

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

In the Matter of)	
)	
Applications of T-Mobile US, Inc., and Sprint Corporation)	WT Docket No. 18-197
)	
For Consent To Transfer Control of Licenses and Authorizations)	
)	
Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time)	ULS File Nos. 0008741236, 0008741420, 0008741603, and 0008741789 et al.

**MEMORANDUM OPINION AND ORDER, DECLARATORY RULING, AND ORDER OF
PROPOSED MODIFICATION**

Adopted: October 16, 2019

Released: November 5, 2019

By the Commission: Chairman Pai and Commissioners O’Rielly and Carr issuing separate statements;
Commissioners Rosenworcel and Starks dissenting and issuing separate statements.

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I. INTRODUCTION

1. T-Mobile US, Inc. (T-Mobile), and Sprint Corporation (Sprint, together with T-Mobile, the Applicants) have filed applications pursuant to sections 214 and 310(d) of the Communications Act of 1934, as amended (the Act),¹ seeking Commission consent to the transfer of control of the licenses, authorizations, and spectrum leases held by Sprint and its subsidiaries to T-Mobile, and the *pro forma* transfer of control of the licenses, authorizations, and spectrum leases held by T-Mobile and its subsidiaries in furtherance of T-Mobile's and Sprint's previously announced agreement to merge.² T-Mobile also filed a petition for declaratory ruling to permit foreign ownership in excess of the statutory benchmark under section 310(b) of the Act.³

2. As the two smallest nationwide mobile service providers, T-Mobile and Sprint assert that their combination will enable the deployment of a world-leading 5G network with capabilities beyond those either could achieve alone. Although each company had independent 5G plans, they claim that on their own they lack the capability to deploy 5G as broadly and with as much capacity as the resulting combined company, New T-Mobile, would. They maintain that their combined scale will increase network efficiency and that Sprint's mid-band spectrum will complement T-Mobile's low-band spectrum, further increasing the quality of their combined network. T-Mobile and Sprint also claim that these and other synergies will enable the merged firm to compete more effectively against the market leaders, AT&T and Verizon Wireless, than could either firm individually. As a result, they argue, the transaction would not result in the lessening of competition often associated with consolidation between horizontal competitors.

3. Building leading 5G networks is of critical importance for our nation. The evolution of wireless networks has, for many years, delivered tremendous value to America's consumers and to its economy. With each new generation of services, wireless consumers have enjoyed the benefits of lower prices and higher quality, while also gaining from the development of the new and valuable industries enabled by faster and more ubiquitous mobile connectivity. As the Commission has recognized, the deployment of 5G networks "holds the potential to bring enormous benefits to American consumers by delivering faster speeds and lower latency and by supporting the development of advanced applications like the Internet of Things, smart cities, and telehealth."⁴ 5G also holds the potential to create three million new jobs in our country and \$500 billion in GDP growth⁵ as well as providing additional competition in the market for in-home connectivity.⁶ And while the promise of 5G exceeds any prior

¹ 47 U.S.C. §§ 214, 310(d).

² A list of the applications is set forth in Appx. A: List of Applications.

³ 47 U.S.C. § 310(b); T-Mobile US, Inc., Petition for Declaratory Ruling under Section 310(b)(4) of the Communications Act of 1934, As Amended, IBFS File No. ISP-PDR-20180618-00002 (filed June 18, 2018) (T-Mobile Section 310(b) Petition).

⁴ *Updating the Commission's Rule for Over-the-Air Reception Devices*, Notice of Proposed Rulemaking, 34 FCC Rcd 2695, para. 1 (2019) (*Over-the-Air Reception Devices NPRM*).

⁵ *Transforming the 2.5 GHz Band*, Report and Order, 34 FCC Rcd 5446, 5446-47, para. 1 (2019) (*2.5 GHz Report and Order*); Accenture Strategy, *Smart Cities: How 5G Can Help Municipalities Become Vibrant Smart Cities*, at 1, 3 (2017), https://newsroom.accenture.com/content/1101/files/Accenture_5G-Municipalities-Become-Smart-Cities.pdf (last visited Oct. 14, 2019).

⁶ *Expanding Flexible Use of the 3.7 to 4.2 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz; Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band; Fixed Wireless Communications Coalition, Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service*, GN Docket No. 18-122, GN Docket No. 17-183 (Terminated), RM 11791, RM-11778, Order and Notice of Proposed Rulemaking, 33 FCC Rcd 6915, 6917, para. 3 (2018) (*3.7-4.2 GHz Order and NPRM*); see also *2.5 GHz Report and Order*, 34 FCC Rcd at 5523 (Statement of Commissioner Brendan Carr).

network technology, we note that its deployment also comes with correspondingly imposing costs and challenges for mobile wireless service providers.

4. Under the Communications Act, the Commission must determine whether the “public interest, convenience, and necessity will be served” by granting these applications.⁷ Under our precedent, the Applicants bear the burden of proving, by a preponderance of the evidence, that the proposed transaction, on balance, will serve the public interest.⁸ Commission staff has conducted an exhaustive review of the proposed transaction, in which it: reviewed thousands of pages of pleadings; issued multiple document and information requests to the Applicants and third parties; examined the documents produced in response to these requests; studied and analyzed engineering and economic models submitted by the Applicants and other commenters; and conducted independent analyses of the public interest claims of the Applicants and third parties.

5. Our analysis bears out many, but not all, of the Applicants’ claims. As to the Applicants’ network claims, we agree that the transaction, as conditioned, will result in significant public interest benefits, including encouraging the rapid deployment of a new 5G mobile wireless network, and improving the quality of the Applicants’ services for American consumers.⁹ Compared to the capabilities of the standalone companies as reflected in their internal plans, the transaction will significantly increase the quality and geographic reach of their wireless networks for the foreseeable future. For example:

- New T-Mobile will deploy high-speed mid-band 5G service to cover 88% of Americans by 2025, 50% more people than the standalone firms’ likely deployments;
- New T-Mobile will have far greater the network capacity than the standalone firms combined, which will give it the incentive to lower per-GB prices and expand output; and
- New T-Mobile’s network will have enough excess 5G capacity to offer a new fixed residential broadband service, increasing the available choices of service provider for millions of homes.

6. In an economy increasingly dependent upon access to broadband services for innovation in a wide variety of sectors and services, these network deployment synergies will yield significant public interest benefits. To confirm these benefits, we adopt as conditions of our approval a series of network buildout commitments offered by the Applicants.

7. The network benefits of the transaction are particularly important for the nation’s underserved rural areas.¹⁰ New T-Mobile’s 5G network will cover 99% of the United States population with speeds faster than 50 Mbps within six years—double the Commission’s definition of advanced telecommunications capability for fixed broadband services. Rural communities will see especially large

⁷ 47 U.S.C. §§ 214(a), 309(a), (d), 310(d).

⁸ *SprintCom, Inc., Shenandoah Personal Communications, LLC, and NTELOS Holdings Corp. for Consent To Assign Licenses and Spectrum Lease Authorizations and To Transfer Control of Spectrum Lease Authorizations and an International Section 214 Authorization*, Memorandum Opinion and Order, 31 FCC Rcd 3631, 3634, para. 6 (WTB, IB 2016) (*Sprint-Shentel-NTELOS Order*); *Applications of AT&T Inc., Leap Wireless International, Inc., Cricket License Col, LLC and Leap Licenseco, Inc. for Consent To Transfer Control and Assign Licenses and Authorizations*, Memorandum Opinion and Order, 29 FCC Rcd 2735, 2741-42, para. 13 (*AT&T-Leap Order*); *Applications of Deutsche Telekom AG, T-Mobile USA, Inc., and MetroPCS Communications, Inc. for Consent To Transfer of Control of Licenses and Authorizations*, Memorandum Opinion and Order and Declaratory Ruling, 28 FCC Rcd 2322, 2327, para. 14 (WTB, IB 2013) (*T-Mobile-MetroPCS Order*); *Applications of AT&T Inc. and Centennial Communications Corp. For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Leasing Arrangements*, Memorandum Opinion and Order, 24 FCC Rcd 13915, 13927, para. 27 (2009) (*AT&T-Centennial Order*).

⁹ See *infra* section VI.A: Nationwide 5G Network.

¹⁰ See *infra* section VI.B: Rural 5G Coverage.

benefits from such 5G connectivity as coverage and throughput in rural areas can often lag urban deployment. And high-speed wireless connections are more valuable for those who lack quality fixed service, telehealth services are more highly demanded the further one lives from a doctor, and distance learning is more important for those far from schools. By bringing new connectivity and competition to underserved rural areas, the transaction will help to ensure that 5G will close the digital divide.

8. Expanding 5G access to all Americans will also enhance the benefits of 5G innovation for the overall United States economy and will support American technological leadership. The larger the United States' 5G user base, and the broader its nationwide coverage, the greater the opportunity for entrepreneurs and innovators. The network benefits of the T-Mobile/Sprint transaction will thus extend beyond mobile wireless services alone, to enhance the competitiveness of the United States' economy.

9. We do not entirely agree, however, with the Applicants' competition analysis. The Applicants claim that, even without any conditions, the network improvements resulting from their transaction would eliminate any potential for a lessening of competition. However, our analysis of potential harms to competition finds that, absent conditions, the evidence of the transaction's impact on competition is mixed. On the one hand, we find that, according to our static merger simulation model, the unconditioned transaction will create upward pricing pressure.¹¹ In particular, the Applicants compete closely with one another through their prepaid brands, Boost Mobile and Metro, and the transaction would eliminate that competition.

10. On the other hand, we agree with the Applicants that the transaction will create quality and dynamic competitive benefits that are not incorporated into the static analysis and that will counteract the upward pricing pressure.¹² Wireless consumers depend on competition to motivate innovation and, in turn, advance the rapid expansion of consumer welfare that the industry has already delivered and will deliver in the future. While we analyze a traditional relevant product market for the provision of mobile telephony/broadband services for purposes of the Commission's initial HHI screen, we recognize that the nature of those services is continually evolving, and this phenomenon will only increase as service providers deploy 5G. Thus, within the mobile telephony/broadband services market, what consumers buy and use changes and improves over time, with corresponding benefits throughout the American economy. By significantly increasing the network quality available from either T-Mobile or Sprint and expanding overall network capacity, this transaction will further drive this critically important competitive dynamic into the new 5G wireless world, strengthening incentives for market participants to innovate.

11. At the end of the day, we believe that it is likely, even without conditions, that these competitive benefits will outweigh pricing pressure in certain areas, such as rural markets, and in certain segments of the market, such as consumers who are primarily quality-conscious. However, we are not confident that this will be the case across the board. In particular, based on the record, we are concerned about the impact of an unconditioned transaction on consumers in densely-populated areas who are primarily concerned about cost. Accordingly, we require, as a condition of our approval, that the Applicants fulfill a series of commitments to address the potential for lost price competition, such as the divestiture of Boost Mobile.¹³ These conditions eliminate the concerns otherwise identified in our review. Among other requirements, the Applicants have committed that the divested Boost Mobile will have low-cost wholesale network access on terms superior to typical MVNOs, with the financial incentive to provide robust competition from the moment of divestiture, and with the ability to build its own facilities over time. We conclude that, as conditioned, the transaction would not substantially lessen competition,¹⁴ and would be in the public interest.

¹¹ See *infra* section V.B.3: Unilateral Effects.

¹² See *infra* section V.B.4: Quality Benefits and Dynamic Competition.

¹³ The Applicants' commitments are set forth in Appx. G: Applicants' Commitments.

¹⁴ As discussed *infra*, we also agree with Applicants that the transaction will strengthen competition in the enterprise (continued....)

12. In connection with a settlement with the U.S. Department of Justice (DOJ), DISH Network Corporation (DISH) has agreed to purchase the divested Boost Mobile, as well as other assets, to effectuate DISH's expansion into facilities-based competition. In addition to our conclusion that, as conditioned herein, the T-Mobile-Sprint transaction would be in the public interest, we conclude that significant public interest benefits would flow from DISH's deployment of 5G broadband services over its spectrum holdings, which for many years have been underutilized, and that the acquisition of Boost Mobile will help DISH achieve that deployment. In connection with certain effectuating extensions and modifications of its licenses, DISH has committed to provide 5G mobile broadband services and deploy a fast, nationwide network, and is subject to significant financial consequences, in addition to potential forfeiture, should it fail to satisfy its buildout obligations.¹⁵ We therefore conclude, contingent upon DISH's consummation of the Boost Mobile divestiture, that certain extensions and conditions related to the DISH licenses would be in the public interest, and we expect based on the current record that additional modifications of the DISH licenses also will serve the public interest. The Wireless Telecommunications Bureau (WTB or Bureau) is directed to make a final public interest determination on these issues in accordance with section 316 of the Communications Act.¹⁶

13. Therefore, as discussed in detail in the Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification (MO&O) that follows, the Commission concludes that the public interest, convenience, and necessity would be served by approval of the Applications as conditioned. The Commission further concludes that, should DISH acquire the Boost Mobile divestiture contemplated by those conditions, the public interest would further be served by extending and conditioning, and, subject to a final determination by WTB, as directed, modifying certain of its licenses.

II. BACKGROUND

A. Description of the Applicants

14. T-Mobile is a publicly-traded Delaware corporation controlled by Deutsche Telekom AG (Deutsche Telekom).¹⁷ T-Mobile states, "[t]hrough its owned and operated retail stores, third-party distributors, and its websites, T-Mobile offers wireless voice and data services to residential and business customers in the United States, Puerto Rico, and the U.S. Virgin Islands, as well as a wide selection of wireless devices and accessories."¹⁸ T-Mobile states that it is "the third largest provider of postpaid service plans in the U.S.,"¹⁹ serving approximately "79.7 million postpaid, prepaid, and wholesale customers."²⁰ In addition, T-Mobile states that it is "the largest provider of prepaid service plans in the

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market and with respect to in-home broadband. See *infra* section VII.E: Enterprise Market and section VI.C: In-Home Broadband Service.

¹⁵ The DISH buildout commitments are set forth in Appx. H: DISH Buildout Commitments. We do not, however, address further potential changes of control, such as the divestiture of 800 MHz licenses to DISH contemplated by the DOJ settlement—the appropriate process for such requests will follow when associated applications are formally filed.

¹⁶ 47 U.S.C. § 316.

¹⁷ Applications of T-Mobile USA, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations, ULS File No. 0008224209 (Lead Application) (filed June 18, 2018, amended July 5, 2018), Exh. 1—Description of the Transaction, Public Interest Statement, and Related Demonstrations at 2 (Public Interest Statement).

¹⁸ Public Interest Statement at 1-2.

¹⁹ T-Mobile US, Inc., SEC Form 10-K, at 8 (filed Feb. 7, 2019).

²⁰ T-Mobile US, Inc., SEC Form 10-K, at 5 (filed Feb. 7, 2019). In the Public Interest Statement, the Applicants state that, for fiscal year ending 2017, T-Mobile served approximately 72.6 million customers under the T-Mobile and Metro brands. Public Interest Statement at 1-2 (citing to T-Mobile US, Inc., SEC Form 10-K (filed Feb. 7, 2018)).

U.S. as measured by customers.”²¹ T-Mobile had 2018 revenues of approximately \$43.3 billion, with an operating income of approximately \$5.3 billion, and total assets of approximately \$72.5 billion.²²

15. Sprint is a publicly-traded Delaware corporation controlled by SoftBank Group Corp. (SoftBank).²³ Sprint states that it “offers a range of wireless and wireline voice and data products and services, as well as devices and accessories, to residential and business customers in the United States, Puerto Rico, and the U.S. Virgin Islands under the Sprint, Boost Mobile, Virgin Mobile, and Assurance Wireless brands,” and that it “is the fourth-largest wireless carrier in the United States,”²⁴ serving approximately 54.5 million postpaid, prepaid, and wholesale consumers.²⁵ Sprint further states that it “is an interexchange carrier and Tier 1 Internet backbone provider,” and that it also “provides wireline voice and data services to businesses with operations outside the United States.”²⁶ Sprint’s annual net operating revenues for the year ended March 31, 2019, were approximately \$33.6 billion, with an operating income of approximately \$400 million, and total assets of approximately \$84.6 billion.²⁷

B. Description of the Transaction

16. T-Mobile and Sprint entered into a Business Combination Agreement (Merger Agreement) pursuant to which T-Mobile will acquire Sprint in an all-stock transaction.²⁸ Pursuant to the Merger Agreement, the Applicants will engage in a series of virtually simultaneous steps that will culminate in Sprint becoming an indirect subsidiary of T-Mobile.²⁹ Following consummation, the Applicants estimate that “Deutsche Telekom and SoftBank are expected to hold approximately 42% and 27% of the fully diluted shares of T-Mobile Common Stock, respectively, with the remaining approximately 31% of the fully-diluted shares of T-Mobile Common Stock held by public stockholders.”³⁰ In addition, pursuant to an agreement between Deutsche Telekom and SoftBank, SoftBank will grant Deutsche Telekom the right to direct the voting of SoftBank’s T-Mobile shares.³¹

17. The Board of Directors of the resulting combined company will be comprised of 14 members.³² Deutsche Telekom will designate nine directors, at least two of whom will be independent.³³ SoftBank will designate four directors, at least two of whom also will be independent.³⁴ The remaining

²¹ T-Mobile US, Inc., SEC Form 10-K, at 8 (filed Feb. 7, 2019).

²² T-Mobile US, Inc., SEC Form 10-K, at 28 (filed Feb. 7, 2019).

²³ Public Interest Statement at 3.

²⁴ Public Interest Statement at 2.

²⁵ Sprint Corporation, SEC Form 10-K, at 40 (filed May 29, 2019). In the Public Interest Statement, the Applicants state that Sprint had “approximately 54.58 million customers across its retail and wholesale wireless service offerings at the end of 2017.” Public Interest Statement at 2 (citing to Sprint Corporation, SEC Form 10-K (filed May 24, 2018)).

²⁶ *Id.* at 2-3.

²⁷ Sprint Corporation, SEC Form 10-K, at 30 (filed May 29, 2019).

²⁸ Public Interest Statement at 3-6.

²⁹ *Id.*

³⁰ *Id.* at 6.

³¹ *Id.* at 6.

³² *Id.* at 7.

³³ *Id.*

³⁴ *Id.*

director will be the chief executive officer of the combined company, currently expected to be John Legere, the current chief executive officer of T-Mobile.³⁵

18. In their Public Interest Statement, the Applicants assert that “[t]he combination of the two companies will generate enormous cost-savings in the form of approximately \$43.6 billion total net present value cost synergies by 2024, allowing New T-Mobile to invest in new network technology, innovation, and operations to rapidly construct and deploy the first true, nationwide 5G network.”³⁶ T-Mobile and Sprint further claim that the merger synergies resulting from their combination will enable them to “deliver unprecedented services to consumers, increasingly disrupt the wireless industry, and ensure U.S. leadership in the race to 5G” and also deliver “increased competition in broadband, enterprise, and video offerings.”³⁷ The Applicants contend that the combined company will have significant advantages over the individual networks, enabling the merged company to “(1) access more cell sites expeditiously than either company could do on its own, (2) deploy a unique combination of spectrum across more cell sites on a more accelerated basis than either company could do individually, (3) provide unencumbered spectrum for 5G deployment, (4) allow faster spectrum refarming that will drive better spectral efficiency, and (5) provide enhanced LTE services and a rapid, seamless migration for existing T-Mobile and Sprint customers.”³⁸ In sum, the Applicants assert that “New T-Mobile’s broad and deep nationwide 5G network will enable the delivery of unprecedented coverage and capacity, resulting in a revolutionary consumer experience with unmatched speed” and “allow consumers to get more value for their money and benefit from new competition and disruption through (1) the expansion and improvement of existing services and (2) the arrival of new, innovative services.”³⁹

19. In a May 20, 2019 filing, detailing the commitments discussed herein, the Applicants reiterated that “their merger will produce enormous consumer benefits and intensify competition.”⁴⁰ In particular, following months of filings, refinements to the Applicants’ plans for merging their operations, *ex parte* meetings, and discussions with Commission staff, the Applicants summarized the claimed benefits in their statement that the merged company’s “nationwide 5G network will deliver transformative fiber-like speeds for mobile services; bring broadband wireless service to millions of unserved and underserved rural Americans; unleash a competitive alternative to in-home, fixed broadband providers; benefit mobile virtual network operators (MVNOs); and accelerate 5G deployment in the United States, thereby ensuring American leadership in the next-generation of wireless technology.”⁴¹

C. Transaction Review Process

20. T-Mobile and Sprint filed their applications on June 18, 2018.⁴² Prior to the filing of the applications and in anticipation of their submission, the Commission opened a docket on June 15, 2018,⁴³ and WTB issued a Protective Order regarding the submission and handling of confidential and highly

³⁵ *Id.*

³⁶ *Id.* at 15 (footnote omitted).

³⁷ *Id.* at 16 (footnote omitted).

³⁸ *Id.* at 28.

³⁹ *Id.* at 50.

⁴⁰ Letter from Nancy Victory, Counsel to T-Mobile, and Regina Keeney, Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed May 20, 2019) (T-Mobile/Sprint May 20, 2019 Commitments Letter).

⁴¹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 1.

⁴² See generally Lead Application (certain applications were amended on July 5, 2018).

⁴³ *Commission Opens Docket for Proposed Transfer of Control of Sprint Corporation to T-Mobile US, Inc.*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 6046 (2018).

confidential information in this proceeding.⁴⁴ In connection with the transaction, the Applicants also made filings with the DOJ, the Committee on Foreign Investment in the United States (CFIUS), and various state public utility commissions.⁴⁵ On July 18, 2018, WTB released a Public Notice accepting the applications for filing and establishing a pleading cycle for public comments.⁴⁶ WTB shortly thereafter issued a Public Notice⁴⁷ and a Protective Order⁴⁸ regarding access to Numbering Resource Utilization and Forecast (NRUF) reports filed by carriers engaged in the provision of wireless telecommunications services (Wireless Telecommunications Carriers) and disaggregated, carrier-specific local number portability (LNP) data related to Wireless Telecommunications Carriers.

21. Nineteen Petitions To Deny the proposed transaction were filed on August 27, 2018,⁴⁹ along with numerous comments.⁵⁰ On September 11, 2018, the Commission paused its informal 180-day transaction shot clock to allow Commission staff and third parties to review newly-submitted and anticipated modeling relied upon by T-Mobile and Sprint.⁵¹ On September 17, 2018, T-Mobile and Sprint

⁴⁴ *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Protective Order, 33 FCC Rcd 6036 (2018) (*Protective Order*). WTB subsequently issued a Supplemental Protective Order adopting procedures to permit limited access to competitively sensitive materials that are claimed to be privileged. *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Supplemental Protective Order, 34 FCC Rcd 407 (WTB 2019) (*Supplemental Protective Order*).

⁴⁵ Public Interest Statement at 140-41.

⁴⁶ *T-Mobile US, Inc., and Sprint Corporation Seek FCC Consent to the Transfer of Control of the Licenses, Authorizations, and Spectrum Leases Held by Sprint Corporation and Its Subsidiaries to T-Mobile US, Inc., and the Pro Forma Transfer of Control of the Licenses, Authorizations, and Spectrum Leases Held by T-Mobile US, Inc., and Its Subsidiaries, Pleading Cycle Established*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 6771 (2018) (*Accepted for Filing Public Notice*) (indicating that petitions to deny were due August 27, 2018, oppositions were due September 17, 2018, and replies were due October 9, 2018). On August 17, 2018, the Communications Workers of America (CWA), Rural Wireless Association (RWA), NTCA – The Rural Broadband Association (NTCA), Public Knowledge, Consumers Union, The Greenlining Institute, Common Cause, New America’s Open Technology Institute, Writers Guild of America West, Free Press, and Benton Foundation filed a motion to stop the informal 180-day clock in this proceeding until T-Mobile and Sprint supplemented their public interest statement to “adequately describe the extensive spectrum aggregation that will result from the proposed transaction” and to extend the pleading cycle. Motion of CWA, RWA, NTCA, Public Knowledge, Consumers Union, The Greenlining Institute, Common Cause, New America’s Open Technology Institute, Writers Guild of America West, Free Press, and Benton Foundation To Stop the Clock, or in the Alternative Motion for Extension of Time, WT Docket No. 18-197, at 1 (filed Aug. 17, 2018) (Motion). WTB denied the Motion and declined to stop the informal clock or extend the pleading schedule. *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorization*, WT Docket No. 18-197, Order, 33 FCC Rcd 8206 (2018).

⁴⁷ *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations, Numbering Resource Utilization and Forecast Reports and Local Number Portability Reports To Be Placed Into the Record, Subjective to Protective Order*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 7376 (2018).

⁴⁸ *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, NRUF/LNP Protective Order, 33 FCC Rcd 7369 (2018) (*NRUF/LNP Protective Order*).

⁴⁹ A list of the entities and individuals that timely filed petitions to deny are included in Appx. B: Petitioners and Commenters.

⁵⁰ In addition to express comments, a number of formal comments were timely filed by the comment deadline. A list of these commenters is included in Appx. B: Petitioners and Commenters.

⁵¹ Letter from David B. Lawrence, Director, T-Mobile/Sprint Transaction Task Force, and Donald K. Stockdale, Jr., Chief, WTB, to Kathleen O’Brien Ham, T-Mobile US, Inc., and Vonya B. McCann, Sprint Corporation, WT Docket No. 18-197 (Sept. 11, 2018) (referencing a substantially revised network engineering model submitted on Sept. 5,

(continued....)

filed a Joint Opposition to the Petitions To Deny,⁵² and other filings also were submitted in response to the Petitions and opening round comments.⁵³ The Commission subsequently extended the reply comment deadline to October 31, 2018, after the Applicants informed the Commission on September 28, 2018, that they had completed their modeling submissions and did not intend to further supplement the record on which they rely.⁵⁴ Accordingly, on October 31, 2018, reply comments were filed.⁵⁵

22. Subsequently, on November 13, 2018, WTB issued a Public Notice seeking comment on a new econometric study, which relied on a new data set and new methodologies, submitted by T-Mobile and Sprint in support of the proposed transaction.⁵⁶ This Public Notice requested comments on the new econometric study, that were due by December 4, 2018.⁵⁷ The Public Notice also stated that, “[a]bsent further significant new record submissions by the Applicants, the informal 180-day clock will resume on December 4, 2018, at day 55,”⁵⁸ and the informal clock did resume on that date. The Applicants subsequently filed significant additional information regarding their network integration plans for 2019-2021, an extension of their previously filed merger simulation analysis to cover the years 2019-2021, and additional information regarding their claims related to fixed wireless broadband services on February 21, 2019, and March 6, 2019.⁵⁹ As a result, the Commission paused the clock as of March 7, 2019, and provided an opportunity for interested parties to file comments on these new submissions by March 28, 2019.⁶⁰ The Commission also stated that, absent further significant new record submissions by the Applicants or other outstanding issues (including documentation of claims of privilege), the informal 180-day clock would resume on April 4, 2019, at day 122,⁶¹ and the informal clock did resume on that date.

23. In addition to the filings identified above and in Appendix B, the Applicants and other interested parties held dozens of *ex parte* meetings and discussions with Commission staff regarding the details of the proposed transaction (in the case of the Applicants) or to explain their concerns about the proposed transaction (in the case of many opposing the transaction or seeking approval with specified

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2018, the Build 9 business model that provides the financial basis for the projected new network buildout, also submitted on Sept. 5, 2018, and the anticipated, but not yet submitted at that time, additional economic modeling).

⁵² Joint Opposition of T-Mobile USA, Inc., and Sprint Corporation (filed Sept. 17, 2018) (Joint Opposition).

⁵³ In addition to the Joint Opposition, filings framed as oppositions to petitions to deny were submitted on September 17, 2018; the filers of these pleadings are listed in Appx. B: Petitioners and Commenters.

⁵⁴ *Applications of T-Mobile US, Inc., and Sprint Corporation for Consent To Transfer Control of Licenses and Authorizations, Extension of Date for Filing Replies*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 9426 (2018).

⁵⁵ The parties submitting reply filings are listed in Appx. B: Petitioners and Commenters.

⁵⁶ *Commission Announces Receipt of Supplemental Analysis From T-Mobile; Establishes Comment Deadline*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 11157 (2018) (*November 13, 2018 Public Notice*).

⁵⁷ Three commenters filed by the December 4, 2018 deadline, and they are listed in Appx. B: Petitioners and Commenters.

⁵⁸ *November 13, 2018 Public Notice*, 33 FCC Rcd at 11158.

⁵⁹ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197 (filed Feb. 22, 2019); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Mar. 6, 2019) (T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter).

⁶⁰ *Commission Announces Receipt of Additional Analysis and Information from T-Mobile and Sprint; Establishes Comment Deadline*, WT Docket No. 18-197, Public Notice, 34 FCC Rcd 1122 (2019). The four parties that filed comments on March 28, 2019 are listed in Appx. B: Petitioners and Commenters.

⁶¹ *Id.* at 1123. The informal clock also was stopped during the federal government shutdown in January 2019—specifically, the clock was paused on January 2, 2019, and resumed on January 29, 2019. *Impact of Potential Lapse in Funding on Commission Operations*, 34 FCC Rcd 1, 4 (2019).

conditions). The Commission also received hundreds of written *ex parte* filings (including from a range of state and local governmental officials, many of them voicing support for the proposed transaction) and approximately 39,000 filings addressed to the proposed transaction.

24. In addition to the many submissions by the Applicants and interested third parties, WTB requested important and necessary documents, information, and data from the Applicants and certain wireless and cable service providers to facilitate further review of the proposed transaction.⁶² In response, the Commission received over four million documents, amounting to nearly 26 million pages, from the Applicants and the entities that received requests for documents. The Applicants and other responding parties provided information and data on, among other things, costs, service plans, customer numbers, wholesale operations, porting, device leases and sales, offer capacity, traffic demand, site information, and/or retail locations. Certain information submitted in this proceeding is subject to the *Protective Order*, *Supplemental Protective Order*, or *NRUF/LNP Protective Order* issued in this proceeding.⁶³

D. New T-Mobile Commitments

25. In response to staff's concerns about certain aspects of the proposed transaction, on May 20, 2019, the Applicants made several commitments to the Commission and asked that their application be approved "subject to" those commitments.⁶⁴ With regard to the potential impact of the transaction on competition, the Applicants pledged to divest Sprint's Boost Mobile business, including Boost's stores, employees, and current subscribers, to an independent buyer, as well as to provide the buyer a wholesale

⁶² Letter from Donald K. Stockdale, Jr., Chief, WTB, to Kathleen O'Brien Ham, T-Mobile US, Inc., WT Docket No. 18-197 (Aug. 15, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Vonya B. McCann, Sprint Corporation, WT Docket No. 18-197 (Aug. 15, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Kathleen O'Brien Ham, T-Mobile US, Inc., WT Docket No. 18-197 (Sept. 10, 2018) (data request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Vonya B. McCann, Sprint Corporation, WT Docket No. 18-197 (Sept. 10, 2018) (data request). WTB also requested information, documents, and data from other entities. Letter from Donald K. Stockdale, Jr., Chief, WTB, to Joan M. Marsh, AT&T Services, Inc., WT Docket No. 18-197 (Sept. 10, 2018) (data request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Grant B. Spellmeyer, U.S. Cellular, WT Docket No. 18-197 (Sept. 10, 2018) (data request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to William H. Johnson, Verizon Communications, WT Docket No. 18-197 (Sept. 10, 2018) (data request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Lee Schroeder, Altice USA, Inc., WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Joan M. Marsh, AT&T Services, Inc., WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Eric Graham, Cellular South Inc. d/b/a C Spire, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Catherine Bohigian, Charter Communications, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Kathryn A. Zachem, Comcast Corporation, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Richard Salzman, TracFone Wireless, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to Grant B. Spellmeyer, U.S. Cellular, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request); Letter from Donald K. Stockdale, Jr., Chief, WTB, to William H. Johnson, Verizon Communications, WT Docket No. 18-197 (Oct. 4, 2018) (information and document request).

⁶³ In this Order, Highly Confidential Information, as defined in the *Protective Order*, will be marked by the terms "[BEGIN HIGHLY CONF. INFO.]" and "[END HIGHLY CONF. INFO.]" Confidential Information, as defined in the *Protective Order*, will be marked by the terms "[BEGIN CONF. INFO.]" and "[END CONF. INFO.]" and NRUF/LNP Confidential Information, as defined in the *NRUF/LNP Protective Order*, will be marked by the terms "[BEGIN NRUF/LNP HIGHLY CONF. INFO.]" and "[END NRUF/LNP HIGHLY CONF. INFO.]" Such information will be redacted from the publicly available version of this Order. The unredacted version will be available upon request to persons qualified to view it under the *Protective Order*, *Supplemental Protective Order*, and *NRUF/LNP Protective Order*.

⁶⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter at 1.

agreement with rates and terms that “will ensure that New Boost will be an aggressive competitor.”⁶⁵ The Applicants also repeated their pledge that they would continue to make their current—or better—rate plans available for three years following consummation of the transaction.⁶⁶

26. With regard to their deployment of 5G service,⁶⁷ the Applicants committed that they would cover 97% of the U.S. population with 5G service within three years of the consummation of the transaction, and 99% within six years.⁶⁸ They committed that within three years, they would provide 5G service with download speeds of at least 50 Mbps to three-quarters of the U.S. population, and download speeds of at least 100 Mbps to almost two-thirds of the U.S. population (63%).⁶⁹ Within six years, the Applicants pledged they would provide 5G download speeds of at least 50 Mbps to almost everyone in the United States (99% of the population), and 5G download speeds of at least 100 Mbps to 90% of the U.S. population.⁷⁰

27. The Applicants also specifically committed to build out their new 5G network to rural communities.⁷¹ They pledged to cover 85% of the United States rural population with 5G service within three years of the consummation of the transaction, and 90% within six years.⁷² They committed that, within three years, two-thirds of the rural population would have access to 5G download speeds of at least 50 Mbps, while over half (55%) would have access to 5G download speeds of at least 100 Mbps.⁷³ Within six years of the merger closing date, they pledged that 5G download speeds of at least 50 Mbps would be available to 90% of the rural population, while two-thirds of the rural population would be able to receive 5G service with download speeds of at least 100 Mbps.⁷⁴

28. As part of the Applicants’ commitment to deploy 5G service, they made additional commitments to deploy 5G service over mid-band frequencies (above 1 GHz and below 6 GHz), as well as over low-band frequencies (below 1 GHz). Specifically, they committed to cover 75% of the United States population with 5G service over mid-band frequencies within three years of the transaction, and 88% within six years.⁷⁵ They also committed to cover 55% of the United States rural population with 5G service using mid-band frequencies within three years of the transaction, and 67% within six years.⁷⁶

29. In connection with their build-out of 5G service, the Applicants also committed, within six years after consummation of the transaction, to marketing and providing in-home broadband service to millions of customers, with minimum speeds of 25 Mbps download and 3 Mbps upload.⁷⁷ The

⁶⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter at 5-6.

⁶⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter at 6.

⁶⁷ “5G” is defined as the 5G New Radio air interface standard as described in 3GPP Release 15. 3GPP, *Release 15*, <https://www.3gpp.org/release-15> (last visited Oct. 14, 2019). T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 5.

⁶⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-3.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ A “rural area” is as defined by the 2010 U.S. Census. The rural population is defined as the population within Rural Areas derived from the 2016 Pitney Bowes study. *Id.*, Attach. 1 at 6.

⁷² T-Mobile/Sprint May 20, 2019 Commitments Letter at 4, Attach. 1 at 2.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-3.

⁷⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter at 4.

⁷⁷ *Id.* at 4-5.

commitment ends when the Applicants are providing in-home broadband service to 9.5 million customers simultaneously.⁷⁸

30. To ensure that they meet their commitments, the Applicants pledged to comply with several different verification mechanisms and to make substantial payments to the U.S. Treasury if they do not follow through on the commitments.⁷⁹ The mechanisms and payments vary with the commitment. With respect to their pledge to divest Boost, the Applicants committed to reaching an agreement with a buyer within 120 days of closing their transaction (with two possible short extensions); to seeking approval of that agreement from WTB; and to paying \$3.5 million per day if they fail to meet the deadline or if the agreement is not approved.⁸⁰

31. With respect to their commitment to build out 5G service, the commitments are structured so that each major commitment has several verifiable goals, and the Applicants will have been deemed to meet their major commitment only if each of those goals has been met.⁸¹ To verify both the coverage areas and speeds of their 5G service, the Applicants committed to using independently-overseen drive tests.⁸² They also committed to providing the Commission with a list of the specific cell sites on which they have deployed 5G service.⁸³ The Applicants further committed that the determination whether they meet the goals will be made by WTB.⁸⁴

32. If the Applicants miss any of the specific three-year goals with respect to their nationwide 5G deployment, they committed to make a payment to the U.S. Treasury of at least \$10 million, with a maximum payment of \$250 million, depending on the amount by which they miss the goal.⁸⁵ The same verification structure and payment scheme applies separately to their commitment to deploy 5G service to rural America.⁸⁶ If the Applicants fail to meet their commitments with respect to both the nationwide deployment and the rural deployment of 5G service, they pledged to make a payment of at least \$20 million, with a maximum of \$500 million.⁸⁷ The Applicants committed to making even larger payments if they miss their commitments for deploying 5G service after six years. In that case, they would make payments of \$10 million for each percent by which they miss their nationwide 5G build-out commitment and of \$20 million for each percent by which they miss their rural build-out commitment, with a minimum payment of \$25 million for the nationwide 5G commitments, and \$50 million for the rural 5G commitments, leading to a maximum payment of \$2.4 billion.⁸⁸ Finally, making a contribution to the U.S. Treasury because they missed meeting their the 6-year commitments does not release the Applicants from meeting those commitments. The commitments remain in place and further contributions will be

⁷⁸ *Id.*, Attach. 1 at 3.

⁷⁹ *Id.* at 7-8, Attach. 1 at 3-7.

⁸⁰ *Id.* at 6, Attach. 1 at 3-4.

⁸¹ *Id.* at 7, Attach. 1 at 4-5.

⁸² *Id.* at 7, Attach. 1 at 1-3.

⁸³ *Id.* at 7, Attach. 1 at 1-3.

⁸⁴ *Id.* at 6, Attach. 1 at 3-5.

⁸⁵ *Id.* at 7, Attach. 1 at 3-5.

⁸⁶ *Id.*

⁸⁷ *Id.*, Attach. 1 at 5.

⁸⁸ Again, the Applicants pledged to make these payments if they miss any individual goal within a commitment, and if they miss both commitments, they would make both payments. For some of the goals within each commitment, the payment would be calculated for each 2% missed. T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 5.

assessed a year following a missed commitment on a recurring basis until each element of each commitment is met.⁸⁹

E. Department of Justice Review

33. The Antitrust Division of the DOJ reviews telecommunications mergers pursuant to section 7 of the Clayton Act, which prohibits mergers that are likely to substantially lessen competition.⁹⁰ The Antitrust Division's review is limited solely to an examination of the competitive effects of the acquisition, without reference to national security, law enforcement, or other public interest considerations. The Antitrust Division reviewed the proposed merger between T-Mobile and Sprint. As a result of its analysis, the DOJ concluded that the proposed merger was likely to result in competitive harm in certain markets,⁹¹ and entered into a settlement with the Applicants designed to address its competitive concerns.⁹² Thus, the DOJ, along with the States of Kansas, Nebraska, Ohio, Oklahoma and South Dakota, filed on July 26, 2019, a Complaint, with the United States District Court for the District of Columbia (District Court),⁹³ and the parties jointly filed a proposed Final Judgment and Stipulation and Order with the District Court.⁹⁴ The DOJ will not object to the merger of T-Mobile and Sprint subject to, among other conditions, the Applicants' divestiture to DISH of Sprint's prepaid assets (Boost Mobile, Sprint-branded prepaid, and Virgin Mobile), and the Applicants' entering into an MVNO agreement with DISH for at least seven years.⁹⁵

34. More specifically, under the terms of the settlement between the Applicants and the DOJ, the Applicants have agreed to transfer control of Sprint's prepaid wireless telecommunications businesses, Boost Mobile, Virgin Mobile, and Sprint-branded prepaid business.⁹⁶ The Applicants have agreed to sell to DISH, the licenses, personnel, facilities, intellectual property, and subscribers of these companies.⁹⁷ In addition, the Applicants agreed to enter into a "full" MVNO agreement with DISH which will allow DISH to use the Applicants' wireless network to provide service to its customers, provides DISH the option to construct and use its own network, and requires the Applicants to interconnect with DISH's network.⁹⁸ The DOJ explains that unlike traditional MVNOs, a full MVNO

⁸⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 5.

⁹⁰ 15 U.S.C. § 18. The DOJ does not review in advance mergers below certain statutorily mandated dollar thresholds, which are currently between \$90 and approximately \$360 million. 15 U.S.C. § 18(a).

⁹¹ *United States et al. v. Deutsche Telekom AG, T-Mobile US, Inc. Softbank Group Corp. and Sprint Corp.*, Complaint, No. 1:19-cv-02232 (D.D.C.) (filed July 26, 2019) (*DOJ Complaint*). All of the DOJ filings regarding this matter are available at <https://www.justice.gov/atr/case/us-et-al-v-deutsche-telekom-ag-et-al> (last visited Oct. 14, 2019).

⁹² *United States of America et al., v. Deutsche Telekom AG, T-Mobile US, Inc., Softbank Group Corp., Sprint Corporation, and DISH Network Corporation*, Proposed Final Judgment, Case No. 1:19-cv-02232, at 2 (D.D.C.) (filed July 26, 2019) (*DOJ Proposed Final Judgment*).

⁹³ *DOJ Complaint*.

⁹⁴ *United States et al. v. Deutsche Telekom AG, T-Mobile US, Inc., SoftBank Group Corp., Sprint Corp., and DISH Network Corp.*, Stipulation and Order, No. 1:19-cv-02232 (D.D.C.) (filed July 26, 2019) (*DOJ Stipulation and Order*).

⁹⁵ *DOJ Proposed Final Judgment*.

⁹⁶ The divestiture would not include subscribers to the Assurance Lifeline program (part of the Virgin Wireless business), or Sprint's prepaid customers receiving services through its Swiftel and Shentel affiliates, due to various contractual and regulatory obligations. *United States et al. v. Deutsche Telekom AG, T-Mobile US, Inc. Softbank Group Corp. and Sprint Corp.*, Competitive Impact Statement, No. 1:19-cv-02232, at 8 & n.2 (D.D.C.) (filed July 30, 2019) (*DOJ Competitive Impact Statement*).

⁹⁷ *DOJ Proposed Final Judgment* at 6-11.

⁹⁸ *DOJ Proposed Final Judgment* at 19-20.

owns some facilities that it can use to carry some of its traffic while using the MVNO agreement to carry the rest.⁹⁹ The Applicants are also required to make available to DISH all of the cell sites it decommissions within five years (which shall be at least 20,000) and all of the retail locations it decommissions within five years (which shall be at least 400).¹⁰⁰ The *DOJ Proposed Final Judgment* also requires DISH to comply with the commitments it filed with the Commission on July 26, 2019, where DISH committed to building a nationwide 5G network using its AWS-4, Lower 700 MHz, and H Block licenses.¹⁰¹

35. In addition, the Applicants must sell DISH their 800 MHz spectrum licenses (with Commission approval) within three years of selling DISH Sprint's prepaid wireless telecommunications businesses, and must negotiate in good faith with DISH to lease DISH's 600 MHz spectrum licenses and deploy the spectrum for use by retail customers.¹⁰² The Applicants also must not interfere with DISH's efforts to deploy its network.¹⁰³ Finally, the *DOJ Proposed Final Judgment* also requires the Applicants to comply with the commitments they filed with the Commission on June 14, 2019, as described above,¹⁰⁴ and requires DISH to comply with the commitments it filed with the Commission on July 26, 2019, where DISH committed to building a nationwide 5G network using its AWS-4, Lower 700 MHz, and H Block licenses.¹⁰⁵

36. The *DOJ Proposed Final Judgment* also contains other terms designed to assure that competition is not lessened by the merger. With regard to MVNO agreements, the Applicants are required to abide by the terms of their existing MVNO agreements and to extend them for the length of the *DOJ Proposed Final Judgment*, i.e., seven years.¹⁰⁶ The Applicants are also prohibited from discriminating against devices that include eSIM technology or that allow for multiple profiles,¹⁰⁷ and must abide by several principles that will make it easier for subscribers to obtain unlocked devices.¹⁰⁸ To assure compliance with the *DOJ Proposed Final Judgment*,¹⁰⁹ the court is requested to appoint a monitor who will have the power to investigate and will file monthly reports on both the Applicants' and DISH's progress towards effectuating the *DOJ Proposed Final Judgment*.¹¹⁰

⁹⁹ *DOJ Competitive Impact Statement* at 5.

¹⁰⁰ *DOJ Proposed Final Judgment* at 13-18.

¹⁰¹ *DOJ Complaint* at 4; *DOJ Competitive Impact Statement* at 11.

¹⁰² *DOJ Proposed Final Judgment* at 11-13, 18-19.

¹⁰³ *DOJ Proposed Final Judgment* at 23.

¹⁰⁴ *DOJ Proposed Final Judgment* at 23.

¹⁰⁵ *DOJ Complaint* at 4; *DOJ Competitive Impact Statement* at 11.

¹⁰⁶ *DOJ Proposed Final Judgment* at 20-23. The Applicants are not required to extend any MVNO agreements that include a reciprocal facility sharing arrangement unless it includes a mutually beneficial reciprocal facility sharing arrangement for the length of the agreement. *Id.* at 21.

¹⁰⁷ *DOJ Proposed Final Judgment* at 21-22.

¹⁰⁸ *DOJ Proposed Final Judgment* at 22-23. eSIM is a standardized technology that enables consumers and service providers to remotely manage and alter certain settings on a mobile device, rather than controlling those settings using physical Subscriber Identity Module (SIM) cards inserted into the device. In particular, eSIM consumers can store multiple operator profiles on a device simultaneously and switch between them remotely. GSMA, eSIM, *The SIM for the Next Generation of Connected Consumer Devices*, <https://www.gsma.com/esim/> (last visited Oct. 14, 2019).

¹⁰⁹ *DOJ Proposed Final Judgment* at 25-28.

¹¹⁰ RWA and NTCA jointly ask the Commission to issue a public notice seeking additional comment in this proceeding in light of the *DOJ Proposed Final Judgment*. Informal Request for Commission Action by RWA and NTCA, WT Docket 18-197 (filed Aug. 5, 2019). The Wireless Internet Service Providers Association (WISPA)

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also asks that we seek additional comment in light of the commitments made by the Applicants in their letter of May 20, 2019, the *DOJ Proposed Final Judgment*, and DISH's commitments made in its letter of July 26, 2019. Letter from Louis Peraertz, Vice President of Policy, WISPA, to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197 (filed Aug. 8, 2019). Some other groups support these requests. See, e.g., Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197 (filed Aug. 13, 2019). The Applicants filed a joint opposition. Joint Opposition of T-Mobile US, Inc. and Sprint Corp. to Requests for Commission Delay, WT Docket No. 18-197 (filed Aug. 9, 2019). RWA and NTCA filed a reply. Reply to Joint Opposition to Informal Request for Commission Action, RWA and NTCA, WT Docket 18-197 (filed Aug. 22, 2019) (RWA and NTCA Reply).

We find further delay neither necessary nor prudent. As to the T-Mobile/Sprint transaction, these commenters seek more time because of another reviewing agency's settlement, yet only generally reference the Administrative Procedure Act and cite to no applicable requirement therein, or in the Communications Act or the Commission's rules, and we do not believe any such requirements are applicable here. In fact, the Commission has rarely issued a formal notice seeking comment on a proposed settlement by another agency. See, e.g., *Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent To Assign or Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 31 FCC Rcd 6327 (2016) (*Charter-Time Warner Order*) (DOJ settlement reached 10 days before the MO&O was adopted); *Applications of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC and Cox TMI, LLC for Consent To Assign AWS-1 Licenses et al.*, Memorandum Opinion and Order and Declaratory Ruling, 27 FCC Rcd 10698 (2012) (DOJ settlement reached five days before the MO&O was adopted). RWA and NTCA argue that it would be arbitrary and capricious for the Commission to entirely fail to consider an important aspect of the problem. RWA and NTCA Reply at 2. But we have done no such thing. Throughout this MO&O, we analyze in great detail the potential competitive consequences of the proposed transaction, find that certain conditions are necessary to ameliorate potential competitive harms, and conclude that with those conditions the public interest benefits outweigh any potential public interest harms. We have also reviewed and analyzed the *DOJ Proposed Final Judgment*. First, we find that nothing in it undermines our conclusion that granting the applications with the conditions we impose serves the public interest. We also note that, to the extent that there is any inconsistency between the *DOJ Proposed Final Judgment* and the conditions we are imposing, the Applicants are bound by the conditions attached to our approval of their applications. We therefore conclude that the *DOJ Proposed Final Judgment* does not undermine our conclusion that granting the applications with the conditions we impose serves the public interest. Second, while our conclusion that the transaction as conditioned serves the public interest does not depend on the *DOJ Proposed Final Judgment*, as discussed elsewhere in this MO&O, we find that the *DOJ Proposed Final Judgment* provides further confidence that the proposed transaction as conditioned is unlikely to cause public interest harms. See *infra* paras. 292, 374 & n.1304. Third, although the *DOJ Proposed Final Judgment* requires the Applicants to enter into an MVNO agreement with DISH, the Applicants are still required to submit that MVNO agreement to WTB, which will review it to ensure that it satisfies the conditions adopted in this MO&O, including that Boost Mobile be divested to a "serious and credible third-party buyer;" further, the Applicants are subject to making significant financial payments until they receive WTB's approval of an agreement that meets those conditions.

Nor do we find it wise to delay a decision further. In several respects, a further formal comment process is unnecessary. These Applications have been publicly noticed for more than a year, subject to three formal comment cycles, and notwithstanding three stoppages of the Commission's 180-day clock, it now runs past day 300. Comments on potential conditions, including a Boost Mobile divestiture, have been raised in the record going back nearly a year. And the May 20, 2019 commitments on which our analysis focuses have been public for months and commented upon by interested parties, including by RWA. Letter from Caressa Bennet, General Counsel to RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197 (filed May 30, 2019). That level of public comment on material conditions exceeds what the Commission often provides in transaction reviews. See, e.g., *Wireless Telecommunications Bureau Seeks Comment on the Impact on the Verizon Wireless-SpectrumCo and Verizon Wireless-Cox Transactions of the Applications of Verizon Wireless and T-Mobile To Assign AWS-1 Licenses*, WT Docket No. 12-4, Public Notice, 27 FCC Rcd 7166 (WTB 2012) (*SpectrumCo Public Notice*) (providing a 14-day period for comment on proposed divestiture of licenses). Meanwhile, while CWA argues that the proposed MVNO agreement between the Applicants and DISH should be submitted into the record and subject to public comment before we reach our decision, the conditions we adopt today require that the Applicants submit such an MVNO agreement to WTB, that the agreement satisfy certain requirements, and that the Applicants be subject to significant financial payments until WTB's approval of an agreement consistent with those requirements. CWA's argument is

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F. DISH Applications

37. On July 26, 2019, DISH filed applications, pursuant to section 309(c) of the Communications Act, for an extension of time to complete construction of its facilities for its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses.¹¹¹ Those requests were made in connection with the *DOJ Proposed Final Judgment*, as described above.¹¹² DISH states that doing so will allow it to build a new 5G network that will provide a facilities-based entrant into the mobile wireless market and promote U.S. leadership in 5G.¹¹³ DISH further states that that its acquisition of Boost Mobile and the other Sprint prepaid assets will facilitate and expedite its entry.¹¹⁴ DISH stated that it was willing to accept several conditions to ensure that it meets its commitments.¹¹⁵ On August 7, 2019, in order to better manage the proceedings related to DISH's applications, WTB consolidated the proceedings on DISH's applications

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therefore unavailing.

The relative potential for prejudice to the Applicants and to commenters also counsels against further delay. The costs to the Applicants of unnecessary further process are apparent: contrary to commenters' assertions, the Tunney Act, 15 U.S.C. § 16, does not bar the Applicants from closing their merger during review of the *DOJ Proposed Final Judgment*, and thus does not necessitate any minimum further delay. Meanwhile, the timing of outstanding regulatory reviews, such as this one, is a potential factor in the procedural considerations of those entities still conducting their reviews. What the Tunney Act does provide for, however, is an opportunity for those interested in commenting upon the *DOJ Proposed Final Judgment* without the Commission putting it out for public comment. Moreover, we note that at the time these commenters filed their requests, it had been over two weeks since the *DOJ Proposed Final Judgment* was filed with the court and made public, and yet none of the groups had filed any substantive comments regarding it with the Commission. *Compare SpectrumCo Public Notice*, 27 FCC Rcd 7166. The same multiple filings by which commenters seek further delay could have instead raised any substantive comments they believe appropriate. Furthermore, it has now been over two months since the *DOJ Proposed Final Judgment* was filed with the court so parties have had an ample opportunity to file substantive comments regarding it with the Commission. Indeed, NTCH filed a copy of the comments it filed with the court in the Tunney Act proceeding. Letter from Donald J. Evans, Counsel to NTCH, to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197 (filed Aug. 26, 2019), Attachment.

Finally, we are concerned that the arguments raised in favor of additional delay that are premised on other reviewing entities' timeframes invite a regulatory Catch 22 for applicants seeking timely decisions from a multitude of reviewing entities. In reality, some agency or another must be the last to render its decision and the actions of those that move before impact the procedural (and settlement) considerations for those that remain.

As to our analysis of DISH's requests, section 309(b) of the Act, 47 U.S.C. § 309(b), provides that requests for extensions of time to construct facilities are not subject to the 30-day waiting period after public notice, and with regard to our modification of DISH's licenses, we provide for an appropriate protest period under section 316 for those whose licenses or permits would be modified by the proposed action, 47 U.S.C. § 316(a)(3). As to other actions contemplated by the *DOJ Proposed Final Judgment* that would require Commission approval, those are not before us now and will be subject to appropriate review when applications are filed.

¹¹¹ Application for Extension of Time of American H Block Wireless L.L.C., ULS File No. 0008741236 (filed July 26, 2019); Application for Extension of Time of DBSD Corp., ULS File No. 0008741420 (filed July 26, 2019); Application for Extension of Time of Gamma Acquisition L.L.C., ULS File No. 0008741603 (filed July 26, 2019); and Application for Extension of Time of Manifest Wireless L.L.C., ULS File No. 0008741789 (filed July 26, 2019).

¹¹² See Letter from Jeffrey H. Blum, Senior Vice President, Public Policy and Government Affairs, DISH, to Donald Stockdale, Chief, Wireless Telecommunications Bureau (July 26, 2019) (DISH July 26, 2019 Commitments Letter).

¹¹³ *Id.* at 2-3.

¹¹⁴ *Id.* at 1-2.

¹¹⁵ *Id.*

with the docket of the T-Mobile-Sprint transaction.¹¹⁶

38. DISH is a Nevada corporation controlled by Charles W. Ergen.¹¹⁷ DISH's common stock is publicly traded on the Nasdaq Global Select Market.¹¹⁸ DISH states that its subsidiaries include entities that hold licenses suitable for the provision of commercial wireless service, including AWS-4, AWS H Block, Lower 700 MHz E Block, and 600 MHz licenses, a multichannel video programming distributor, and an online video distributor.¹¹⁹ DISH's annual net operating revenues for the year ended December 31, 2018, were approximately \$13.6 billion, and its operating income was \$2.1 billion, with total assets of approximately \$30.6 billion.¹²⁰

III. STANDARD OF REVIEW AND PUBLIC INTEREST FRAMEWORK

39. Pursuant to sections 214(a) and 310(d) of the Act,¹²¹ we must determine whether the proposed transfer of control to T-Mobile of licenses and authorizations held and controlled by subsidiaries of Sprint will serve the public interest, convenience, and necessity. In making this determination, we first assess whether the proposed transaction complies with the specific provisions of the Act, other applicable statutes, and the Commission's rules.¹²²

40. If the proposed transaction does not violate a statute or rule, we then consider whether the transaction could result in public interest harms by substantially frustrating or impairing the objectives or implementation of the Act or related statutes.¹²³ Our competitive analysis, which forms an important part of the public interest evaluation, is informed by, but not limited to, traditional antitrust principles.¹²⁴ The DOJ has independent authority to examine the competitive impacts of proposed mergers and transactions involving transfers of Commission licenses, but the Commission's competitive analysis under the public

¹¹⁶ *Wireless Telecommunications Bureau Consolidates Proceedings on DISH Applications for Extensions of Time To Construct Facilities with Docket of T-Mobile – Sprint Transaction*, WT Docket No. 18-197, ULS File Nos. 0008741236, 0008741420, 0008741603, and 0008741789, Public Notice, DA No. 19-747 (WTB Aug. 7, 2019).

¹¹⁷ DISH Network Corporation, SEC Form 10-K, at 56 (filed Feb. 13, 2019); *see also* DISH Network L.L.C. Form 602, File No. 0008332122, Exh. A at 1.

¹¹⁸ DISH Network Corporation, SEC Form 10-K, at 1 (filed Feb. 13, 2019).

¹¹⁹ DISH Aug. 27, 2018 Petition at 1 & n.1.

¹²⁰ DISH Network Corporation, SEC Form 10-K, at 64 (filed Feb. 13, 2019).

¹²¹ 47 U.S.C. §§ 214(a), 310(d). Section 310(d) of the Act requires that we consider applications for transfer of Title III licenses under the same standard as if the proposed transferee were applying for licenses directly under section 308 of the Act, 47 U.S.C. § 308. *See, e.g., Applications of Level 3 Communications, Inc. and CenturyLink, Inc. for Consent To Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 32 FCC Rcd 9581, 9585, para. 8 (2017) (*CenturyLink-Level 3 Order*); *Application of Verizon Communications Inc. and Straight Path Communications, Inc. for Consent To Transfer Control of Local Multipoint Distribution Service, 39 GHz, Common Carrier Point-to-Point Microwave, and 3650-3700 MHz Service Licenses*, Memorandum Opinion and Order, 33 FCC Rcd 188, 189, para. 5 & n.11 (WTB 2018) (*Verizon-Straight Path Order*); *Applications of GCI Communication Corp., ACS Wireless License Sub, Inc., ACS of Anchorage License Sub, Inc., and Unicom, Inc. for Consent To Assign Licenses to the Alaska Wireless Network, LLC*, Memorandum Opinion and Order and Declaratory Ruling, 28 FCC Rcd 10433, 10442, para. 23 & n.71 (2013) (*Alaska Wireless-GCI Order*).

¹²² 47 U.S.C. § 310(d); *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585, para. 8; *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 5; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10442, para. 23.

¹²³ *See, e.g., CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585, para. 9; *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 5; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10442, para. 23.

¹²⁴ *See, e.g., CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585, para. 9; *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 6; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10443, para. 25; *see also Northeast Utils. Serv. Co. v. FERC*, 993 F.2d 937, 947 (1st Cir. 1993) (public interest standard does not require agencies “to analyze proposed mergers under the same standards that the Department of Justice . . . must apply”).

interest standard is somewhat broader. Notably, the Commission has determined it may impose and enforce narrowly tailored, transaction-specific conditions that address the potential harms of a transaction.¹²⁵ Specifically, the Commission has repeatedly held that it will impose conditions “only to remedy harms that arise from the transaction (i.e., transaction-specific harms)” and “related to the Commission’s responsibilities under the Communications Act and related statutes,” and that it “will not impose conditions to remedy pre-existing harms or harms that are unrelated to the transaction.”¹²⁶

41. If we determine that a transaction raises no public interest harms or that any such harms have been ameliorated by narrowly tailored conditions, we next consider a transaction’s public interest benefits. Notably, the Commission has long recognized the clear public interest benefits in a license or authorization holder being able to assign or transfer control of its license or authorization freely.¹²⁷ We also review other claimed public interest benefits of a transaction, with the applicants bearing the burden of proving those benefits by a preponderance of the evidence.¹²⁸ As part of our public interest authority, we may impose narrowly-tailored conditions to ensure for the public the transaction-specific benefits claimed by the Applicants.¹²⁹

42. Finally, if we are able to find that narrowly tailored, transaction-specific conditions are able to ameliorate any public interest harms and the transaction is in the public interest, we may approve the transaction as so conditioned.¹³⁰ In contrast, if we are unable to find that a proposed transaction even with such conditions serves the public interest or if the record presents a substantial and material question of fact, then we must designate the application for hearing.¹³¹

IV. QUALIFICATIONS OF THE APPLICANTS AND COMPLIANCE WITH COMMUNICATIONS ACT AND FCC RULES AND POLICIES

A. Qualifications of the Applicants

43. Section 310(d) of the Act requires that we make a determination as to whether the Applicants have the requisite qualifications to hold Commission licenses.¹³² Among the factors the Commission considers in its public interest review is whether the applicant for a license has the requisite

¹²⁵ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585-86, para. 9; *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 6.

¹²⁶ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586, para. 9; *Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation for Consent To Transfer Control of Licenses and Authorizations et al.*, Memorandum Opinion and Order, 19 FCC Rcd 21522, 21545-46, para. 43 (2004) (*Cingular-AT&T Wireless Order*); *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 6; see also *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10444, para. 26.

¹²⁷ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586, para. 10; *Verizon-Straight Path Order*, 33 FCC Rcd at 190-91, para. 7.

¹²⁸ 47 U.S.C. § 309(e); *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586, para. 10; *Verizon-Straight Path Order*, 33 FCC Rcd at 190-91, para. 7; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10442, para. 23.

¹²⁹ See, e.g., *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10443, para. 26; *AT&T-Centennial Order*, 24 FCC Rcd at 13929, para. 30.

¹³⁰ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586, para. 11; *Verizon-Straight Path Order*, 33 FCC Rcd at 191, para. 8.

¹³¹ 47 U.S.C. § 309(e); *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586-87, para. 11; *Verizon-Straight Path Order*, 33 FCC Rcd at 191, para. 8; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10444, para. 27. Section 309(e)’s requirement applies only to those applications to which Title III of the Act applies. *ITT World Communications, Inc. v. FCC*, 595 F.2d 897, 901 (2d Cir. 1979); *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586-87, para. 11 & n.37.

¹³² 47 U.S.C. § 310(d).

“citizenship, character, financial, technical, and other qualifications.”¹³³ Therefore, as a threshold matter, the Commission must determine whether the applicants to a proposed transaction meet the requisite qualification requirements to hold and transfer licenses under section 310(d) of the Act and the Commission’s rules.¹³⁴

44. T-Mobile will control the combined company. No issues were credibly raised regarding the basic qualifications of T-Mobile and it has repeatedly been found qualified to hold Commission licenses.¹³⁵ We therefore find that there is no reason to reevaluate the requisite citizenship, character, financial, technical, or other basic qualifications of T-Mobile under the Act and our rules, regulations, and policies.¹³⁶ We examine the foreign ownership issues in section X.

45. In September of 2019, Sprint publicly disclosed that it had collected millions of dollars for Lifeline subscribers who were not using the service and therefore should have been de-enrolled under the Commission’s Lifeline rules.¹³⁷ RWA argues that we should delay our consideration of the Applications while we investigate the matter.¹³⁸ We disagree. The Commission generally does not reevaluate the qualifications of transferors unless issues related to basic qualifications have been sufficiently raised in petitions to warrant designation for hearing on the question whether the transferee is fit to be a licensee or should instead have its licenses revoked.¹³⁹ That has not occurred here. Moreover, there is no evidence that the incidents of non-compliance described by Sprint, while extensive, rise under our precedent to the level that would warrant designation for an evidentiary hearing.¹⁴⁰ In sum, we do not

¹³³ 47 U.S.C. §§ 308, 310(d); *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9587, para. 12; *Verizon-Straight Path Order*, 33 FCC Rcd at 191, para. 9; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10444, para. 28.

¹³⁴ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9587, para. 12; *Verizon-Straight Path Order*, 33 FCC Rcd at 191-92, para. 9; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10444-45, para. 28.

¹³⁵ See, e.g., *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2329, para. 18; *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3635, para. 8.

¹³⁶ 47 U.S.C. § 310(d); 47 CFR § 1.948. RWA submitted an informal request in WC Docket No. 10-90 and WT Docket No. 10-208 requesting the Commission to investigate the 4G LTE coverage claimed by T-Mobile USA, Inc., as part of the one-time data collection for the Mobility Fund Phase II reverse auction process. Rural Wireless Association, Inc., Informal Request for Commission Action, WC Docket No. 10-90, WT Docket No. 10-208 (filed Dec. 26, 2018). RWA also submitted the request as an *ex parte* submission in this docket. Letter from Caressa Bennet, General Counsel, RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Jan. 10, 2019). RWA’s request will be addressed in WC Docket No. 10-90 and WT Docket No. 10-208. RWA’s filing did not specifically challenge the qualifications of T-Mobile.

¹³⁷ News Release, FCC, FCC Learns That Sprint Received Tens of Millions in Lifeline Subsidies—But Provided No Service (Sept. 24, 2019), <https://www.fcc.gov/document/sprint-received-lifeline-subsidies-885000-inactive-subscribers>.

¹³⁸ Supplement to Petition To Deny of Rural Wireless Association, Inc., Joined by Communications Workers of America, Consumer Reports, New America’s Open Technology Institute, NTCA - The Rural Broadband Association, Institute for Local Self-Reliance, The Greenlining Institute, Open Markets Institute, Public Knowledge, WT Dkt. No. 18-197, at 1, 3, 6 (filed Oct. 3, 2019).

¹³⁹ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9587, para. 13; *Verizon-Straight Path Order*, 33 FCC Rcd at 192, para. 10 & n.27; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10445, para. 29. See generally *Jefferson Radio Co. v. FCC*, 340 F.2d 781, 783 (D.C. Cir. 1964); *Stereo Broadcasters, Inc. v. FCC*, 652 F.2d 1026, 1030 (D.C. Cir. 1981) (Commission policy generally prohibits the assignment of a license while basic qualifications issues raised against the licensee remain unresolved, and thus serves as a deterrent to licensee misconduct).

¹⁴⁰ Compare *Terry Keith Hammond*, Order to Show Cause, Notice of Apparent Liability and Hearing Designation Order, 21 FCC Rcd 10267 (2006) (hearing designated with respect to licensee’s felony conviction and issues concerning possible rule violations, false certifications and failure to respond to Commission inquiries), with *Springfield Broadcasting Partners*, Notice of Apparent Liability, 14 FCC Rcd 3683 (1999), Memorandum Opinion and Order and Forfeiture Order, 14 FCC Rcd 19230 (1999) (forfeiture imposed for 304 violations of children’s

(continued....)

find there is currently a material question of fact regarding Sprint's basic qualifications to be a Commission licensee.

46. Nonetheless, we continue to investigate Sprint's possible violations of the Commission's Lifeline rules and our grant of the Applications is without prejudice to any enforcement actions the Commission or any other government agency may deem appropriate in light of any facts uncovered in any investigations of possible violations of law. We have no reason to believe that New T-Mobile, which will control Sprint, will be unwilling or unable to correct any errors or take any remedial steps that may be necessary. Nevertheless, out of an abundance of caution, we condition our grant of the Applications on New T-Mobile (however structured, whether through merger, consolidation, or otherwise), and its successors, assigns, and transferees, assuming liability for any forfeitures or restitution that may be imposed by the Commission on Sprint Corporation and its subsidiaries, unless such liability has been resolved by Sprint Corporation prior to the closing of this transaction.¹⁴¹

B. Compliance with Communications Act and Commission Rules and Policies

47. The proposed transaction must comply with the Act, other applicable statutes, and the Commission's rules before we can find that it is in the public interest.¹⁴² We find that the proposed transaction will not violate any statutory provisions or Commission rules.

C. Standing of Certain Petitioners

48. The Applicants argue that the Free Conferencing Petition, the Aureon Petition, the Atif Khan Petition, and the Stanley Besecker Petition should be dismissed for failure to demonstrate standing.¹⁴³ The Applicants note that these petitions did not purport to demonstrate standing and claim that the petitions fail to allege an injury arising from the proposed transaction at all or involve allegations that predated the proposed transaction and so lack a causal link to the transaction.¹⁴⁴ Free Conferencing responds that it has standing based on the economic harm it claims to experience from T-Mobile policies that have reduced usage of Free Conferencing's services.¹⁴⁵ Free Conferencing adds that similar policies have been adopted by Sprint's Boost Mobile subsidiary and that the proposed transaction would exacerbate the harm.¹⁴⁶ Free Conferencing argues further that the goal of these policies has been to

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advertising limits, renewal application granted); *Morgan County Industries, Inc.*, Memorandum Opinion and Order and Notice of Apparent Liability for Forfeiture, 21 FCC Rcd 13712 (MB 2006) (forfeiture proposed for station operation at an unauthorized location; renewal application granted), *High I-Q Radio, Inc.*, Memorandum Opinion and Order, 19 FCC Rcd 7225 (2004) (license assignment approved in case involving unauthorized transfer of control, commercial operation of a radio station authorized as a non-commercial station, and failure to timely file certain contracts).

¹⁴¹ If the transaction never closes, then obviously neither New T-Mobile nor T-Mobile US, Inc. and/or T-Mobile USA, Inc. would assume any liability imposed on Sprint.

¹⁴² See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9587, para. 14; *Verizon-Straight Path Order*, 33 FCC Rcd at 193, para. 13.

¹⁴³ Joint Opposition at 1 & n.1.

¹⁴⁴ Joint Opposition at 1 & n.1.

¹⁴⁵ Free Conferencing Reply at 3; see also Free Conferencing Petition To Deny at 16-17. According to Free Conferencing, when a T-Mobile customer with an unlimited calling plan dials the number for a Free Conferencing conference call, the customer may hear a message stating that there will be a one cent per minute charge, and that the customer can decline to pay the additional charges for the call by ending the call (referred to as the "One-Cent Policy"). Free Conferencing Petition to Deny at 10-11; see also Supplemental Submission in Support of CarrierX, LLC's Petition to Deny, WT Docket No. 18-197 (filed May 29, 2019) (Free Conferencing Supplement) (offering additional documentation in support of Free Conferencing's arguments).

¹⁴⁶ Free Conferencing Reply at 4; Letter from Lauren J. Coppola, Counsel to Free Conferencing, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Oct. 12, 2018).

“destroy the free conference call model”¹⁴⁷ and that the proposed transaction would enable those policies to be applied across the larger base of New T-Mobile consumers, including the current Sprint customers.¹⁴⁸ None of the other three petitioners filed a response to the Applicants’ arguments.

49. The Act and the Commission’s rules require that a petition to deny must contain specific allegations of fact sufficient to show that the petitioner is a party in interest.¹⁴⁹ To establish party-in-interest standing, a petitioner must allege facts sufficient to demonstrate that grant of the subject application would cause it to suffer a direct injury.¹⁵⁰ In addition, a petitioner must demonstrate a causal link between the claimed injury and the challenged action. To demonstrate a causal link, a petitioner must establish that the injury can be traced to the challenged action and that the injury would be prevented or redressed by the relief requested.¹⁵¹ For these purposes, an injury must be concrete and particularized and also actual or imminent, not conjectural or hypothetical.¹⁵²

50. The Aureon Petition is based on an existing dispute with Sprint dating back to 2008 regarding payment for access service from Aureon, that is the subject of a pending federal court proceeding.¹⁵³ The Atif Khan Petition is based on an existing dispute with T-Mobile, regarding cell phones sold by T-Mobile in 2016, that is the subject of a pending state court proceeding.¹⁵⁴ These two petitioners accordingly have failed to establish any causal link between their alleged injuries and the proposed transaction. The alleged injuries, assuming the petitioners’ allegations are true, arise from conduct by the Applicants that already has occurred and are not a result of the proposed transaction. The Stanley Besecker Petition alleges no specific direct injury to the petitioner, but expresses concerns about the possible impact on Shenandoah Telecommunications Company (Shentel) under its existing agreement with Sprint relating to a merger of Sprint with another entity.¹⁵⁵ Such concerns are conjectural or hypothetical at present and thus provide no basis for standing in the instant proceeding. If New T-Mobile were to seek Commission consent to acquire Shentel in a subsequent separate proposed transaction, the petitioner would have an opportunity to file a petition to deny and demonstrate injury in that proceeding.

51. The Free Conferencing Petition is based on a T-Mobile policy that, as Free Conferencing states, was implemented in October 2016.¹⁵⁶ Free Conferencing challenges the call routing practices and policies of T-Mobile and Inteliquent, Inc. (Inteliquent), an intermediate carrier that provides voice interconnection services to T-Mobile.¹⁵⁷ According to Free Conferencing, when a T-Mobile customer with an unlimited calling plan dials the number for a Free Conferencing conference call, the customer may hear a message stating that there will be a one cent per minute charge, and that the customer can decline to pay the additional charges for the call by ending the call (referred to as the “One-Cent

¹⁴⁷ Free Conferencing Reply at 13.

¹⁴⁸ Free Conferencing Reply at 13-14; *see also* Free Conferencing Supplement at 13-14.

¹⁴⁹ 47 U.S.C § 309(d)(1); 47 CFR § 1.939(d).

¹⁵⁰ *Applications of T-Mobile License, LLC, AT&T Mobility Spectrum LLC, and New Cingular Wireless PCS, LLC for Consent To Assign AWS-1 Licenses*, Memorandum Opinion and Order, 29 FCC Rcd 6350, 6355, para. 6 (2014) (*T-Mobile-AT&T Order*).

¹⁵¹ *T-Mobile-AT&T Order*, 29 FCC Rcd at 6355, para. 6.

¹⁵² *T-Mobile-AT&T Order*, 29 FCC Rcd at 6355, para. 6.

¹⁵³ Aureon Petition at 2-4.

¹⁵⁴ Atif Kahn Petition at 1.

¹⁵⁵ Stanley Besecker Petition at 1-2.

¹⁵⁶ Free Conferencing Petition at 2; Free Conferencing Reply at 9.

¹⁵⁷ Free Conferencing Petition at 1, 6-7, 10; Free Conferencing Supplement at 4, 11.

Policy”).¹⁵⁸ Free Conferencing asserts that the One-Cent Policy is against the public interest and fears that, if the merger is approved, this policy will be extended to Sprint’s customers.¹⁵⁹ Free Conferencing asks the Commission to deny the request to transfer licenses and authorizations in this transaction, or, in the alternative, condition the transaction on T-Mobile’s cessation of its treatment of calls made to Free Conferencing’s conference call phone numbers.¹⁶⁰ Free Conferencing currently is engaged in federal court litigation with Inteliquent.¹⁶¹ Free Conferencing characterizes T-Mobile’s policy as call-blocking and discriminatory, in violation of the Communications Act and Commission intercarrier compensation policies.¹⁶²

52. Free Conferencing’s claim involves allegations about T-Mobile’s past and current pricing and intercarrier compensation policies, which are not otherwise at issue in this proceeding, and which involve complex issues potentially affecting a wide range of wireless and wireline providers that the Commission has not yet ruled on.¹⁶³ Although the challenged practice has been in existence since 2016, and although our rules provide for the filing of, *inter alia*, a petition for declaratory ruling, an informal request for Commission action, a petition for rulemaking, or a section 208 complaint,¹⁶⁴ Free Conferencing has not taken advantage of these other, more appropriate, mechanisms to resolve its issue. The Commission does not favor attempts to use proceedings such as this one to raise issues better dealt with in alternative proceedings affording procedures more well-suited to addressing the parties’ claims.¹⁶⁵ Accordingly, we dismiss Free Conferencing’s petition, and leave them to their other remedies.¹⁶⁶ We also find that Aureon, Atif Khan, and Stanley Besecker lack standing to file petitions to deny, and dismiss their pleadings.

V. POTENTIAL PUBLIC INTEREST HARMS: UNILATERAL AND COORDINATED EFFECTS

53. We begin our competitive analysis by determining, in section V.A, the appropriate market definitions for the proposed transaction. This includes a determination of the product market, the geographic markets, and the input market for spectrum suitable and available for the provision of mobile

¹⁵⁸ Free Conferencing Petition at 13; *see also* Free Conferencing Supplement at 11.

¹⁵⁹ Free Conferencing Petition at 1; *see also* Free Conferencing Supplement at 13-14.

¹⁶⁰ Free Conferencing Petition at 28; *see also* Free Conferencing Supplement (offering additional documentation in support of its arguments).

¹⁶¹ Free Conferencing Supplement at 4.

¹⁶² Free Conferencing Petition at 18-19; Free Conferencing Reply at 2.

¹⁶³ *See, e.g., Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17874-90, paras. 656-701 (2011).

¹⁶⁴ 47 CFR §§ 1.2; 1.41; 1.401; 1.711.

¹⁶⁵ Joint Opposition at 122-23 (citing *Applications of Craig O. McCaw and Am. Tel. & Tel. Co. for Consent to the Transfer of Control of McCaw Cellular Commc’ns and its Subsidiaries*, Memorandum Opinion and Order, 9 FCC Red 5836, 5904, para. 123 (1994) (The Commission’s policy is to “not consider arguments in [transaction] proceedings[s] that are better addressed in other Commission proceedings.”)).

¹⁶⁶ *Cf. Applications of Softbank Corp., Starburst II, Inc., Sprint Nextel Corporation, and Clearwire Corporation, Memorandum Opinion and Order*, 28 FCC Rcd 9642, 9676, para. 85 (2013) (*Softbank-Sprint Order*) (“intercarrier compensation disputes are not merger specific, are based on arguments about prior conduct by [the subject carrier], and are more appropriately resolved through the contractual provisions between the parties or through the Commission’s complaint process under section 208 of the Act.”); *see generally FCC v. Schreiber*, 381 U.S. 279 (1965).

telephony/broadband services.¹⁶⁷ In addition, we include a discussion of the current market participants in the mobile wireless industry.¹⁶⁸

54. We then turn, in section V.B, to our consideration of the likely competitive effects of the proposed transaction. First, we apply our initial two-part screen, and report the post-transaction HHIs, as well as the increase in spectrum aggregation. In our consideration of increased spectrum aggregation, we assess spectrum aggregation above the total spectrum screen, as well as “enhanced factor review.” We then evaluate the potential for harmful unilateral and coordinated effects arising from the loss of Sprint as a competitive constraint. Finally, we consider whether there are any countervailing factors arising from dynamic competition, repositioning, or new entry into the mobile wireless market that would help address any potential competitive harms.

A. Market Definitions and Market Participants

1. Product Market

55. Product market definition is designed to aid the assessment of a transaction’s likely competitive effects;¹⁶⁹ it focuses on consumers’ ability and willingness to switch from one product to a different product in response to an increase in price or reduction in quality.¹⁷⁰ Such consumer responses play a major role in constraining pricing by competitors. To determine whether a group of products constitutes a relevant product market, antitrust authorities often apply the hypothetical monopolist test. This test “requires that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (‘hypothetical monopolist’) likely would impose at least a small but significant and non-transitory increase in price (‘SSNIP’) on at least one product in the market, including at least one product sold by one of the merging firms.”¹⁷¹ Further “if a hypothetical monopolist could profitably target a subset of customers for price increases, . . . [we] may identify relevant markets defined around those targeted customers.”¹⁷² In recent transaction orders involving mobile wireless providers, the Commission has defined the relevant product market as a combined “mobile telephony/broadband services” product market that comprises mobile voice and data services, including mobile voice and data services provided over advanced broadband wireless networks (mobile broadband services).¹⁷³

56. *Record.* The Applicants argue that while the Commission has traditionally viewed the relevant product market for wireless services as “a combined ‘mobile telephony/broadband services’ product market,”¹⁷⁴ consumer preferences have shifted, and the mobile services landscape has changed

¹⁶⁷ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636, para. 10; *AT&T-Leap Order*, 29 FCC Rcd at 2746, para. 22; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2331, para. 24.

¹⁶⁸ *Id.*

¹⁶⁹ Market definition is not an end in and of itself but rather a tool to facilitate the analysis of competitive effects. If the competitive effects of a proposed transaction can be understood without rigorously defining markets, it may be unnecessary to do so. See, e.g., *Horizontal Merger Guidelines*, U.S. Department of Justice and the Federal Trade Commission at § 4 (Aug. 19, 2010) (*2010 DOJ/FTC Horizontal Merger Guidelines*).

¹⁷⁰ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 4.

¹⁷¹ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 4.

¹⁷² *2010 DOJ/FTC Horizontal Merger Guidelines* at § 4.1.4. Markets to serve targeted customers are also known as “price discrimination markets.” *Id.*

¹⁷³ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636, para. 11; *AT&T-Leap Order*, 29 FCC Rcd at 2746, para 23; see also *Policies Regarding Mobile Spectrum Holdings; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6133, 6224, para. 234 & n.623 (WTB 2014) (*Mobile Spectrum Holdings Report and Order*).

¹⁷⁴ Public Interest Statement at 11; see also NTCA Petition to Deny at 1, 4-5; CWA Comments at 7-8; Free State Comments at 20; Free State Foundation Reply Comments at 5 (Sept. 17, 2018) (Free State Reply); Will Rinehart

(continued....)

significantly to converge with wireline services within the broadband market.¹⁷⁵ While some commenters contend that fixed services are not a sufficiently close substitute for mobile wireless services and thus should not be included in the relevant product markets,¹⁷⁶ others contend that as differences in service coverage and performance have diminished, the substitutability of fixed and mobile services has increased, as illustrated by various marketplace developments.¹⁷⁷

57. Other commenters support defining separate product markets or otherwise conducting separate analyses for narrower categories of services in addition to evaluating a combined mobile telephony/broadband services market. For example, some commenters argue for defining separate markets for prepaid retail services and for wholesale services.¹⁷⁸ CWA, for example, contends that there are substantial differences in service offerings and demand between postpaid and prepaid services and that no precedent precludes the Commission from defining them as separate markets based on that analysis.¹⁷⁹ DISH argues that the Applicants' own estimates of the number of prepaid customers that migrated to postpaid plans is "miniscule" and fails to demonstrate meaningful levels of substitution between prepaid and postpaid services.¹⁸⁰ DISH also observes that the Applicants report revenues and churn separately for prepaid and postpaid services in their annual reports and otherwise treat them as separate markets.¹⁸¹ Free Press also argues that prepaid services meet the criteria for a "price discrimination market" under the *2010 DOJ/FTC Horizontal Merger Guidelines* and warrant separate

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Comments at 9 (Sept. 17, 2018) (Will Rinehart Comments); Letter from Allen P. Grunes, Counsel to CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 5 (filed Nov. 30, 2018) (CWA Nov. 30, 2018 *Ex Parte* Letter) (arguing that the Commission should continue to rely on the product market definition used in previous orders).

¹⁷⁵ Public Interest Statement at 12-13 (further asserting that changes to the way mobile broadband is used are made at an accelerated pace, and the Commission has recognized that the mobile wireless marketplace is on the brink of a major technological transformation with the introduction of 5G that is likely to be both competitively disruptive and transformative). Arguing for a more expansive approach to market definition and competitive analysis, ACLP suggests that the Commission should use this opportunity to update its approach to evaluating transactions in an evolving digital ecosystem that implicates more than just traditional wireless services. Advanced Communications Law & Policy Institute Comments at 18-20 (Sept. 17, 2018) (ACLP Comments).

¹⁷⁶ Free Press Petition at 12; NTCA Petition at 5; CWA Comments at 9-10; OTI Reply at 13; Public Knowledge Reply at 9.

¹⁷⁷ ITIF Opposition at 6-7; Will Rinehart Comments at 3-7.

¹⁷⁸ DISH Aug. 27, 2018 Petition at 6 (arguing that including MVNOs in the product market creates an overly broad product market definition); DISH Aug. 27, 2018 Petition at 44, 53-54 (distinguishing postpaid from prepaid services and asserting that wholesale services constitute a separate product market); Free Press Petition at 3, 10-11 (the nationwide cellular service market and the nationwide wholesale cellular service market); Public Knowledge Petition to Deny at 25-26 (prepaid and wholesale markets); CWA Comments at 9 (prepaid market); Letter from Gregg T. Nunziata, Counsel to Peter Adderton, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Aug. 29, 2018) (Adderton Aug. 29, 2018 *Ex Parte* Letter) (prepaid market); Altice Information Request Response, Exh. 1, Declaration of Michael Cragg and Eliana Garcés at 5-6, 9, 15-17 (Jan. 28, 2019) (Altice Information Request Response, Cragg/Garcés Declaration) (prepaid and wholesale markets, and further distinguishing between markets for wholesale services to full infrastructure MVNOs and wholesale services for other MVNOs).

¹⁷⁹ CWA Reply at 14-16; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 6; *see also* Free Press Reply at 71 (citing an approximate 20% difference in ARPU between postpaid and prepaid customers for both Sprint and T-Mobile).

¹⁸⁰ DISH Reply at 19.

¹⁸¹ DISH Reply at 21-22.

analysis on that basis.¹⁸² At a minimum, Free Press asks the Commission to evaluate particular “customer segment[s],” such as “the ‘value-focused’ wireless customer segment.”¹⁸³

58. The Applicants and other commenters respond that marketplace evidence demonstrates that there are no separate prepaid and postpaid markets, with the increasing substitutability among those offerings driven in significant part by T-Mobile’s and Sprint’s marketplace approaches to prepaid and postpaid services.¹⁸⁴ The Applicants also urge the Commission to reject calls to define a separate wholesale product market on the grounds that doing so would be inconsistent with Commission precedent.¹⁸⁵

59. Voqal argues that because of its propagation characteristics and the bandwidth in the 2.5 GHz band, “the sale and leasing of 2.5 spectrum should be treated as a relevant product market divided among local geographic markets.”¹⁸⁶ The Applicants respond that 2.5 GHz spectrum is not a “market” for market definition purposes.¹⁸⁷ The Applicants add that 2.5 GHz spectrum is included with a variety of other bands in an input market for spectrum for the provision of mobile broadband services.¹⁸⁸

60. *Discussion.* After carefully reviewing the record and consistent with the Commission’s previous approach in recent transactions, for purposes of our initial screen, we continue to use the product market definition of a combined “mobile telephony/broadband services” market that is comprised of mobile voice and data services, including mobile voice and data services provided over advanced broadband wireless networks (mobile broadband services).¹⁸⁹ The mobile/telephony broadband services market encompasses differentiated services (e.g., voice-centric or data-centric), devices (e.g., feature phone, smartphone, tablet, etc.), and contract features (e.g., prepaid vs. postpaid),¹⁹⁰ which are distinctions that wireless providers often recognize in their internal analyses of the marketplace. We consider product differentiation in the offering of prepaid or value-conscious wireless services, as appropriate in our analysis of the likely competitive effects and the efficacy of remedies.

61. But while we continue to focus on a relevant market defined as the provision of “mobile telephony/broadband services”¹⁹¹ for purposes of our initial screen, we note that a defining characteristic of that market has been, and will continue to be, ongoing innovation and reinvention. As new generations of wireless technologies have been adopted, the dynamics of competition have continually evolved to

¹⁸² Free Press Reply at 69-71.

¹⁸³ Free Press Petition at 9-10.

¹⁸⁴ Joint Opposition at 73-76; ICLE Opposition at 31-32; ACLP Comments at 33; Citizens Against Government Waste Reply Comments at 4 (Sept. 17, 2018) (CAGW Reply); Will Rinehart Comments at 7-9; *see also* ICLE Opposition at 30 (“At the very least, postpaid plans put a ceiling on prepaid prices for many prepaid users. To be sure, there are some prepaid consumers who don’t have the credit history required to participate in the postpaid market at all. But these are inframarginal consumers, and they will benefit from the extent of competition at the margins unless operators can effectively price discriminate in ways they have not in the past (and which no commenter has demonstrated is possible or likely).”).

¹⁸⁵ Joint Opposition at 99 & n.373.

¹⁸⁶ Voqal Petition at 5; *see also Id.* at 2-11.

¹⁸⁷ Joint Opposition at 26 & n.86.

¹⁸⁸ Joint Opposition at 26 & n.86.

¹⁸⁹ *See, e.g., Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636, para. 11; *AT&T- Leap Order*, 29 FCC Rcd 2735, 2747-48, para. 26; *see also Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6224, para. 234 & n.623.

¹⁹⁰ *See, e.g., AT&T- Leap Order*, 29 FCC Rcd 2735, 2747-48, para. 26; *see also T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336, para. 41.

¹⁹¹ *See, e.g., Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636, para. 11; *AT&T-Leap Order*, 29 FCC Rcd at 2746, para. 23; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332, para. 28.

adapt to emerging consumer preferences and use cases. We expect this process to continue to drive consumer welfare in the mobile telephony/broadband services market. In recognition of the importance of industry dynamics in the mobile wireless marketplace, this mobile telephony/broadband services product market definition includes not only the traditional wireless services, but also encompasses the recent significant and rapidly evolving advances in mobile broadband services technologies. As discussed further below, this underscores the importance, in a competition analysis of mobile telephony/broadband services, of incorporating dynamic effects and emphasizing innovation and network deployment.¹⁹²

62. We disagree with commenters that a combined mobile telephony/broadband services product market is overly broad. In particular, and consistent with our analysis in previous transactions, we decline to adopt a separate product market definition for prepaid services.¹⁹³ Instead, we find it appropriate to consider issues raised in the record regarding the competitive effects of the proposed transaction on prepaid service offerings within the context of our analysis of competitive effects on the broader differentiated mobile telephony/broadband services product market. Notably, whereas there is substantial disagreement in the record concerning the most appropriate estimate of consumer substitution,¹⁹⁴ as a general matter, record evidence indicates that mobile wireless consumers do switch between postpaid and prepaid services within and across mobile wireless service providers, an indication that consumers view these differentiated services as substitutes in the same product market.¹⁹⁵

63. Similarly, we decline to define a separate product market for wholesale service offerings. As we discuss in section VII.A, MVNOs that purchase wholesale wireless services increase the range of differentiated services offered to consumers within the broader mobile telephony/broadband services product market.¹⁹⁶ Consistent with the Commission's approach in previous transactions, we find it appropriate to consider issues raised in the record regarding the competitive effects of the proposed transaction on wholesale service offerings within the context of our analysis of competitive effects on the broader differentiated mobile telephony/broadband services product market.¹⁹⁷

¹⁹² See *infra* section V.B.4: Quality Benefits and Dynamic Competition.

¹⁹³ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2747, para. 26; *AT&T-Centennial Order*, 24 FCC Rcd at 13932, para. 37; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6225, para. 237. See also *infra* section V.B.3: Unilateral Effects.

¹⁹⁴ See *infra* section V.B.3.a: Consumer Substitution.

¹⁹⁵ See generally Joint Opposition, Appx. I, Declaration of Glenn Woroch (Sept. 17, 2018) (Joint Opposition, Woroch Declaration); Joint Opposition at 73-77. See also TMUS-FCC-02452963 Email from Mark Roettgering to Matt Staneoff, May 25, 2018, stating **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.], and TMUS-FCC-02452965, "Metro growth strategy discussion," May '18, stating **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]. See also DT Investor Relations Top Issues dated 01/2018, DT-FCC-00022560 at DT-FCC-00022921 stating that **[BEGIN HIGHLY CONF. INFO.]**

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¹⁹⁶ MVNOs acquire capacity, an input, from the facilities-based service providers to be able to sell mobile wireless services to consumers and to compete downstream against facilities-based service providers' service offerings.

¹⁹⁷ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2747, para. 26; *Applications of AT&T Inc., E.N.M.R. Telephone Cooperative, Plateau Telecommunications, Inc., New Mexico RSA 4 East Limited Partnership, and Texas RSA 3 Limited Partnership For Consent To Assign Licenses and Authorizations*, Memorandum Opinion and Order, 30 FCC

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64. Further, we are not persuaded that fixed services should be included within the relevant product market. We find that in response to a small but significant and non-transitory price increase in mobile wireless services, at this point in time, too few mobile consumers would be likely to switch from mobile wireless services to fixed services to make that price increase unprofitable.¹⁹⁸ Finally, we decline to define a separate product market for the sale or lease of 2.5 GHz spectrum, but include 2.5 GHz spectrum in the input market for spectrum, and address 2.5 GHz spectrum concentration concerns in our analysis of the competitive harms raised by the proposed transaction.

65. Consistent with previous Commission determinations,¹⁹⁹ we find that mobile telephony/broadband services provided to enterprise and government customers is a relevant product market for antitrust analysis.²⁰⁰ Large enterprise and government customers purchase mobile wireless services in a different way from retail customers. For example, enterprise and government customers typically select a supplier and negotiate rates through a bidding process, often beginning with formal Requests for Proposals (RFPs).²⁰¹ Other enterprise customers may simply obtain a firm-wide service plan through negotiation with a service provider.²⁰² Such customers typically seek to purchase nationwide (or national plus international) service from a single provider to serve employees located in diverse Cellular Market Areas (CMAs), many of whom travel throughout the United States or worldwide.²⁰³ In addition, the prices and contract terms tend to be quite different for enterprise and government customers than for individual consumers.²⁰⁴ Because of these market features, large enterprise and government customers would generally not substitute to retail wireless services in response to a small but significant price increase.

2. Geographic Market

66. The Commission has found that the geographic market for wireless transactions is local.²⁰⁵ The Commission also has found, however, that a proposed transaction's competitive effects

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Rcd 5107, 5115-16, para. 37 (2015) (*AT&T-Plateau Wireless Order*).

¹⁹⁸ See, e.g., Free Press Petition at 11-12 (contending that under the *2010 DOJ/FTC Horizontal Merger Guidelines* wireless consumers would not substitute fixed telecommunications networks in response to small but significant non-transitory increases in price); CWA Comments at 8 (asserting that because neither fixed wireless services nor wireline services are mobile, they are not regarded by consumers of mobile wireless services as reasonable substitutes).

¹⁹⁹ See, e.g., *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6224, para. 234 & n.623; see also *Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Manager and De Facto Transfer Leasing Arrangements*, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC Rcd 17444, 17470 & n.198 (2008); *Applications of Nextel Communications, Inc. and Sprint Corporation For Consent to Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 20 FCC Rcd 13967, 13983, 13986, paras. 38, 43 (2005) (*Sprint-Nextel Order*) (using a hypothetical monopolist test and finding a separate market for residential and enterprise services).

²⁰⁰ See, e.g., *Applications of AT&T Inc. and Deutsche Telekom AG For Consent To Transfer Control of Licenses and Authorizations*, Staff Analysis and Findings, 26 FCC Rcd 16184, 16232-33, para. 86 (WTB 2011) (*AT&T-T-Mobile Staff Report*) (a separate competitive analysis was undertaken on the effect of the proposed transaction in the enterprise/government market).

²⁰¹ *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16233, para. 87.

²⁰² *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16233, para. 87.

²⁰³ *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16233, para. 87.

²⁰⁴ *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16233, para. 87.

²⁰⁵ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636-37, para. 12; *AT&T-Leap Order*, 29 FCC Rcd at 2748, para. 27; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332, para. 29.

should be evaluated at the national level where a proposed transaction exhibits certain national characteristics that provide cause for concern.²⁰⁶ For this proposed transaction, we continue to use CMAs as the local geographic markets, and in addition, we analyze the nationwide effects of the proposed transaction on competition in the provision of mobile telephony/broadband services.

67. *Record.* The Applicants maintain that under Commission precedent, the agency should use primarily CMAs as the local geographic markets for analyzing potential competitive effects, but they also urge the Commission to consider the effect of the transaction at the national level.²⁰⁷ Some commenters assert that the proposed transaction would “have particularly acute effects on competition in certain local geographic markets,”²⁰⁸ while also arguing for evaluating the proposed transaction on a nationwide basis.²⁰⁹ In particular, Free Press contends that Sprint and T-Mobile have significantly larger market shares in some geographic markets than others, and the Commission should evaluate any areas with particularly large increases in concentration in addition to conducting a nationwide analysis.²¹⁰

68. *Discussion.* The Commission has found repeatedly that because most consumers use their mobile wireless services at or close to where they live, work, and shop, they generally purchase mobile wireless services from service providers that offer and market such services locally.²¹¹ Wireless service sold in distant locations is generally not a good substitute for service sold near a consumer’s home or work.²¹² In addition, service providers compete at the local level on factors such as coverage and service quality.²¹³ With respect to mobile telephony/broadband services, nothing in our record causes us to doubt that in the event of a price increase (or service quality decrease) that is limited to one CMA, that has the effect of raising the quality-adjusted price in that locality,²¹⁴ too few buyers would switch to purchasing mobile wireless services for service providers operating in another area to make that quality-adjusted price increase unprofitable. Defining local geographic markets for mobile wireless services does not preclude us, however, from recognizing that two key competitive variables—service plan offerings and prices—typically do not vary for most service providers across most geographic markets where they sell services.²¹⁵ In addition, certain key elements in the provision of mobile wireless services, such as the development of mobile broadband equipment and devices, are done largely on a national level.²¹⁶

²⁰⁶ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3636-37, para. 12; *AT&T-Leap Order*, 29 FCC Rcd at 2748, para. 27; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332, para. 29.

²⁰⁷ Public Interest Statement at 12.

²⁰⁸ Free Press Petition at 11; see also CWA Comments at 15 (stating that “[b]oth the Commission and the Department of Justice have in the past defined the relevant geographic markets as local”).

²⁰⁹ American Antitrust Institute Petition to Deny at 7 (AAI Petition); DISH Aug. 27, 2018 Petition at 45; Free Press Petition at 3, 10-11; see also CWA Comments at 15.

²¹⁰ Free Press Petition at 16.

²¹¹ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2748-49, para. 29; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332-33, para. 31; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6225-26, para. 238.

²¹² See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2748-49, para. 29; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332-33, para. 31; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6225-26, para. 238.

²¹³ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2748-49, para. 29; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2332-33, para. 31; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6225-26, para. 238.

²¹⁴ Service quality might fall, for example, if the service providers do not expand service in response to increases in demand, leading to more problems associated with network congestion (such as slow data transmission speeds or more frequent dropped calls).

²¹⁵ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2749, para. 30; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2333, para. 32; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6226, para. 239.

²¹⁶ See, e.g., *AT&T-Leap Order*, 29 F-CC Rcd at 2749, para. 30; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2333,

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69. T-Mobile and Sprint, the third and fourth largest service providers in the United States, are seeking Commission approval to the assignment or lease of a maximum of 230.5 megahertz of spectrum covering 3235 counties in 733 of 734 CMAs (only the Gulf of Mexico is not included) covering the entire population of the United States. In addition, the Applicants will be combining two nationwide networks. Because of these important national characteristics, we find it appropriate to evaluate the likely competitive effects of the proposed transaction at the national level. In addition, given the breadth of the proposed transaction, and that the same four service providers compete in nearly every major city nationwide, we do not find it necessary to assess the likely competitive effects of the proposed transaction on the provision of mobile wireless services in each local market to determine the likely consequences for competition.²¹⁷ We note, however, that we will continue to consider competition in local markets as appropriate in our competitive review.²¹⁸ We further find it appropriate to evaluate the likely competitive effects on enterprise/government customers at the nationwide level.

3. Input Market for Spectrum

70. The Commission has previously determined that the following bands, or portions thereof, should be included in the input market for spectrum: cellular, broadband PCS, SMR, 700 MHz band spectrum, Advanced Wireless Services (AWS) in the 1710-1755 and 2110-2155 MHz band (AWS-1, on a market-by-market basis), Broadband Radio Service spectrum (BRS, on a market-by-market basis), Wireless Communications Service (WCS) spectrum, the 600 MHz band, AWS in the 2000-2020 MHz and 2180-2200 MHz spectrum bands (AWS-4), H Block, additional BRS spectrum, the majority of the Educational Broadband Service (EBS) spectrum, and the AWS-3 band (on a market-by-market basis as it becomes “available”).²¹⁹ In addition, the Commission, in 2016, adopted a millimeter wave (mmW) spectrum threshold, separate from the current spectrum screen, that included the 28 GHz, 37 GHz, and 39 GHz bands,²²⁰ and since then, it has added the 24 GHz and 47 GHz bands.²²¹

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para. 32; *see also Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6226, para. 239.

²¹⁷ We note that the Commission previously found in its evaluation of the AT&T/Centennial transaction that because of Puerto Rico’s unique characteristics in terms of limited geographic scope and isolated nature, the relevant geographic market was not any individual CMA, but rather Puerto Rico itself. *AT&T-Centennial Order*, 24 FCC Rcd at 13934, para. 42; *see also Application of AT&T Mobility Puerto Rico Inc. and Worldcall Inc. For Consent To Assign Licenses*, Memorandum Opinion and Order, 30 FCC Rcd 9763, 9768-69, para. 12 (WTB 2015) (*AT&T-Worldcall Order*); *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10448, para. 37 (2013) (in which the Commission determined that the state of Alaska is a relevant geographic market). We follow that same approach here, as appropriate, in our analysis of likely competitive effects.

²¹⁸ *Cf. 2010 DOJ/FTC Horizontal Merger Guidelines* at § 4.1.1 (“The hypothetical monopolist test ensures that markets are not defined too narrowly, but it does not lead to a single relevant market. The Agencies may evaluate a merger in any relevant market satisfying the test, guided by the overarching principle that the purpose of defining the market and measuring market shares is to illuminate the evaluation of competitive effects.”). In section V.B.2.b: Spectrum Concentration, we consider the likely competitive effects of the proposed transaction in Puerto Rico, and we also consider competition in each of the local markets that trigger enhanced factor review.

²¹⁹ *See, e.g., Communications Marketplace Report et al.*, Report, 33 FCC Rcd 12558, 12585-86, para. 32 and Fig. A-23 (2018) (*Communications Marketplace Report*); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Twentieth Report, 32 FCC Rcd 8968, 8994-95, para. 39, Table II.E.1 (2017) (*20th Competition Report*); *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3637-38, para. 15; *see also Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, 6177-79, 6184-87, paras. 70, 100-102, 118-25.

²²⁰ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8083-84, paras. 188-190 (2016) (*Spectrum Frontiers R&O*).

²²¹ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services et al.*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988, 11011, para. 74 & n.189 (2017) (*Spectrum Frontiers 2nd R&O*).

71. *Record.* The Applicants assert that the input market for spectrum should include all of the bands identified above, such that the total amount of spectrum that is suitable and available for the provision of mobile wireless services is 715.5 megahertz.²²² Various commenters agree that these bands should all be included such that the total amount of spectrum available is 715.5 megahertz.²²³ In addition, with respect to the 4950 megahertz of mmW spectrum currently available, the Applicants state that the mmW spectrum threshold is 1850 megahertz,²²⁴ and no commenter proposes a different mmW spectrum threshold.²²⁵

72. *Discussion.* Spectrum bands that are suitable and available in the near term for the provision of mobile telephony/broadband services are included in the spectrum screen.²²⁶ Whether spectrum is “suitable,” for purposes of the spectrum screen, “is determined by whether the spectrum is capable of supporting mobile service given its physical properties and the state of equipment technology, whether the spectrum is licensed with a mobile allocation and corresponding service rules, and whether the spectrum is committed to another use that effectively precludes its use for mobile telephony/broadband services.”²²⁷ The total amount of spectrum in the Commission’s spectrum screen that is currently considered suitable and available for the provision of mobile telephony/broadband services is 715.5 megahertz. For any proposed secondary market transaction, the current spectrum screen trigger is 240 megahertz, or approximately one-third of the total amount of currently suitable and available spectrum.²²⁸ Finally, there are currently also 4950 megahertz of mmW spectrum available for flexible terrestrial wireless use, where proposed secondary market transactions are subject to the separate mmW spectrum threshold of 1850 megahertz.

²²² Public Interest Statement at 133-34; *see also* Joint Opposition at 26 & n.86.

²²³ DISH Aug. 27, 2018 Petition at 69; DISH Aug. 27, 2018 Petition, Exh. B, Declaration of Joseph Harrington, Coleman Bazelon, Jeremy Verlinda, and William Zarakas at 94-97 (Aug. 27, 2018) (DISH Aug. 27, 2018 Petition, Brattle Declaration); Broadcast Data Corp. Petition at 6; Public Knowledge Petition at 6-7; RWA Petition at 17-18, NTCA Petition at 12; Union Telephone Petition at 30; CWA Aug. 27, 2018 Comments at 21-22.

²²⁴ Joint Opposition at 27 & n.89 (citing *Spectrum Frontiers 2nd R&O*, 32 FCC Rcd at 11011, para. 74).

²²⁵ Frontier and Windstream assert the Applicants would exceed the mmW spectrum threshold, but do not address the magnitude of that threshold in the first instance. Frontier/Windstream Comments at 2. To the contrary, they cite the Applicants’ own general description of the mmW spectrum threshold from the Public Interest Statement. Frontier/Windstream Comments at 3 & n.3.

²²⁶ *See, e.g., AT&T-Leap Order*, 29 FCC Rcd at 2749-51, paras. 32, 34; *SoftBank-Sprint Order*, 28 FCC Rcd at 9657, para. 39; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, 6171-87, paras. 70, 76-125.

²²⁷ *See, e.g., AT&T-Centennial Order*, 24 FCC Rcd at 13935, para. 43; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71. Whether spectrum is “available” is based on whether it is “fairly certain” that it meets the criteria for suitability in the near term, an assessment that can be made at the time the spectrum is licensed or at later times after changes in technology or regulation that affect the consideration. *See, e.g., AT&T-Centennial Order*, 24 FCC Rcd at 13935, para. 43; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6169, para. 71.

²²⁸ *Communications Marketplace Report*, 33 FCC Rcd at 12585-86, para. 32, Fig. A-23. We note that in the recently approved *2.5 GHz Report and Order*, in discussing the inclusion of EBS spectrum in the screen, we removed the educational use discount of 5%, as well the EBS white space discount of 16.5%, and we newly included the EBS J band channels. This would increase the amount of EBS spectrum included in the screen from 89 megahertz to 116.5 megahertz. In turn, the revised amount of spectrum available would be 743 megahertz, with an associated trigger of 250 megahertz (approximately one-third of the total amount of suitable and available spectrum). *2.5 GHz Report and Order*, 34 FCC Rcd at 37-38, paras. 99-100. For purposes of our analysis of spectrum aggregation in the instant transaction, we apply the current screen of 240 megahertz, as the new screen is not yet effective.

4. Market Participants

73. Consistent with the Commission's approach in previous transactions, we focus our initial analysis of market concentration only on facilities-based entities providing mobile telephony/broadband services using 600 MHz, 700 MHz, cellular, SMR, PCS, AWS-1, AWS-3 (on a market-by-market basis as it becomes available), AWS-4, H Block, BRS, EBS, and WCS spectrum bands.²²⁹ In addition, we note that facilities-based service providers may also provide mobile telephony/broadband services using mmW spectrum, which we will also take into account in our evaluation of the competitive effects. Further, we recognize that MVNOs may provide additional competitive constraints, which we also account for in our evaluation of the likely competitive effects.²³⁰

74. *Record.* The Applicants identify a number of additional entities besides facilities-based mobile wireless providers as having increasing competitive relevance to the mobile wireless market.²³¹ The Applicants argue that Comcast, Charter, and DISH should be treated as nationwide market participants because these companies: (1) operate and advertise nationally, serving customers across the United States; (2) have millions of customers for their traditional cable and satellite services, positioning them well to cross-sell wireless services; (3) have access to spectrum, equipment, network facilities, and programming; and (4) engage in the full range of non-price rivalry activities, such as creating capacity through "network investments, network upgrades, or network coverage."²³² In addition to their cable networks and resources, the Applicants point out that Comcast and Charter have millions of Wi-Fi hotspots and a favorable MVNO agreement with Verizon Wireless, and that Comcast has licensed 600 MHz spectrum, as well.²³³ The Applicants also point to DISH as being on the cusp of entering the market with nationwide Internet of Things (IoT) and 5G networks using its spectrum assets, coupled with that company's considerable financial resources, large customer base, and potential access to valuable content.²³⁴

75. The Applicants further argue that MVNOs should be treated as market participants. They observe, for example, that TracFone is the largest MVNO in the United States, and the fifth largest wireless service provider by subscribership.²³⁵ The Applicants assert that MVNOs such as TracFone have advantages that make them effective competitors, such as the ability to avoid some of the costs facilities-based providers incur and the flexibility they have in setting retail prices and determining the customer experience.²³⁶ Certain commenters that agree with the Applicants, point to cable operators such as Comcast and Charter, along with DISH and MVNOs as market participants, as well as potential competition from Google, Apple, and traditional television broadcasters.²³⁷

²²⁹ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638, para. 16; *AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37; see also *Communications Marketplace Report*, 33 FCC Rcd at 12561-63, paras. 6-7.

²³⁰ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638, para. 16 & n.48; *AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37; see also *Communications Marketplace Report*, 33 FCC Rcd at 12561-63, paras. 6-7.

²³¹ Public Interest Statement at 103-17 (arguing that Comcast, Charter, and DISH are competitors and are investing heavily in their existing networks and assets to better compete in 5G); see also Joint Opposition at 78-80.

²³² Public Interest Statement at 104.

²³³ Public Interest Statement at 104-11.

²³⁴ Public Interest Statement at 112-14.

²³⁵ Public Interest Statement at 114-15. Further, the Applicants predict competition from other sources, such as Google's Project Fi. *Id.* at 116-17.

²³⁶ Joint Opposition at 79, 85 & n.320.

²³⁷ Free State Comments at 8-9; Digital Bridge and Vertical Bridge Joint Comments at 5-6 (Aug. 31, 2018) (Digital Bridge/Vertical Bridge Comments); Letter from Senator James F. Clayborne, Jr., Illinois State Senate, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Sept. 4, 2018); CAGW Reply at 4-5; ACLP Comments

76. Charter responds that providing mobile service through a resale arrangement is materially different than providing mobile service as a facilities-based nationwide or even regional mobile provider.²³⁸ Charter explains that substantial barriers exist to entering the mobile services market as a facilities-based service provider, including high spectrum license acquisition costs, significant network deployment costs, tower site acquisition or leasing and construction costs, costs of purchasing network equipment, backhaul costs, and the costs of interconnection and roaming agreements.²³⁹

77. Certain commenters contend that the Applicants have not presented evidence that the services of these claimed competitors are viewed as effective substitutes for, or have a price-constraining effect on, the services of the four national facilities-based wireless providers.²⁴⁰ Other commenters point to the nascency, limited success, and geographic limits of Comcast and Charter as wireless providers; cite cable operators' retreat from planned facilities-based wireless entry in the past; and claim that MVNO offerings—whether by Comcast and Charter or other MVNOs—do not compete with the underlying facilities-based provider of wholesale in an economically meaningful sense.²⁴¹

78. *Discussion.* Consistent with the Commission's approach in past mobile wireless transactions, for purposes of initial concentration measures, we will consider only facilities-based entities providing mobile telephony/broadband services using 600 MHz, 700 MHz, cellular, SMR, PCS, AWS-1, AWS-3 (on a market-by-market basis as it becomes available), AWS-4, H Block, BRS, EBS, and WCS spectrum to be market participants.²⁴² As in previous transactions, we will exclude MVNOs from consideration when computing initial concentration measures.²⁴³ We find, however, that MVNOs such as TracFone, Altice, Comcast, or Charter may provide additional constraints against any anticompetitive

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at 9-13.

²³⁸ Charter Comments at 5-6.

²³⁹ Charter Comments at 6.

²⁴⁰ CWA Comments at 10; *see also* CWA Comments at 13 (discussing the unknown subscribership to Google's Project Fi and the fact that it is compatible with only a limited set of phones).

²⁴¹ *See, e.g.*, DISH Aug. 27, 2018 Petition at 53 ("Google's Project Fi can hardly be called a competitor to T-Mobile and Sprint, as it is an MVNO using Sprint and T-Mobile themselves to provide its cellular network coverage"); *Id.* at 47-48 (making similar arguments regarding TracFone); Union Telephone Petition at 28 (citing the reseller status of TracFone, Google's Project FI, and others as undercutting their significance as competitive constraints on facilities-based service providers); CWA Comments at 15 (making similar arguments with respect to TracFone and other MVNOs). DISH argues that the Applicants mischaracterize Commission precedent when they suggest that MVNOs were considered market participants in the past. DISH Aug. 27, 2018 Petition at 46.

²⁴² *See, e.g.*, *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638, para. 16 & n.48; *AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37. The record indicates that T-Mobile regularly compiles an executive dashboard of the company's key wireless competitors and competitive metrics. TMUS-FCC-00891572 (Executive Dashboard—Key Metrics for April 24, 2018); TMUS-FCC-07990179 (Executive Dashboard—Key Metrics for October 9, 2018). T-Mobile's Senior Leadership Team report [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]. TMUS-FCC-00891572 at pages 17-18, 36 (Executive Dashboard—Key Metrics for April 24, 2018); TMUS-FCC-07990179 at pages 15-16, 34 (Executive Dashboard—Key Metrics for October 9, 2018). For T-Mobile's prepaid brand, the company tracks [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]

TMUS-FCC-00891572 at pages 17-18, 35 (Executive Dashboard—Key Metrics for April 24, 2018); TMUS-FCC-07990179 at page 35 (Executive Dashboard—Key Metrics for October 9, 2018). The Senior Leadership Team report also [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]. TMUS-FCC-00891572 at pages 24-25 (Executive Dashboard—Key Metrics for April 24, 2018); TMUS-FCC-07990179 at pages 23-24 (Executive Dashboard—Key Metrics for October 9, 2018).

²⁴³ *See, e.g.*, *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638, para. 16 & n.48; *AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37.

behavior,²⁴⁴ and we take into account the role of such providers in our evaluation of the likely competitive effects.

B. Competitive Effects of the Proposed Transaction

79. The proposed transaction is a horizontal merger: T-Mobile, the nation's third largest mobile wireless service provider, seeks to acquire one of its direct rivals, Sprint, the nation's fourth largest mobile wireless service provider.²⁴⁵ Horizontal transactions such as this raise potential competitive concerns when the combined entity has the incentive and the ability, either unilaterally or in coordination with other service providers, to raise prices, lower quality, or otherwise harm competition in a relevant market.²⁴⁶ In addition, because spectrum is an essential input in the provision of mobile wireless services, the Commission also evaluates the likely competitive effects of an increase in spectrum holdings on the provision of mobile wireless services.²⁴⁷

80. In this section, we first describe the current market characteristics of the mobile wireless industry, and then apply our initial two-part screen to provide metrics on the extent of increased market concentration and spectrum aggregation resulting from the proposed transaction. Next, we evaluate the potential for unilateral and coordinated effects were the transaction not subject to conditions. As the Commission has consistently stated, horizontal transactions raise competitive concerns when they reduce the availability of substitute choices to the point that the merged firm has a significant incentive and ability to engage in anticompetitive actions, either unilaterally or in coordination with other firms.²⁴⁸ The Commission has also recognized that the risk of anticompetitive behavior is increased by the inability of

²⁴⁴ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638, para. 16 & n.48; *AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37.

²⁴⁵ A transaction is said to be horizontal when the firms in the transaction sell products that are in the same relevant markets and are therefore viewed as reasonable substitutes by purchasers of the products. *AT&T-Leap Order*, 29 FCC Rcd at 2745-46, para. 21; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2330, para. 21; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21556-57, paras. 68-69; see also *2010 DOJ/FTC Horizontal Merger Guidelines* at § 4.

²⁴⁶ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17; *AT&T-Leap Order*, 29 FCC Rcd at 2744-46, para. 21; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2330, para. 21, *Application of EchoStar Communications Corp., General Motors Corp., and Hughes Electronics Corp., Transferors, and EchoStar Communications Corp., Transferee*, CS Docket No. 01-348, Hearing Designation Order, 17 FCC Rcd 20559, 20608, para. 97 (2002) (*EchoStar-DIRECTV HDO*). Unilateral effects arise when the merged firm finds it profitable to alter its behavior following the merger by increasing its price or otherwise harming competition. *2010 DOJ/FTC Horizontal Merger Guidelines* at § 6. In the case of the provision of mobile wireless services, in addition to increasing prices, this might take the form of delaying improvements in service quality, adversely adjusting the features of a service offering without changing the price of the plan or reducing the rate of new product development or other innovation in a relevant market. See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17 & n.51; *AT&T-Leap Order*, 29 FCC Rcd at 2756-57, para. 49.

Coordinated effects arise when firms take actions that are profitable for each of them only as a result of the accommodating reactions of others. A merger may diminish competition by enabling or encouraging post-merger coordinated interaction among firms in the relevant market that harms customers. *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7; see also *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17 & n.51; *AT&T-Leap Order*, 29 FCC Rcd at 2756-57, para. 49. Either or both unilateral and coordinated effects may arise from a proposed transaction, and the distinction between them is not always clear cut. See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17 & n.51; *AT&T-Leap Order*, 29 FCC Rcd at 2757, para. 49.

²⁴⁷ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3635-36, para. 9; *AT&T-Leap Order*, 29 FCC Rcd at 2745, para. 20; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2340, para. 53 & n.123.

²⁴⁸ See, e.g., *2010 DOJ/FTC Horizontal Merger Guidelines* at § 6; *AT&T-Leap Order*, 29 FCC Rcd at 2756-57, para. 49; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336, para. 42; *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16196, para. 15; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21557, para. 70.

other firms to enter the market or expand.²⁴⁹ We consider whether there are any countervailing factors arising from dynamic competition, repositioning, or new entry into the mobile wireless market. In addition, we discuss the divestiture of Boost and the three-year price commitment, which address the risk of harmful price effects associated with the proposed transaction.

1. Characteristics of the Mobile Wireless Industry

81. Mobile wireless services are an important and increasingly prevalent part of Americans' daily lives, and competition in the provision of mobile wireless services drives innovation and investment throughout the economy.²⁵⁰ Over time, the mobile wireless industry has transitioned from one centered on interconnected mobile voice communications to one that produces an array of voice, messaging, and broadband services.²⁵¹ As the Commission has previously emphasized, broadband has become crucial for economic growth, job creation and overall quality of life.²⁵² Mobile broadband enhances the benefits of broadband by giving flexible access to applications that were once confined to fixed use,²⁵³ and by allowing new applications that harness the unique capabilities of mobile devices.²⁵⁴ In response to the rapidly increasing demand for data, mobile wireless providers continue to expand and improve their networks.²⁵⁵

82. The upcoming 5G networks will be much faster and carry far more data than current wireless networks; this will, in turn, enable many new applications, such as telemedicine, smart homes, smart cities, smart transportation, and IoT.²⁵⁶ Fostering the development of 5G, as well as other innovations that are yet to be imagined, will be critical to future national competitiveness in a multitude of industries and will lead to more jobs, increased investment, and economic growth.²⁵⁷ Additionally, 5G deployment in the more rural areas of the nation will lead to important applications such as precision agriculture, and may help close the digital divide.²⁵⁸

83. The market for mobile telephony/broadband services in the United States is differentiated: Service providers compete not only on the basis of price but also on other non-price variables, such as plan terms and conditions, call quality, geographic coverage, and customer service.²⁵⁹

²⁴⁹ See, e.g., *AT&T-Centennial Order*, 24 FCC Rcd at 13982, 13948-52, paras. 34, 75-86; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21556-57, para. 69, Appx. D. Cf. *FTC v. Heinz*, 246 F.3d 708, 717 (D.C. Cir. 2001).

²⁵⁰ *Communications Marketplace Report*, 33 FCC Rcd at 12561, para. 5.

²⁵¹ *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, 26 FCC Rcd at 9688, para. 5 (2015).

²⁵² Federal Communications Commission, *Connecting America: The National Broadband Plan*, at xi, 3 (Mar. 16, 2010).

²⁵³ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2018 Broadband Deployment Report, 33 FCC Rcd 1660, 1665, para. 16 (2018) (*2018 Broadband Deployment Report*).

²⁵⁴ *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2016 Broadband Deployment Report, 31 FCC Rcd 699, 712, para. 30 (2016) (*2016 Broadband Deployment Report*).

²⁵⁵ *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2019 Broadband Deployment Report, 34 FCC Rcd 3857, 3861-62, para. 11 (2019) (*2019 Broadband Deployment Report*).

²⁵⁶ *2.5 GHz Report and Order*, 34 FCC Rcd at 5446-47, para. 1.

²⁵⁷ *2.5 GHz Report and Order*, 34 FCC Rcd at 5446-47, para.1.

²⁵⁸ *2.5 GHz Report and Order*, 34 FCC Rcd at 5446-47, para.1.

²⁵⁹ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2756, para. 49; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336, para. 41; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21570, para. 116. While service providers can change

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In this market, four facilities-based service providers can be described as “nationwide”: AT&T, Sprint, T-Mobile, and Verizon Wireless.²⁶⁰ Although none of these four nationwide service providers has a network that is truly ubiquitous, all four service providers have networks that cover at least 90% of the population with Long Term Evolution (LTE).²⁶¹ Collectively, these four service providers accounted for over 400 million mobile wireless own-branded and MVNO subscribers/connections as of year-end 2017, or approximately 99% of the total number of subscribers/connections.²⁶²

84. In addition to the four nationwide facilities-based service providers, there are a number of regional and local facilities-based service providers.²⁶³ U.S. Cellular, for example, which is currently the fifth largest facilities-based service provider in the United States with around five million subscribers/connections, is best characterized as a multi-regional service provider; it has developed wireless networks and customer service operations in portions of 22 states.²⁶⁴ C Spire, the sixth largest facilities-based service provider in the U.S., provides service in the Southeastern United States to nearly one million subscribers.²⁶⁵ There are also dozens of other facilities-based mobile wireless service providers throughout the United States, many of which provide service in a single, often rural, geographic area.²⁶⁶ In addition, many MVNOs provide service to retail customers.²⁶⁷

85. As noted above, this proposed transaction would combine the third and fourth largest service providers in the United States. T-Mobile’s LTE network covers approximately 96% of the population of the United States,²⁶⁸ while Sprint’s LTE network covers approximately 91% of the population of the United States.²⁶⁹ The geographic overlap of the two service providers’ spectrum assets would encompass 733 CMAs, and across those local markets, New T-Mobile would hold a maximum of 361.7 megahertz of spectrum post-transaction. New T-Mobile would have approximately 134 million subscribers post-transaction and would be comparable in size to AT&T and Verizon Wireless in terms of the number of subscribers in the United States.²⁷⁰

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 some of these conduct variables, for example, price, relatively quickly, other variables—particularly non-price variables such as quality and coverage—require investments in spectrum or infrastructure and are not easily modified. *See, e.g., AT&T-Leap Order*, 29 FCC Rcd at 2752, para. 37 & n.173; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336, para. 41 & n.100; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21570, para. 116.

²⁶⁰ *Communications Marketplace Report*, 33 FCC Rcd at 12561-62, para. 6.

²⁶¹ *Communications Marketplace Report*, 33 FCC Rcd at 12561-62, para. 6. The terms “subscriber,” “subscriptions,” and “connections” are used interchangeably. CTIA Wireless Industry Indices Year-End 2017, at 2.

²⁶² *Communications Marketplace Report*, 33 FCC Rcd at 12561-62, para. 6.

²⁶³ To offer nationwide service, these smaller service providers generally do so through roaming agreements that they have negotiated individually with other service providers, including the nationwide service providers.

²⁶⁴ United States Cellular Corp., SEC Form 10-K, at 1 (filed Feb. 22, 2019).

²⁶⁵ C Spire, About C Spire, https://www.cspire.com/company_info/about/news_detail.jsp?entryId=29600003 (last visited Oct. 14, 2019).

²⁶⁶ Examples of such facilities-based service providers include Appalachian Wireless, Bluegrass Cellular, Carolina West Wireless, Cellcom, Choice Wireless, GCI, Nex-Tech Wireless, and Sagebrush Cellular.

²⁶⁷ MVNOs do not own any network facilities, but instead purchase mobile wireless services wholesale from facilities-based service providers and resell these services. *Communications Marketplace Report*, 33 FCC Rcd at 12562-63, para. 7.

²⁶⁸ *Communications Marketplace Report*, 33 FCC Rcd at 12592-93, para. 42, Fig. A-30.

²⁶⁹ *Communications Marketplace Report*, 33 FCC Rcd at 12592-93, para. 42, Fig. A-30.

²⁷⁰ As of December 31, 2018, T-Mobile USA had approximately 80 million connections and earned approximately \$43 billion in revenue, and Sprint had approximately 54 million connections and earned approximately \$32 billion in revenue. AT&T had approximately 153 million connections and earned approximately \$71 billion in revenue,

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86. In part due to its smaller network, Sprint currently has 33% fewer connections than the next smallest provider, T-Mobile. In addition, it experiences churn rates that are approximately 80% higher than that of the other three nationwide providers.²⁷¹ Sprint has positioned itself as the low-price alternative amongst nationwide providers, with Average Revenues Per User (ARPU) that are 6%-10% lower for postpaid and prepaid services, respectively, than T-Mobile.²⁷² Nevertheless, with the exception of the fiscal year that ended March 31, 2019, Sprint's retail subscribers have declined in each fiscal year since 2016 even as the number of subscribers for AT&T, T-Mobile, and Verizon Wireless have grown.²⁷³ There are increasing concerns whether Sprint can effectively deploy 5G, or even remain viable as a standalone company, and these concerns are driven in part by Sprint itself.²⁷⁴

2. Initial Screen

87. In the past, the Commission has used a two-part screen to help identify those markets that provide particular reason for further competitive analysis, but has not limited its consideration of potential competitive harms solely to markets identified by its screen if it encounters other factors that may bear on the public interest inquiry.²⁷⁵ The first part of the screen is based on the size of the post-transaction Herfindahl-Hirschman Index (HHI),²⁷⁶ and the change in the HHI.²⁷⁷ The second part of the screen,

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and Verizon Wireless had approximately 118 million retail connections and earned approximately \$92 billion in revenue. T-Mobile US, Inc., SEC Form 10-K, at 28 (filed Feb. 7, 2019); Sprint Corporation, SEC Form 10-Q, Sprint Wireless Operating Statistics (filed Jan. 31, 2019), https://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2018/Q3/04_Financial-Operating-Information.xlsx; Verizon Communications Inc., SEC Form 10-K, at 3 (filed Feb. 15, 2019); AT&T Inc., SEC Form 10-K, at 6 (filed Feb. 20, 2019).

²⁷¹ Sprint's postpaid phone churn rate was 1.84%, compared to 0.90% for AT&T, 1.01% for T-Mobile, and 1.03% for Verizon Wireless. T-Mobile US, Inc., SEC Form 10-K, at 30 (filed Feb. 7, 2019); Sprint Corporation, SEC Form 10-Q, Sprint Wireless Operating Statistics (filed Jan. 31, 2019), https://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2018/Q3/04_Financial-Operating-Information.xlsx; Verizon Communications Inc., SEC Form 10-K, Exh. 13 (filed Feb. 15, 2019); AT&T Inc., SEC Form 10-K, Exh. 13, at 7 (filed Feb. 20, 2019).

²⁷² Sprint's postpaid ARPU was \$43.64 and prepaid ARPU was \$34.53, compared with a postpaid ARPU \$46.40 and a prepaid ARPU of \$38.53 for T-Mobile. T-Mobile US, Inc., SEC Form 10-K, at 31 (filed Feb. 7, 2019); Sprint Corporation, SEC Form 10-Q, at 52 (filed Jan. 31, 2019).

²⁷³ Sprint's average retail subscribers totaled 41,242 thousand in March 31, 2019, compared to 42,432 thousand in March 31, 2016. Sprint Corporation, SEC Form 10-K (filed May 29, 2019); Sprint Corporation, SEC Form 10-K (filed May 26, 2017).

²⁷⁴ The Applicants assert that Sprint is losing customers and scale, even at its relatively lower prices. Letter from Samuel L. Feder, et al., Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 10, 42 (filed Apr. 15, 2019) (Sprint Apr. 15, 2019 *Ex Parte* Letter). Sprint further outlined the fundamental challenges the company is facing and attempted to distinguish between the more optimistic language in its public filings and communications with financial markets and what it describes as the stark realities of the company's financial challenges. *See generally Id.* The April 15 *Ex Parte* Letter quotes a high-level executive of Sprint as saying, "I don't agree that we are really good. We are actually bad." *Id.* at 24. *See also* SPR-FCC-00838645; SPR-FCC-01163326; SPR-FCC-01942200; SPR-FCC-02220906; SPR-FCC-02223448; SPR-FCC-03823232; SPR-FCC-03954963; SPR-FCC-04195255; SPR-FCC-04244029; SPR-FCC-04284314; SPR-FCC-04407636; SPR-FCC-04671873; SPR-FCC-04671954; SPR-FCC-10782432; SPR-FCC-10818415; SPR-FCC-11103310; SPR-FCC-11238737; SPR-FCC-11534214; SPR-FCC-11586795; SPR-FCC-11609665; SPR-FCC-11684427; SPR-FCC-11830961; SPR-FCC-11874043; SPR-FCC-12519794; SPR-FCC-12602887; SPR-FCC-12605340; SPR-FCC-14140001; SPR-FCC-14140298; SPR-FCC-14140558 and SPR-FCC-14141223. *See also infra* n.857.

²⁷⁵ *See, e.g., Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3635-36, para. 9; *AT&T-Leap Order*, 29 FCC Rcd at 2752-53, 2755-56, paras. 39, 41, 47; *see also Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6140-41, para. 13.

²⁷⁶ *See, e.g., Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17; *AT&T-Leap Order*, 29 FCC Rcd at

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which is applied on a county-by-county basis, identifies local markets where the merged entity would hold approximately one-third or more of the total spectrum suitable and available for the provision of mobile telephony/broadband services, post-transaction.²⁷⁸ Further, if the acquiring entity would increase its below-1-GHz spectrum holdings so as to hold approximately one-third or more of such spectrum post-transaction, we would apply enhanced factor review.²⁷⁹ Finally, the Commission has also adopted a separate mmW spectrum threshold of 1850 megahertz as an initial analytical tool to aid in identifying certain markets for further review.²⁸⁰

88. As discussed in detail below, the application of the two-part screen suggests that the proposed transaction may raise competitive concerns because it would increase concentration substantially in many markets, both in terms of market concentration and spectrum concentration. In the majority of CMAs, as well as nationwide, the HHI would exceed the thresholds at which horizontal transactions raise potential competitive concerns. Similarly, the Commission's spectrum screen is triggered in approximately half of the nation's CMAs. We recognize, however, that the two-part screen is the first step only in our competitive evaluation and does not itself predict the likely competitive effects of the proposed transaction on consumers.

a. Market Concentration

89. The increased market concentration arising from the proposed transaction is an indicator of potential harm to competition, and in antitrust analysis, triggers a presumption that the merger is likely to enhance market power.²⁸¹ It is important to note, however, that market concentration measures are merely the beginning of the competitive analysis, and that the presumption may be rebutted by evidence showing that the merger is unlikely to enhance market power.²⁸² We provide a more detailed and

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2753, para. 41; *2010 DOJ/FTC Horizontal Merger Guidelines* at § 5.3; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6140-41, 6221-22, para. 13 & n.34, para. 225 & n.605. The HHI is the sum of the squares of the market shares of each firm participating in the market. Since the HHI is based on squared market shares, it gives proportionally greater weight to providers with large market shares, and thus accounts for market share variation.

²⁷⁷ The initial HHI screen identifies, for further case-by-case market analysis, those markets in which, post-transaction: (1) the HHI would be greater than 2800 and the change in HHI would be 100 or greater; or (2) the change in HHI would be 250 or greater, regardless of the level of the HHI. See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17 & n.50; *AT&T-Leap Order*, 29 FCC Rcd at 2753, para. 41 & n.140; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6140-41, para. 13 & n.34.

According to the *2010 DOJ/FTC Horizontal Merger Guidelines*, an HHI above 2500 indicates a market with a high degree of concentration, and mergers resulting in concentration above this level that increase the HHI by more than 200 points are presumed likely to enhance market power. *2010 DOJ/FTC Horizontal Merger Guidelines* at § 5.3. (Under the *2010 DOJ/FTC Horizontal Merger Guidelines*, lesser concentration levels and increases may also raise competitive concerns.) *Id.* The *2010 DOJ/FTC Horizontal Merger Guidelines* are commonly relied upon by the courts. See, e.g., *FTC v. Heinz*, 246 F.3d at 716, 720.

²⁷⁸ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17; *AT&T-Leap Order*, 29 FCC Rcd at 2753, para. 41; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6222-23, para. 228.

²⁷⁹ See, e.g., *Application of AT&T Mobility Spectrum LLC and Club 42CM Limited Partnership For Consent To Assign Licenses*, Memorandum Opinion and Order, 30 FCC Rcd 13055, 13065-66, para. 23 (2015) (*AT&T-Club 42 Order*); *AT&T-Plateau Wireless Order*, 30 FCC Rcd at 5118, para. 24; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6240, paras. 286-87.

²⁸⁰ See, e.g., *Spectrum Frontiers R&O*, 31 FCC Rcd at 8082, para. 185; *Spectrum Frontiers 2nd R&O*, 32 FCC Rcd at 11009-11, paras. 70, 74 & n.189; *Verizon-Straight Path Order*, 33 FCC Rcd at 194-95, paras. 18-19.

²⁸¹ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 5.3, 19.

²⁸² *2010 DOJ/FTC Horizontal Merger Guidelines* at § 5.3, 19 (“The purpose of these thresholds is not to provide a

(continued....)

comprehensive analysis of the likely competitive effects arising from this proposed transaction in section V.B.3 below.

90. *Record.* While acknowledging the Commission's initial screen, the Applicants assert that triggering the screen does not create a presumption of competitive harm, but rather identifies "those local markets in which no competitive harm clearly arises from the transaction."²⁸³ The Applicants further claim that they did not have information to enable them to calculate HHIs.²⁸⁴ Certain commenters, noting that wireless prices have dropped over time even as the level of industry concentration as measured by the HHI has increased, criticize HHIs as indicia of competition.²⁸⁵ Other commenters argue that exceeding the screen should constitute presumptive evidence of anticompetitive harm, and not serve solely as a preliminary screen.²⁸⁶

91. Various commenters have submitted nationwide HHI calculations using various data sources, and for various market definitions, which, pre-transaction, range from 2236-3282, and post-transaction, range from 2596-4585.²⁸⁷ In addition to the nationwide HHI calculations, Free Press argues that local market shares in some CMAs where T-Mobile and Sprint have been particularly successful will be substantially higher than the national average.²⁸⁸ Free Press argues that the proposed transaction triggers the Commission's HHI screen in 97 of the top 100 CMAs.²⁸⁹ The Applicants object to certain of the commenters' market share calculations to the extent that they attribute MVNOs' subscribers to the underlying wholesale providers.²⁹⁰

92. *Discussion.* For purposes of determining HHIs in this transaction, we use December 2018 Numbering Report/Utilization Forecast (NRUF) data for both local markets and a nationwide structural analysis.²⁹¹ While various commenters raise valid concerns about the usefulness of HHIs as a

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rigid screen to separate competitively benign mergers from anticompetitive ones, although high levels of concentration do raise concerns. Rather, they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors confirm, reinforce, or counteract the potentially harmful effects of increased concentration.”).

²⁸³ Public Interest Statement at 132 (quoting *AT&T-Centennial Order*, 24 FCC Rcd at 13931, para. 34); *see also* Joint Opposition at 23 (similar).

²⁸⁴ Public Interest Statement at 135.

²⁸⁵ ICLE Opposition at 6-7, 10-12; TechFreedom Opposition at 6-7; Will Rinehart Comments at 2; *see also, e.g.*, Competitive Enterprise Institute Reply Comments at 3 (Sept. 17, 2018) (citing a 2011 study “concluding that no ‘statistically significant relationship’ existed between wireless prices and market concentration”).

²⁸⁶ CWA Reply at 16-18; DISH Reply at 35-36, 53-54; Public Knowledge Reply at 8; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 4; Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. 1 at 3 (filed Apr. 15, 2019) (CWA Apr. 15, 2019 *Ex Parte* Letter).

²⁸⁷ Consumer Policy Solutions Comments, Attach. at 2-3; AAI Petition at 7; CWA Aug. 27, 2018 Comments at 18-20; DISH Aug. 27, 2018 Petition at 75; DISH Aug. 27, 2018 Petition, Brattle Declaration at 40; Free Press Aug. 27, 2018 Petition at 24, 26, 27; Free Press Reply at 9-11; Public Knowledge Aug. 27, 2018 Petition at 5-6; Testimony of Gene Kimmelman, President and CEO, Public Knowledge, at 6 (June 27, 2018), https://www.publicknowledge.org/assets/uploads/documents/Public_Knowledge_Gene_Kimmelman_Testimony_on_Sprint_T-Mobile_Merger_6-27-2018-2.pdf (cited in Public Knowledge Aug. 27, 2018 Petition at 28); Altice Information Request Response, Cragg/Garcés Declaration at 24 (Jan. 28, 2019).

²⁸⁸ Free Press Aug. 27, 2018 Petition at 24, 66-67.

²⁸⁹ Free Press Reply at 11-12.

²⁹⁰ Joint Opposition at 79.

²⁹¹ *Communications Marketplace Report*, 33 FCC Rcd at 12582-83, para. 30. NRUF tracks the number of phone numbers that have been assigned to end users. *Id.* at 12563, para. 8.

predictor of likely competitive effects, we note that we apply them here only as an initial screen before undertaking an appropriately comprehensive analysis below.²⁹² Based on the number of connections, the HHI screen would be triggered in 99 of the 100 most populous CMAs, with an average post-merger HHI of [BEGIN NRUF/LNP HIGHLY CONF. INFO.] [END NRUF/LNP HIGHLY CONF. INFO.], and an average change of [BEGIN NRUF/LNP HIGHLY CONF. INFO.] [END NRUF/LNP HIGHLY CONF. INFO.]. Nationwide, 362 CMAs, in which approximately 82% of the United States (and territories) population live, trigger the HHI screen.²⁹³ In calculating a nationwide HHI, the post-transaction (weighted average) HHI by CMA would be [BEGIN NRUF/LNP HIGHLY CONF. INFO.] [END NRUF/LNP HIGHLY CONF. INFO.] and the average change in the HHI would be [BEGIN NRUF/LNP HIGHLY CONF. INFO.] [END NRUF/LNP HIGHLY CONF. INFO.] based on the number of connections. Accordingly, given the increase in concentration as indicated by the HHI screen, the proposed transaction warrants the careful and detailed analysis that follows.

93. **Enterprise.** We also consider increased concentration in the nationwide enterprise market. The Applicants contend that “T-Mobile and Sprint collectively serve only a very small portion of the enterprise segment today,” in contrast to the “extremely strong positions with enterprise customers” that “AT&T and Verizon currently enjoy.”²⁹⁴ According to the Applicants, AT&T and Verizon Wireless currently have a combined market share of approximately 90%, while T-Mobile and Sprint have a combined market share of approximately 9%.²⁹⁵ In our calculation of market share, we find that T-Mobile and Sprint have a slightly higher combined enterprise market share of approximately [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% while AT&T and Verizon Wireless have a combined share of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%.²⁹⁶ In addition, we calculated a pre-transaction HHI of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] and a post-transaction HHI of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], with a corresponding change in the HHI of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] points. Notwithstanding the initial high level of concentration, this is a relatively small increase in concentration and does not raise a significant competitive concern, given the current market positions of AT&T and Verizon Wireless.²⁹⁷ Our initial structural analysis therefore suggests that the proposed transaction will not lead to adverse competitive effects on a nationwide basis in the enterprise market.

b. Spectrum Concentration

94. Spectrum is an essential input in the provision of mobile wireless services, and ensuring that sufficient spectrum is available for incumbent licensees as well as potential new entrants is critical to promoting effective competition and innovation in the marketplace.²⁹⁸ When considering the potential competitive effects of spectrum aggregation resulting from a proposed transaction, the Commission has considered whether there would be an increased likelihood that rival service providers or potential

²⁹² See *infra* section V.B.3: Unilateral Effects.

²⁹³ Appx. C: CMAs that Trigger the Market Concentration Screen.

²⁹⁴ Public Interest Statement at 71.

²⁹⁵ Joint Opposition, Appx. C, Reply Declaration of Peter Ewens at para. 21 (Sept. 17, 2018) (Joint Opposition, Ewens Reply Declaration).

²⁹⁶ Economics Data Request, Attach. B: Customer Data Table. Note that the market share calculations exclude IoT devices.

²⁹⁷ See, e.g., 2010 DOJ/FTC Horizontal Merger Guidelines at § 5.3 (discussing how an increase in HHI of less than 100 points is considered a small change in concentration and is unlikely to have adverse competitive effects).

²⁹⁸ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3635-36, para. 9; *AT&T-Leap Order*, 29 FCC Rcd at 2745-46, para. 21; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6233, 6240, paras. 267, 286-88.

entrants would be foreclosed from expanding capacity, deploying mobile broadband technologies, or entering the market, and also whether rivals' costs would be increased to the extent that they would be less likely to be able to compete robustly.²⁹⁹ The spectrum screen, applied on a county-by-county basis, identifies local markets where an entity would hold approximately one-third or more of the total spectrum suitable and available for the provision of mobile telephony/broadband services, post-transaction.³⁰⁰ Further, if the acquiring entity would increase its below-1-GHz spectrum holdings to hold approximately one-third or more of such spectrum post-transaction, we apply enhanced factor review.³⁰¹

(i) Application of Total Spectrum Screen

95. *Record.* The Applicants, which provide spectrum holdings data for the spectrum screen analysis,³⁰² argue that the aggregation of spectrum is central to the benefits of the proposed transaction and will leave sufficient remaining spectrum for competitors.³⁰³ The Applicants contend that the purpose of the spectrum screens is not to create a presumption of competitive harm, but “to identify those local markets in which no competitive harm clearly arises from the transaction”³⁰⁴—an interpretation emphasized by other commenters as well.³⁰⁵ The Applicants argue that the Commission thus should reject commenters' concerns premised solely on the fact that a spectrum screen is exceeded,³⁰⁶ and should not treat the number of markets where the spectrum screen is exceeded as a factor in the competitive analysis, let alone dispositive of it.³⁰⁷ One commenter also argues that concerns about spectrum concentration not only fail to account for the diverse spectrum holdings of other companies but also ignore the Commission's ongoing efforts to make additional spectrum available.³⁰⁸

96. By contrast, other commenters view the scope and extent of areas where the screen would be exceeded as evidence of anticompetitive harm given the need for spectrum to compete in the wireless marketplace.³⁰⁹ For example, certain commenters argue that significant competitive harms are demonstrated by the number and significance of the counties or markets where New T-Mobile would exceed the spectrum screen.³¹⁰ Union Telephone argues that, if New T-Mobile really needs all the

²⁹⁹ See, e.g., *AT&T-Club 42 Order*, 30 FCC Rcd at 13062-63, para. 16; *AT&T-Worldcall Order*, 30 FCC Rcd at 9767-68, para. 10.

³⁰⁰ See, e.g., *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3638-39, para. 17; *AT&T-Leap Order*, 29 FCC Rcd at 2753, para. 41; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6222-23, para. 228.

³⁰¹ See, e.g., *AT&T-Club 42 Order*, 30 FCC Rcd at 13065-66, para. 23; *AT&T-Plateau Wireless Order*, 30 FCC Rcd at 5118, para. 24; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6240, paras. 286-87.

³⁰² Public Interest Statement at 135 (citing Public Interest Statement, Appx. L, Spectrum Holdings and Aggregation Data).

³⁰³ Public Interest Statement at 135.

³⁰⁴ Public Interest Statement at 132 (quoting *AT&T-Centennial Order*, 24 FCC Rcd at 13931, para. 34); see also Joint Opposition at 23, 25.

³⁰⁵ Free State Reply at 3.

³⁰⁶ Joint Opposition at 27.

³⁰⁷ Joint Opposition at 25.

³⁰⁸ ACLP Comments at 28-29. ICLE argues that the Commission should abandon any focus on the percentage of spectrum a provider would hold to guard against the risk of oversimplified analyses, and instead should consider the overall effects of particular amalgamations of spectrum on consumers. ICLE Opposition at 12-15.

³⁰⁹ Blue Wireless Reply at 17-18 & n.38; CWA Reply at 18-21; DISH Reply at 34-35; Public Knowledge Reply at 4-5; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 7; Letter from Phillip Berenbroick, Senior Policy Counsel, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-3 (filed Dec. 20, 2018) (Competition Advocates Dec. 20, 2018 *Ex Parte* Letter).

³¹⁰ Public Knowledge Petition at 7; RWA Petition at 21-22; see also DISH Aug. 27, 2018 Petition at 71-73

spectrum it would obtain in order to deploy 5G, that suggests that remaining providers with much less spectrum will not be viable 5G competitors; conversely, if not all that spectrum is required, allowing New T-Mobile to retain it will simply result in spectrum warehousing to the detriment of competitors that need additional spectrum.³¹¹ Other commenters likewise express concern about spectrum hoarding and argue for the use of a more stringent screen lower than one-third of available spectrum.³¹² Commenters also argue more generally that the magnitude of spectrum New T-Mobile would possess is inconsistent with “Congress’ goal of ‘promoting the widespread dissemination of information from a multiplicity of sources’ by reducing the nationwide market for mobile broadband services and greatly concentrating spectrum into the hands of just three carriers.”³¹³ Public Knowledge advocates that the Commission retain its traditional spectrum screen analyses.³¹⁴

97. *Discussion.* Our application of the spectrum screen indicates that New T-Mobile would hold 240 megahertz or more of spectrum in 356 CMAs covering approximately 82% of the population in the United States (and territories).³¹⁵ Across those local markets, New T-Mobile would hold a maximum of 361.7 megahertz of spectrum post-transaction. Although the spectrum screen is triggered in much of the nation, we note that the combination of spectrum and other resources brought together as a result of the proposed transaction would give New T-Mobile the capability to deploy a highly robust nationwide 5G network as discussed in detail in section VI.A *infra*. As the Commission has recognized, “America’s appetite for wireless broadband service is surging” and “[e]nabling next generation wireless networks and closing the digital divide will require efficient utilization of the low-, mid-, and high-bands.”³¹⁶

98. In particular, the benefits depend to a significant extent on the extensive deployment of 2.5 GHz spectrum, spectrum that Sprint is currently not fully utilizing.³¹⁷ We note that Sprint has not widely deployed its 2.5 GHz spectrum assets and our technical analysis predicts that on a standalone basis it would fail to cover nearly half of the country with 5G services on its 2.5 GHz spectrum, even assuming it has the financial ability to reach its previously planned deployment level.³¹⁸ The transaction will therefore significantly increase the overall utilization of the 2.5 GHz spectrum. We further note that as a condition to consent, the Commission is requiring a certain amount of mid-band spectrum to be deployed for 5G, which in turn will benefit American consumers.³¹⁹

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(discussing a spectrum screen analysis by The Brattle Group finding that “New T-Mobile would be over the screen across 90.2% of the country’s population and almost half of its land area” and reporting other evaluations of spectrum concentration); CWA Comments at 5 (“the transaction would significantly increase concentration in the national and numerous local geographic markets for mobile telephony/broadband services and prepaid wireless retail services, measured using both the standard market concentration screen and the Commission’s standard screen for spectrum concentration”).

³¹¹ Union Telephone Reply at 16-17, 19, 29-30.

³¹² Frontier and Windstream Comments at 1-2, 5-6.

³¹³ Union Telephone Petition at 33; Union Telephone Reply at 17-19; *see also* Broadcast Data Corp. Petition at 8.

³¹⁴ Public Knowledge Reply at 5-6.

³¹⁵ Appx. D: CMAs that Trigger the Spectrum Screen. We do not apply the mmW spectrum threshold, as there is no transfer of mmW spectrum implicated by the instant transaction.

³¹⁶ *3.7-4.2 GHz Order and NPRM*, 33 FCC Rcd at 6917, paras. 3, 4.

³¹⁷ The Commission has noted that “[m]id-band spectrum is well-suited for next generation wireless broadband services due to the combination of favorable propagation characteristics (compared to high bands) and the opportunity for additional channel re-use (as compared to low bands).” *3.7-4.2 GHz Order and NPRM*, 33 FCC Rcd at 6917-18, para. 5.

³¹⁸ *See infra* Appx. F: Technical Appendix; *see also supra* n.274 and *infra* n.857.

³¹⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-3.

99. We also note that keeping pace with innovation in mobile wireless, the Commission has striven, and continues to strive to increase the total supply of spectrum that it allocates and licenses for mobile broadband use.³²⁰ In recent years, the Commission's efforts to make available a significant amount of additional spectrum across a range of frequencies have raised the amount of spectrum considered suitable and available for the provision of mobile telephony/broadband services to 715.5 megahertz, which does not include the additional 4950 megahertz of mmW spectrum across five bands subject to rules that facilitate flexible terrestrial wireless use.³²¹ 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.³²² Further, beginning on June 25, 2020, the Commission intends to auction Priority Access Licenses in the 3.5 GHz band.³²³ The Commission has also proposed to add a mobile allocation to the spectrum between 3.7 GHz and 4.2 GHz, and to make some or all of this band available for flexible-use fixed and mobile services by repurposing it from satellite downlink use to licensed, terrestrial use.³²⁴ Overall, given current spectrum holdings of rival service providers, including mmW spectrum, as well as spectrum coming online in the near future, we find it unlikely that rival service providers or potential entrants would be foreclosed from expanding capacity, deploying mobile broadband technologies, or entering the market, notwithstanding New T-Mobile's significant post-transaction spectrum holdings.

(ii) Enhanced Factor Review

100. *Record.* The Applicants analyzed the areas where New T-Mobile would hold more than one-third of the available low-band spectrum post-transaction, and assert that the aggregation of low-band spectrum in the proposed transaction would not result in competitive harm.³²⁵ The Applicants further contend that there is no risk of foreclosure due to this low-band spectrum aggregation, since there is unassigned 600 MHz spectrum in most of the markets that trigger enhanced factor review.³²⁶ Although the Applicants contend that past cases using this analysis focused only on transactions involving the top two providers and should not be necessary here, they further argue that their analysis satisfies the enhanced factor review standard.³²⁷ Some commenters assert that allowing New T-Mobile to exceed the level of concentration of spectrum below 1 GHz that triggers enhanced review would solidify existing market power and impede entry.³²⁸

101. *Discussion.* The Commission determined in the *Mobile Spectrum Holdings Report and Order* that increased aggregation of below-1-GHz spectrum would be treated as an "enhanced factor"

³²⁰ *Communications Marketplace Report*, 33 FCC Rcd at 12584-85, para. 31.

³²¹ *Communications Marketplace Report*, 33 FCC Rcd at 12714, para. 294.

³²² *2.5 GHz Report and Order*, 34 FCC Rcd at 5447, para. 3.

³²³ The Commission has recently sought to promote investment in the 3.5 GHz band. *See generally Promoting Investment in the 3550-3700 MHz Band*, Report and Order, 33 FCC Rcd 10598 (2018).

³²⁴ *3.7-4.2 GHz Order and NPRM*, 33 FCC Rcd at 6916-17, 6964, paras. 1-2, 5, 148 (noting that mid-band spectrum is well-suited for next generation wireless broadband services and seeking comment on whether this band should be included in the Commission's spectrum screen).

³²⁵ Public Interest Statement at 136-37.

³²⁶ Public Interest Statement, Appx. J, Low-Band Spectrum Aggregation, at paras. 5, 7-8, 11, 14, 17, 21, 26, 28, 31 (June 18, 2018) (Public Interest Statement, Low-Band Spectrum Aggregation).

³²⁷ Public Interest Statement at 137; Public Interest Statement, Low-Band Spectrum Aggregation at 2-5 (discussing the relevant factors to be considered as part of the "enhanced factor" review under the *Mobile Spectrum Holdings Report and Order*); Public Interest Statement, Low-Band Spectrum Aggregation at 6-33 (analyzing specific CMAs).

³²⁸ Liberty Cablevision Petition at 4, 7-11; Altice Petition at 23.

under its case-by-case review of license transfers if, post-transaction, the acquiring entity would hold approximately one-third or more of the suitable and available spectrum below 1 GHz.³²⁹ As a result of the proposed transaction, New T-Mobile would hold one-third or more of below-1-GHz spectrum in 22 CMAs covering approximately 2% of the population in the United States (and territories).³³⁰ We undertook a detailed market-by-market analysis of the implicated CMAs, taking into account the factors ordinarily considered. These factors include, but are not limited to: the total number of rival service providers; the coverage by technology of the firms' respective networks; the rival firms' market shares; the combined entity's post-transaction market share and how that share changes as a result of the transaction; the amount of spectrum suitable for the provision of mobile telephony/broadband services controlled by the combined entity; and the spectrum holdings of each of the rival service providers.³³¹

102. Post-transaction, there would be at least three service providers with substantial total and low-band spectrum holdings in each of the markets subject to enhanced factor review.³³² In addition, there would be at least three providers with significant market share in most of these markets; and in the remaining markets, because New T-Mobile would not have a significant market share post-transaction, the transaction would not reduce the total number of significant competitors. Further, the majority of the markets subject to enhanced factor review would have at least three providers with significant LTE population coverage. In addition, there are several smaller service providers that hold low band spectrum across all or part of each of these CMAs, and there is additional low-band spectrum available in many of these markets. Based on our careful evaluation of the competitive effects in each local market, we find that New T-Mobile would be unlikely to foreclose rival service providers from entering or expanding in these local markets and therefore, the potential for competitive harm due specifically to the aggregation of below-1-GHz spectrum is low, notwithstanding New T-Mobile's low-band spectrum holdings post-transaction in each of these local markets.

(iii) Puerto Rico

103. *Record.* The Applicants acknowledge that, under the Commission's traditional view of what constitutes a "genuine competitor," there is one local area—Puerto Rico—where AT&T, T-Mobile, and Sprint are all present, but Verizon Wireless is not.³³³ However, the Applicants cite the Puerto Rico Telephone Company (PRTC) as a strong competitor.³³⁴ The Applicants argue further that T-Mobile's and Sprint's acquisition of significant low-band spectrum in Puerto Rico is relatively recent and that they have the weakest coverage of the providers operating in Puerto Rico, which they suggest means that the transaction will enable increased competition in new areas.³³⁵ The National Puerto Rican Chamber of Commerce expresses comfort with the post-transaction level of competition in Puerto Rico and

³²⁹ *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6233, 6238-40, paras. 267, 282-88. The Commission established enhanced factor review in a rulemaking, and we therefore apply it herein. We note, however, that concerns expressed in the dissent from the order establishing that review appear to have come to pass, including, for example, the growing value of mid-band spectrum as a competitive asset as a result of technological innovation. *Id.* at 6268, 6271-74 (Dissenting Statement of Commissioner Ajit Pai). We therefore believe that reexamination of enhanced factor review may be warranted in a future rulemaking.

³³⁰ Appx. E: CMAs that Trigger Enhanced Factor Review.

³³¹ *See, e.g., AT&T-Plateau Wireless Order*, 30 FCC Rcd at 5120, para. 29; *AT&T-Club 42 Order*, 30 FCC Rcd at 13071, para. 34.

³³² We derive market shares and HHIs from our analysis of data compiled in the NRUF and LNP database. We derive network coverage from Form 477 data, and we obtain spectrum holdings from our licensing databases and the Applications.

³³³ Public Interest Statement at 135-36.

³³⁴ Public Interest Statement at 136.

³³⁵ Public Interest Statement, Low-Band Spectrum Aggregation, at 7-10.

anticipates that the transaction will lead to improved communications service and help with the recovery from Hurricane Maria.³³⁶

104. Liberty Cablevision claims that the Applicants fail to make the kind of detailed public interest showing with respect to Puerto Rico that is required.³³⁷ It argues that New T-Mobile's acquisition of such a large portion of low-band spectrum is particularly significant in Puerto Rico given the terrain there.³³⁸ In addition, it alleges that the risk to cable operators, like Liberty Cablevision, is particularly great because New T-Mobile will have the incentive to impede the competitive efforts of cable operators.³³⁹ Further, Liberty Cablevision points out that the transaction will eliminate the very competition between Sprint and T-Mobile in Puerto Rico that Sprint relied upon in order to defend its joint venture with Open Mobile notwithstanding that the spectrum screen was exceeded there.³⁴⁰

105. The Applicants respond that Liberty Cablevision's competitive claims ignore the role of PRTC in an effort "to block or impair broadband and cable choice for consumers," and emphasize that PRTC "has a significant share of the Puerto Rico CMAs and is part of the largest wireless operation in Latin America."³⁴¹ Liberty Cablevision counters that hurricane damage significantly diminished PRTC's competitive significance in the short- to medium-term.³⁴² Liberty Cablevision also argues that, if the transaction were approved, it should be subject to MVNO and spectrum divestiture conditions to protect and enhance competition in Puerto Rico.³⁴³ In addition, the Puerto Rico Telecommunications Bureau asks the Commission to consider the spectrum screen analyses in "the multifaceted Puerto Rico market (not just the major population areas)" to ensure that "the Commission's spectrum policies applicable to Puerto Rico . . . promote competition, innovation, and serve the public interest, convenience, and necessity."³⁴⁴

106. *Discussion.* In undertaking our market-by-market analysis, we consider various competitive variables that help to predict the likelihood of competitive harm post-transaction.³⁴⁵ We

³³⁶ Comments of National Puerto Rican Chamber of Commerce at 4-9 (Sept. 10, 2018) (NPRCC Comments).

³³⁷ Liberty Cablevision Aug. 27, 2018 Petition at 10; Liberty Cablevision Reply at 2-4; Liberty Cablevision Mar. 28, 2019 Comments at 4-5.

³³⁸ Liberty Cablevision Aug. 27, 2018 Petition at 9.

³³⁹ Liberty Cablevision Aug. 27, 2018 Petition at 10-12.

³⁴⁰ Liberty Cablevision Aug. 27, 2018 Petition at 7-8.

³⁴¹ Joint Opposition at 28.

³⁴² Liberty Cablevision Reply at 4-5; *see also* New America's Open Technology Institute Comments, WC Docket No. 17-287, at 36-38 (discussing the effects of Hurricane Maria on the telecommunications infrastructure in Puerto Rico) submitted in WT Docket No. 18-179 (Feb. 21, 2019); Letter from Matthew F. Wood, Vice President of Policy and General Counsel, Free Press, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Feb. 22, 2019) (referencing "the unacceptably prolonged failure of telecommunications in Puerto Rico following Hurricane Maria").

³⁴³ Liberty Cablevision Reply at 5-7; Liberty Cablevision Mar. 28, 2019 Comments at 2, 5.

³⁴⁴ Letter from Sandra Torres López, President, Puerto Rico Telecommunications Bureau, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Mar. 1, 2019); *see also* Liberty Cablevision Mar. 28, 2019 Comments at 4 (supporting the Puerto Rico Telecommunications Bureau's concerns and requests). In response to Liberty Cablevision's filing discussing the Puerto Rico Telecommunications Bureau's filing, the Bureau clarified that it has "not made any determination regarding the benefits of the proposed transaction" and "that its interest in this proceeding is limited to the matters stated in our March 1, 2019 *ex parte* filing and by no means should our concerns be interpreted as an opposition to the proposed transaction." Letter from Sandra Torres López, President, Puerto Rico Telecommunications Bureau, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Apr. 16, 2019).

³⁴⁵ *See., e.g., AT&T-Leap Order*, 29 FCC Rcd at 2767, para. 75; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2338, para. 47.

address the application of the total spectrum screen in section V.B.2.b.i *supra*. As discussed in section V.B.2.b.ii *supra*, we find that the likelihood of competitive harm in Puerto Rico specifically arising from the increased aggregation of low-band spectrum as a result of the proposed transaction is low. In our analysis of the factors ordinarily considered,³⁴⁶ post-transaction, there will be three service providers with significant market shares, significant LTE coverage, and sufficient holdings of low-band and mid-band spectrum to maintain and expand service.³⁴⁷ Further, as described in section II.E *supra*, our required divestiture of Boost Mobile, which has a competitive presence in Puerto Rico, and is currently marketed to prepaid and lower-income consumers,³⁴⁸ will preserve the existence of a fourth mobile wireless service provider and promote competition. Moreover, we agree with the Applicants that it is not necessary that all service providers in any local market be one of the four nationwide providers. As the Commission has previously found, regional and local service providers offer consumers additional choices in the areas they serve, and they help promote deployment in rural areas, where multiple nationwide service providers may have less incentive to offer high-quality services.³⁴⁹ Based on our competitive evaluation, we find that the likelihood of harm in the Puerto Rico market is low.

(iv) 2.5 GHz Spectrum

107. *Record.* Some commenters argue that because New T-Mobile will hold the overwhelming majority of 2.5 GHz band spectrum, which is ideally suited for 5G development, “[w]ithout competitive opportunities to acquire portions of this key spectrum, New T-Mobile’s rivals will be hampered in their efficient deployment of a nationwide 5G network.”³⁵⁰ The Applicants respond that commenters’ concerns are not transaction-specific because control of the 2.5 GHz spectrum is not becoming more concentrated as a result of the transaction.³⁵¹ Voqal counters that because the merged

³⁴⁶ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2767, para. 75; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2338, para. 47.

³⁴⁷ We derive market shares and HHIs from our analysis of data compiled in the NRUF and LNP database. We derive network coverage from Form 477 data, and we obtain spectrum holdings from our licensing databases and the Applications.

³⁴⁸ See *infra* section V.B.6.a: Boost Mobile Divestiture.

³⁴⁹ *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6206-07, paras. 179-80; see also *Communications Marketplace Report*, 33 FCC Rcd at 12561-62, para. 6.

³⁵⁰ Voqal Aug. 27, 2018 Petition at 18; see also e.g., Broadcast Data Corp. Petition at 3, 7 (arguing that in the Lakeland Market and many other local areas there is inadequate BRS and EBS spectrum for any potential competitor to provide a viable wireless broadband service in the BRS/EBS band); Rural Operators Petition at 4 (citing the lack of available 2.5 GHz spectrum in South Carolina, and highlighting Laurens County and Calhoun County where “New T-Mobile would hold 342.5 MHz of low and mid-band spectrum – nearly half of all the spectrum available for mobile services in those counties,” which they claim would harm competition and deny rural providers access to spectrum needed to provide service); Letter from Mark Van Bergh, Counsel to Voqal et al., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 1 (filed May 2, 2019) (Voqal/NACEPF/MB May 2, 2019 *Ex Parte* Letter) (expressing concerns about 5G competition to New T-Mobile without access to 2.5 GHz spectrum); Letter from John Schwartz, Chief Executive, Voqal, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Apr. 29, 2019) (Voqal Apr. 29, 2019 *Ex Parte* Letter) (claiming that “[i]f the merger were to be approved without imposing a divestiture condition, 5G competitors would lack a key input for deploying 5G, anticompetitively raising their costs and EBS licensees would lose an opportunity for competition to come to the 2.5 GHz band”); Letter from Mark Van Bergh, Counsel to North American Catholic Educational Programming Foundation, Inc. and Mobile Beacon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Apr. 2, 2019) (NACEPF/MB Apr. 2, 2019 *Ex Parte* Letter) (asserting that “New T-Mobile’s extensive nationwide 2.5 GHz holdings would make it nearly impossible for other carriers to identify contiguous blocks of 2.5 GHz spectrum large enough to be useful for deploying 5G, limiting potential competition for leasing 2.5 GHz spectrum”).

³⁵¹ Joint Opposition at 26, 123-24; Letter from Regina M. Keeney, Counsel to Sprint, and Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 3-5 (filed Apr. 6, 2019); Letter from Regina M. Keeney, Counsel to Sprint, and Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary,

(continued....)

company will operate the 2.5 GHz band differently than would Sprint on a standalone basis, these concerns are transaction-specific, and it seeks divestiture of portions of the 2.5 GHz spectrum.³⁵² Further, rural providers that have leased spectrum from Sprint in the past express concern that the transaction will result in the loss of access to leased spectrum in the future.³⁵³ And potential sellers or lessors of 2.5 GHz spectrum also express concern that “Sprint enjoys and exploits buyer power over sellers and lessors of 2.5 GHz spectrum” today and the transaction would exacerbate these anticompetitive market conditions.³⁵⁴

108. In the Joint Opposition, the Applicants emphasize that they will honor existing spectrum leases, and further argue that, although New T-Mobile will “be utilizing its full spectrum portfolio as part of its plan to provide new and improved services,” it nonetheless “will continue spectrum sales and leases where economically justified.”³⁵⁵ The Applicants also contend that Voqal’s arguments and request for divestiture of 2.5 GHz spectrum “is nothing more than an attempt to involve the Commission in a long-running contractual dispute with Sprint” of the sort that the Commission historically refuses to address in transaction reviews.³⁵⁶ In addition, some commenters that lease 2.5 GHz spectrum to Sprint cite Sprint’s “positive record of partnering with the educational community to unleash the educational potential of those networks,” and assert that the transaction “presents certain benefits that mitigate in favor of Commission approval of the application, provided that T-Mobile commits to a continued productive interactive partnership with its educational Lessors.”³⁵⁷ NEBSA/CTN, citing prior positive arrangements with Sprint and assurances by both merger parties that the EBS licenses and lease relationships, including the educational services provided through those leases, will remain an important part of the merged entity’s operations, also support the transaction.³⁵⁸

109. Certain commenters maintain that the potential loss of such spectrum leases from Sprint if New T-Mobile deems them not “economically justified” could mean the loss of service by competitors in rural areas that depend on access to that spectrum.³⁵⁹ Voqal further argues that the Applicants have

(Continued from previous page) _____
FCC, WT Docket No. 18-197, at 2-3 (filed Mar. 29, 2019) (T-Mobile/Sprint Mar. 29, 2019 *Ex Parte* Letter).

³⁵² Voqal Reply at 2-3. Similarly, Voqal argues that precedent under which the Commission permitted the aggregation of 2.5 GHz spectrum by Sprint is irrelevant here because New T-Mobile’s incentive and ability to act in anticompetitive ways in connection with its 2.5 GHz spectrum will be different than that of standalone Sprint. Voqal Reply at 7-8.

³⁵³ NTCA Aug. 27, 2018 Petition at 9; RWA Aug. 27, 2018 Petition at 7-8, 22-23; Union Telephone Aug. 27, 2018 Petition at 31; *see also* Voqal/NACEPF/MB May 2, 2019 *Ex Parte* Letter, Attach. at 1 (“New T-Mobile would have less incentive to share the [2.5 GHz] spectrum”).

³⁵⁴ Voqal Aug. 27, 2018 Petition at 15-17; Letter from Mark Van Bergh, Counsel to Voqal, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. B at 11 (filed Nov. 9, 2018) (Voqal Nov. 9, 2018 *Ex Parte* Letter); Broadcast Data Corp. Petition at 5 (arguing that the transaction “would eliminate a critical ‘competing buyer’” and asserting that “if Petitioner or another entity could purchase or lease enough BRS/EBS spectrum, entry of a new competitor providing wireless broadband service in the Lakeland Market, and markets nationwide, would be viable”); Voqal/NACEPF/MB May 2, 2019 *Ex Parte* Letter, Attach. at 1; Voqal Apr. 29, 2019 *Ex Parte* Letter at 2-3; NACEPF/MB Apr. 2, 2019 *Ex Parte* Letter at 2-3; *see also Id.* at 4-8 (asserting that licensing changes that are possible in a pending rulemaking to eliminate educational eligibility rules or auction unused EBS spectrum could exacerbate concerns about the effect of the transaction on 2.5 GHz spectrum); Voqal/NACEPF/MB May 2, 2019 *Ex Parte* Letter, Attach. at 1 (expressing concern that New T-Mobile would have more financial resources to acquire auctioned EBS spectrum).

³⁵⁵ Joint Opposition at 101 & n.379.

³⁵⁶ T-Mobile/Sprint Mar. 29, 2019 *Ex Parte* Letter at 4-5.

³⁵⁷ Comments of Hispanic Information and Telecommunications Network at 4 (Oct. 25, 2018) (HITN Comments).

³⁵⁸ NEBSA/CTN Reply at 1-3; *see also* Letter from Edwin N. Laverne, Counsel to CTN, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 1-2 (filed Nov. 28, 2018).

³⁵⁹ NTCA Reply at 4; RWA Reply at 12-13.

failed to rebut its claim that the transaction will give New T-Mobile an increased incentive and ability to exercise market power in the acquisition of 2.5 GHz spectrum.³⁶⁰ In particular, Voqal asserts that while Sprint would have been willing to sell or lease its 2.5 GHz spectrum to other providers, New T-Mobile will have the incentive and ability to foreclose competitors from acquiring an adequate nationwide 2.5 GHz portfolio of their own.³⁶¹

110. *Discussion.* We have carefully examined the transaction-specific issues raised in the record relating to 2.5 GHz spectrum. We reject commenters' arguments that the transfer of the 2.5 GHz spectrum in the proposed transaction is a separate market; rather, we have consistently evaluated holdings within this band in the input market for spectrum,³⁶² and see no reasonable basis on which to depart from our precedent in the context of this transaction. In any event, we point out that the 2.5 GHz band is no more concentrated as a result of this transaction than it would have been had Sprint continued to hold the licenses as T-Mobile currently does not hold any 2.5 GHz spectrum licenses. We note the Commission's recent effort to modernize the 2.5 GHz band also provides opportunities for additional entities to obtain access to unused 2.5 GHz spectrum.³⁶³ Further, we dismiss as speculative claims that the transaction will give New T-Mobile the incentive or ability to foreclose access to spectrum in the 2.5 GHz band to raise rivals' costs or that New T-Mobile would impose below-market prices upon sellers or lessors of 2.5 GHz spectrum. Based on our review of the record, we find that these claims are merely speculative.

3. Unilateral Effects

111. In this section, we evaluate the potential unilateral competitive effects of the proposed transaction. As noted above, horizontal transactions raise potential competitive concerns when the combined entity has the incentive and the ability to raise prices, lower quality, or otherwise harm competition in a relevant market.³⁶⁴ Unilateral effects arise when firms, regardless of the anticipated actions or responses of other firms, find it profitable to raise prices or otherwise exercise market power following a horizontal merger.³⁶⁵ When a transaction combines two firms selling products that substitute for each other, there can be an increased incentive for the combined entity to unilaterally raise the price of one or both firms' offerings above the pre-transaction level.³⁶⁶ The degree of direct competition or substitution between the merging parties' products and whether there are non-merging parties that are selling close substitutes (or that could quickly reposition their products to be close substitutes) are important factors in determining the likelihood and magnitude of any potential unilateral price

³⁶⁰ Voqal Reply at 3; Voqal Apr. 29, 2019 *Ex Parte* Letter at 1-2, 5-6.

³⁶¹ Voqal Reply at 4.

³⁶² *20th Competition Report*, 32 FCC Rcd at 8993-98, paras. 39-41; *Sprint-Shentel-NTELOS Order*, 31 FCC Rcd at 3637, para. 13; *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6184-87, paras. 118-25; *SoftBank-Sprint Order*, 28 FCC Rcd at 9659, para. 42.

³⁶³ *2.5 GHz Report and Order*, 34 FCC Rcd at 5447, 5448-49, paras. 3, 18 (rejecting as speculative and unpersuasive the assertions of some commenters that eliminating eligibility restrictions will lead to existing licensees' losing negotiating leverage and giving commercial entities the incentive and ability to offer licensees unfavorable sale terms rather than new or renewed leases).

³⁶⁴ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 1, 1-2, § 6, 20-22.

³⁶⁵ See, e.g., *Applications of AT&T, Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 30 FCC Rcd 9131, 9166, para. 84 (2015) (*AT&T-DIRECTV Order*); *AT&T-T-Mobile Staff Report*, 26 FCC Rcd 16211, para. 48; *EchoStar-DIRECTV HDO*, 17 FCC Rcd at 20619, para. 152; *2010 DOJ/FTC Horizontal Merger Guidelines* at § 1, 2, § 6, 20-22.

³⁶⁶ See, e.g., *AT&T-DIRECTV Order*, 30 FCC Rcd at 9166, para. 84; *EchoStar-DIRECTV HDO*, 17 FCC Rcd at 20624, para. 169; *2010 DOJ/FTC Horizontal Merger Guidelines* at § 6.1, 20; Farrell, J., & Shapiro, C. (2010). Antitrust evaluation of horizontal mergers: An economic alternative to market definition. *The BE Journal of Theoretical Economics*, 10(1) at 6 (Farrell and Shapiro (2010)).

increases.³⁶⁷ We begin by considering consumer substitution in the mobile wireless industry. Next, we turn to our analysis of upward pricing pressure, before evaluating the potential for unilateral price effects.

a. Consumer Substitution

112. The magnitude of unilateral effects from a horizontal merger depends significantly on the closeness of competition between the two merging parties, which can be measured by the degree to which consumers substitute among the merging parties' products following a change in price or quality. To evaluate consumer substitution patterns, we calculate a diversion ratio, which measures the percentage of consumers that leave one firm following a price increase that switch to the other.³⁶⁸ Since 2004, the Commission has relied on porting data from the LNP database to calculate diversion ratios in evaluating mobile wireless transactions.³⁶⁹ Although the Applicants argue for the use of alternative measures of diversion, we continue to find that the LNP data, while not perfect, are the most appropriate data for the reasons discussed below.

113. *Record.* The Applicants claim that LNP porting data are unreliable for purposes of calculating diversion ratios.³⁷⁰ Specifically, the Applicants claim that porting, and switching data more generally, will provide biased estimates of diversion because whereas diversion ratios theoretically capture customer switching in response to changes in price or quality, porting customers may switch for other reasons.³⁷¹ Further, the Applicants note that not all customers who switch service providers port their numbers, and those who do port may not be representative of all switchers.³⁷² The Applicants claim

³⁶⁷ See, e.g., *AT&T-DIRECTV Order*, 30 FCC Rcd at 9166, para. 84; *2010 DOJ/FTC Horizontal Merger Guidelines* at § 6.1, 20-22; see also *United States v. H&R Block*, 833 F. Supp. 2d 36, 81 (D.D.C. 2011) (stating that unilateral effects in a differentiated product market are likely to be profitable where the products controlled by the merging firms are close substitutes, products offered by non-merging firms are sufficiently different to make a small but significant and non-transitory price increase profitable for the merging firms, and non-merging firms are unlikely to reposition their products to offer close substitutes for the products offered by the merging firms).

³⁶⁸ See, e.g., *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16319, Appx. C at para. 8; Shapiro, C. (1995). Mergers with differentiated products. *Antitrust*, 10, at 23. The diversion ratio of customers leaving firm i due to a price increase that choose firm j is given by $D_{ij} = (\partial X_j / \partial P_i) / (\partial X_i / \partial P_i)$ where P and X represent, respectively, price and quantity. The diversion ratio is increasing in the degree of substitution between competing firms, so that higher diversion is associated with greater predicted harms from post-merger unilateral effects. This is because pre-merger, some customers who leave one firm following a price increase are lost to its prospective merger partner, whereas the post-merger firm does not lose these customers. The greater the proportion of customers of one merging firm who view the merger partner as their second choice, the greater the incentive to raise price post-merger.

³⁶⁹ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2759-60, paras. 55, 70 & n.197, n.199, n.248; *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16212-13, 16216-18, 16319-23, para. 51 & n.148, paras. 55-56, Appx. C, paras. 8-15; *AT&T-Centennial Order*, 24 FCC Rcd at 13948, para. 75 & n.288. We note that Sprint advocated for the use of LNP data for diversion in the AT&T/T-Mobile proposed merger review, and the Commission relied on it, for example, in the analysis approving T-Mobile's acquisition of MetroPCS. See, e.g., *AT&T-T-Mobile Staff Report* proceeding, WT Docket No. 11-65, Sprint Reply Comments at 12, 22-24 (June 20, 2011) ("[T]he Commission made available the NRUF/LNP porting data that permitted more precise estimates of the diversion ratios."); *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2338, para. 47 & n.115.

³⁷⁰ Joint Opposition, Appx. F, Declaration of Compass Lexecon, at 128, para. 176 (Sept. 17, 2018) (Joint Opposition, Compass Lexecon Declaration).

³⁷¹ Joint Opposition, Compass Lexecon Declaration at 127, para. 174; Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Appx. A at 14-21, paras. 36-53 (filed Feb. 7, 2019) (Cornerstone Feb. 7, 2019 Response). The Applicants also suggest that Commission staff previously recognized that customers do not necessarily port their numbers in response to price or quality changes. Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 1-3 (filed Dec. 14, 2018) (T-Mobile Dec. 14, 2018 *Ex Parte* Letter).

³⁷² Joint Opposition, Compass Lexecon Declaration at 127, para. 175; Cornerstone Feb. 7, 2019 Response at 13, para. 34.

that the LNP data are unreliable because they systematically overstate switching between Sprint and T-Mobile relative to switching based on survey and other data.³⁷³ The Applicants suggest that the Commission could use alternative sources, such as Harris Mobile Insights (Harris Mobile Insights Survey or Harris Survey), Sprint Brand IQ, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**, Subscriber Shares, or shares of activations or deactivations, each of which the Applicants claim are used to analyze switching.³⁷⁴ Finally, the Applicants claim that porting data likely over-represents diversion between Sprint and T-Mobile and, conversely, understates diversion associated with MVNOs such as TracFone because, whereas Sprint and T-Mobile offer incentives to customers to port their numbers when switching to the firms' prepaid brands, MVNOs do not.³⁷⁵

114. The Applicants further contend that better measures of diversion in the record render moot the discussion of whether to use LNP data.³⁷⁶ Specifically, the Applicants, pointing to the Cornerstone Report,³⁷⁷ argue that these "rich NMP [Nielsen Mobile Performance] data, which were not available to the Commission in prior merger reviews, allowed [Cornerstone] to provide a sophisticated demand model that directly estimates diversion ratios and thus avoid concerns that the Commission has expressed in the past about potential shortcomings in the use of porting data."³⁷⁸ The Applicants emphasize that the Cornerstone Report calculates diversion ratios that reflect the closeness of competition between any two brands, taking into account product and consumer characteristics.³⁷⁹ The Applicants contend that data on consumer switching, in contrast, whether derived from porting data or other sources, mix changes in demand and supply, which make them generally inappropriate measures for understanding consumer substitution patterns.³⁸⁰

115. Various commenters reference the LNP data to argue that Sprint, Boost Mobile, T-Mobile, and Metro are close competitors. Based on its analysis of LNP data, Free Press argues further that Sprint is T-Mobile's closest competitor, and T-Mobile is Sprint's closest competitor, even while both

³⁷³ Joint Opposition, Compass Lexecon Declaration at 128, para. 176; T-Mobile Dec. 14, 2018 *Ex Parte* Letter, Attach. at 5-6 & nn.23-28.

³⁷⁴ Joint Opposition, Compass Lexecon Declaration at 32, Table 2, 128, para. 176; Letter from Nancy Victory, Counsel to T-Mobile, and Regina M. Keeney, Counsel to Sprint et al., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. 1 at 1, Tables 1, 3-12 (filed Apr. 12, 2019) (T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter).

³⁷⁵ Joint Opposition, Compass Lexecon Declaration at 129-30, para. 177; T-Mobile Dec. 14, 2018 *Ex Parte* Letter, Attach. at 2-5; T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 15-19. As an example, the Applicants point to a survey of customers who port out from Boost Mobile relative to non-port switchers from Boost to argue that relative to port-outs, substantially fewer non-port switchers from Boost Mobile go to **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**. See also Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Appx. B at 2 (filed Feb. 7, 2019) (Compass Lexecon Feb. 7, 2019 Response); T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 2, Fig. 1.

³⁷⁶ T-Mobile Dec. 14, 2018 *Ex Parte* Letter, Attach. at 1; Letter from Nancy Victory, Counsel to T-Mobile, and Regina M. Keeney, Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 9, para. 16 (filed Apr. 3, 2019) (Cornerstone Apr. 3, 2019 Response).

³⁷⁷ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. A (filed Nov. 6, 2018) (Cornerstone Report); T-Mobile Dec. 14, 2018 *Ex Parte* Letter, Attach. at 1.

³⁷⁸ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 3, Attach. B (filed Dec. 6, 2018) (T-Mobile Dec. 6, 2018 *Ex Parte* Letter); see also Cornerstone Feb. 7, 2019 Response at 4-13, paras. 8-33.

³⁷⁹ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. A at para. 12 (filed Dec. 18, 2018) (T-Mobile Dec. 18, 2018 Cornerstone Report *Ex Parte* Letter).

³⁸⁰ T-Mobile Dec. 18, 2018 Cornerstone Report *Ex Parte* Letter, Attach. A at paras. 14, 17.

also take share from AT&T and Verizon Wireless,³⁸¹ and that nationwide results somewhat obscure the closeness of competition in many CMAs.³⁸² CWA claims that the Applicants' estimate of a low degree of substitutability between them "is simply not credible."³⁸³ DISH notes that the competitive effects of the transaction could be particularly significant if "the diversion rates from Sprint to T-Mobile and vice-versa are proportionally greater than their respective market shares."³⁸⁴ DISH argues that LNP data shows much higher diversion between Sprint and T-Mobile than the level of diversion relied upon in Applicants' models which means that Sprint's and T-Mobile's brands are particularly close competitors and that the upward pricing pressure likely to result from the transaction will be much greater than the Applicants predict.³⁸⁵ DISH further argues that Applicants' internal documents provide additional support for relying on porting, and observes that changes in net porting are closely aligned to pricing promotions,³⁸⁶ and also points to prior use of the porting data by both the Commission and Applicants' experts in prior proceedings.³⁸⁷ Finally, DISH claims that documents cited by the Applicants show that their Harris Mobile Insights survey data are used **[BEGIN HIGHLY CONF. INFO.]**

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116. DISH contends that the Applicants' reasons for using other survey data to calculate diversion rather than relying on LNP data are unpersuasive because: (1) even if LNP data do not capture all gross additions and deactivations, that does not demonstrate they are unrepresentative or biased;³⁸⁹ (2) claims that LNP data overstate diversion relative to the Applicants' estimates are conclusory and do not demonstrate that the Applicants' estimates are more accurate;³⁹⁰ (3) while LNP data attribute MVNO

³⁸¹ Free Press Reply at 18-30.

³⁸² Free Press Reply at 7-8, 15-18, 23-30; *see also* Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 14-15 (filed Jan. 28, 2019) (DISH Jan. 28, 2019 *Ex Parte* Letter); DISH Jan. 28, 2019 *Ex Parte* Letter, Attach. A, Brattle Jan. 28, 2019 Response at 17-22 (Brattle Jan. 28, 2019 Response) (arguing that the Applicants' survey data also reveals greater diversion in certain geographical areas); Brattle Jan. 28, 2019 Response at 14-16 (arguing that the Applicants' survey data that indicate switching as a result of price or cost suggests that the Applicants' prepaid brands are particularly close competitors).

³⁸³ CWA Comments at 24-33; CWA Reply at 21-24; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 8.

³⁸⁴ DISH Aug. 27, 2018 Petition at 62.

³⁸⁵ DISH Reply at 14-16. In preliminary gross upward pricing pressure index (GUPPI) calculations, DISH finds higher upward pricing pressure when using the LNP data to calculate diversion than when calculating diversion from information on gross subscriber additions and subscriber shares. DISH Aug. 27, 2018 Petition, Brattle Declaration at 46-47.

³⁸⁶ DISH Jan. 28, 2019 *Ex Parte* Letter at 3, 5-8; Brattle Jan. 28, 2019 Response at 7-8. DISH points to various documents to back this assertion, for instance: TMUS-FCC-01648593 at 7; TMUS-FCC-01648615 **[BEGIN HIGHLY CONF. INFO.]**

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³⁸⁷ DISH Jan. 28, 2019 *Ex Parte* Letter at 10; Brattle Jan. 28, 2019 Response at 10-11.

³⁸⁸ DISH Jan. 28, 2019 *Ex Parte* Letter at 9 & n.32, n.34. *See, e.g.*, TMUS-FCC-00796583. Relatedly, DISH points to internal documents comparing a variety of sources (**[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] referenced in TMUS-FCC-07675268) that indicate that porting lines up with certain other sources of switching data relied on by T-Mobile. Brattle Jan. 28, 2019 Response at 13-14.

³⁸⁹ DISH Reply at 16. DISH points out that Compass Lexecon admits that "diversion ratios based on porting data are not systematically biased as a result of the reasons for porting." Joint Opposition, Compass Lexecon Declaration at 127, para. 174.

³⁹⁰ DISH Reply at 17.

ports to the underlying facilities-based provider, the Applicants fail to demonstrate that, on net, LNP data understate diversions to AT&T and Verizon Wireless;³⁹¹ and (4) the Applicants do not defend the merits of the study they use instead of porting data, nor do they even describe the methodology used in that study.³⁹² In response to the alternative diversion estimates provided by Cornerstone, CWA, and DISH, separately, highlight what they view as a variety of flaws in the Cornerstone methodology.³⁹³ These alleged flaws include: the assignment of one price per brand,³⁹⁴ a network performance model that does not represent rural areas,³⁹⁵ a disregard for how income affects consumers' willingness to pay for service, inappropriate use of margins, inappropriate categorization of users based on data usage,³⁹⁶ as well as other biases.³⁹⁷

117. In response,³⁹⁸ and as well as defending their prior analyses,³⁹⁹ the Applicants argue that: the Applicants' executives use porting data directionally for day-to-day analysis rather than as long-term indicators of diversion and recognize the limitations of porting data;⁴⁰⁰ documents submitted by DISH fail to show a relationship between porting and price, and DISH's analyses of these documents contain errors or erroneous conclusions;⁴⁰¹ prior analyses submitted by the Applicants properly treat geographic variation;⁴⁰² and the use of porting in past proceedings does not negate its limitations.⁴⁰³ The Applicants

³⁹¹ DISH Reply at 17.

³⁹² DISH Reply at 18; DISH Reply, Exh. 1, Reply Declaration of Joseph Harrington and The Brattle Group at 15 (DISH Reply, Brattle Reply Declaration). DISH submitted numerous filings with respect to diversion. *See, e.g.*, Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 7 (filed Feb. 19, 2019) (DISH Mar. 25, 2019 *Ex Parte* Letter); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Mar. 25, 2019) (DISH Mar. 25, 2019 *Ex Parte* Letter); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-4 (filed Mar. 18, 2019) (Mar. 18, 2019 *Ex Parte* Letter); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 9-12 (filed May 1, 2019) (DISH May 1, 2019 *Ex Parte* Letter).

³⁹³ CWA Dec. 4, 2018 Comments at 2; DISH Dec. 4, 2018 Comments at 3.

³⁹⁴ CWA Dec. 4, 2018 Comments at 2, Appx. A at 2.

³⁹⁵ CWA Dec. 4, 2018 Comments, Appx. B at 3-5, paras. 9-16.

³⁹⁶ DISH Dec. 4, 2018 Comments at 3-5, Attach. 6, 15-20.

³⁹⁷ *See, e.g.*, CWA Dec. 4, 2018 Comments, Appx. A at 4-6.

³⁹⁸ *See, e.g.*, T-Mobile Feb. 7, 2019 *Ex Parte* Letter, Appendices A and B; Letter from Nancy Victory, Counsel to T-Mobile, and Regina M. Keeney, Counsel to Sprint, et al., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Mar. 14, 2019) (attaching Response to DISH's February 19, 25, 2019 Submissions); Letter from Nancy Victory, Counsel to T-Mobile, and Regina M. Keeney, Counsel to Sprint, et al., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Mar. 21, 2019).

³⁹⁹ *See, e.g.*, T-Mobile Dec. 18, 2018 Cornerstone Report *Ex Parte* Letter, Attach. A at paras. 7-8, 22, 24-27, 39-45; Cornerstone Feb. 7, 2019 Response at 4-13, paras. 8-33.

⁴⁰⁰ Cornerstone Feb. 7, 2019 Response at 22-23, paras. 58-59; Compass Lexecon Feb. 7, 2019 Response at 4-5; T-Mobile Feb. 7, 2019 *Ex Parte* Letter, Appendices C and D; T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 14-15, 19-20.

⁴⁰¹ Cornerstone Feb. 7, 2019 Response at 24-26, paras. 64-70 (*See, e.g.*, TMUS-FCC-01648593 at 7); Compass Lexecon Feb. 7, 2019 Response at 5-8; Cornerstone Apr. 3, 2019 Response at 9-10, para. 18 (referring to DISH's reliance on TMUS-FCC-07849832 at 21); T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 20-27.

⁴⁰² Compass Lexecon Feb. 7, 2019 Response at 9.

⁴⁰³ Compass Lexecon Feb. 7, 2019 Response at 6.

also argue that various other sources of switching data, which they assert are more representative of diversion rates than porting data, indicate that the proposed transaction is pro-competitive.⁴⁰⁴

118. *Discussion.* While there is no perfect measure of diversion—all of the data sources at issue are proxies or estimates of consumer substitution patterns—the question before us is which of the proxies in our record is the most reliable metric for predicting the proposed transaction’s likely competitive effects. In prior transaction reviews, Commission staff have acknowledged that porting is an imperfect measure of diversion because consumers who port their numbers are not necessarily responding to a price or quality change, but nonetheless has relied on it as the most reliable proxy.⁴⁰⁵ Moreover, we agree that the porting data do not contain the full universe of subscribers who switch providers in a given month, but rather only switchers who choose to keep their mobile wireless telephone numbers.⁴⁰⁶ Nevertheless, we find that the Applicants fail to offer compelling evidence that those who port would react substantially differently to a price increase than those who do not, or that the LNP porting data are so substantially biased as to render them inferior to proffered alternatives.

119. In our review of the record, we find that T-Mobile’s documents strongly demonstrate that for a number of years T-Mobile executives have consistently relied on porting data for competitive analyses.⁴⁰⁷ Indeed, T-Mobile’s internal daily, weekly, monthly, and quarterly reports,⁴⁰⁸ as well as its ad hoc reports and internal and external financial documents reveal that T-Mobile relies on porting data in the ordinary course of business and for both short-term and long-term competitive analysis. Some of their regular presentations, for example, analyzed porting data over the course of a year evaluating porting ratios, porting volume, and overall porting trends.⁴⁰⁹ T-Mobile’s internal daily **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**⁴¹⁰ and weekly **[BEGIN**

⁴⁰⁴ T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 1, Tables 1, 5-12.

⁴⁰⁵ *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16320-21, Appx. C, para. 10. The Commission has consistently relied on LNP data to measure diversion. *See, e.g., T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2338, para. 47 & n.115; *AT&T-Centennial Order*, 24 FCC Rcd at 13948 & n.288.

⁴⁰⁶ *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16320-21, Appx. C, para. 10. Specifically, staff articulated the potential for sample selection bias arising from the fact that subscribers who port their mobile wireless telephone number may be a non-random sample of subscribers.

⁴⁰⁷ TMUS-FCC-00916511 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** porting data email by T-Mobile executives, Jan. 2017); *see also* TMUS-FCC-00206649 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Jan. 2018). In particular, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** provides T-Mobile with porting data that **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**, which they use to calculate porting ratios. We note that in early 2018, T-Mobile entered into an agreement with **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]. *See, e.g.,* TMUS-FCC-00711808 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**, Mar. 22, 2018).

⁴⁰⁸ *See, e.g.,* TMUS-FCC-01648593; TMUS-FCC-01649797; TMUS-FCC-01003724; TMUS-FCC-01003897; TMUS-FCC-07689772; TMUS-FCC-01593569; TMUS-FCC-01609887 (May 2016 to May 2018). T-Mobile, “Competitive Industry Performance Report.”

⁴⁰⁹ *See, e.g.,* TMUS-FCC-00610351; TMUS-FCC-00478974; TMUS-FCC-00840830; TMUS-FCC-00467836; TMUS-FCC-00471788; TMUS-FCC-00410041 (Aug. 2015 to June 2018). T-Mobile **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**.

⁴¹⁰ A lengthy list of T-Mobile executives, including high-level executives, receive an emailed report each day of **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]. *See, e.g.,* TMUS-FCC-06420278; TMUS-FCC-06583563; TMUS-FCC-07047457; TMUS-FCC-02428344; TMUS-FCC-02343406; TMUS-FCC-06883761 (Aug. 2014 to Aug. 2018).

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HIGHLY CONF. INFO.] **[END HIGHLY CONF. INFO.]**⁴¹¹ also heavily rely on porting data and have been routinely and widely distributed within T-Mobile, including to high-level executives.⁴¹² T-Mobile's reliance on porting data for competitive analysis is further evidenced in their Board of Directors meetings and statements to investors.⁴¹³ Record evidence also reveals that Sprint, as well as other service providers,⁴¹⁴ rely on porting-based data sources, both for short-term and long-term competitive analysis.⁴¹⁵

120. Other data sources that have been used by T-Mobile in the past include surveys conducted by Harris Mobile Insights and T-Mobile's internal **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** surveys.⁴¹⁶ The Applicants, as part of their Joint

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T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emailed reports; *see also* TMUS-FCC-02558637; TMUS-FCC-00925133 (Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emails, May 19, 2016); TMUS-FCC-02341343 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emails, Apr. 5, 2016); TMUS-FCC-02338544 (T-Mobile, "porting" emails, July 4, 2016).

⁴¹¹ *See, e.g.*, TMUS-FCC-01703262; TMUS-FCC-01109435; TMUS-FCC-00224211; TMUS-FCC-05436856; TMUS-FCC-02344683; TMUS-FCC-02383007; TMUS-FCC-02423875; TMUS-FCC-02404219 (Sept. 2015 to June 2018). T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** reports; *see also* TMUS-FCC-01703260; TMUS-FCC-00839546; TMUS-FCC-00030699; TMUS-FCC-00224209.

⁴¹² *See, e.g.*, TMUS-FCC-00387935; TMUS-FCC-04684503; TMUS-FCC-00900537; TMUS-FCC-02329436; TMUS-FCC-01411764; TMUS-FCC-02428309 (Mar. 2016 to Feb. 2018). T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emailed reports from T-Mobile executives who used porting ratios to analyze **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**.

⁴¹³ *See, e.g.*, TMUS-FCC-06703350 (T-Mobile, "Business Update: TMUS Board of Directors Meeting," June 12-13, 2018); TMUS-FCC-07432185 (T-Mobile, "Business Update: TMUS Board of Directors Meeting," Feb. 14-15, 2018); TMUS-FCC-06254536 (T-Mobile, "Business Update: TMUS Board of Directors Meeting," Dec. 1, 2017); TMUS-FCC-08156730 (T-Mobile, "Q2 2017 Earnings Materials," July 18, 2017); The Motley Fool, TMUS Q4 2018 Earnings Conference Call Transcript, <https://www.fool.com/earnings/call-transcripts/2019/02/08/t-mobile-us-tmus-q4-2018-earnings-conference-call.aspx> (last visited Oct. 14, 2019); The Motley Fool, TMUS Q2 2018 Earnings Conference Call Transcript, <https://www.fool.com/earnings/call-transcripts/2018/08/06/t-mobile-us-tmus-q2-2018-earnings-conference-call.aspx> (last visited Oct. 14, 2019).

⁴¹⁴ Verizon Wireless and U.S. Cellular also rely on **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** porting data and sometimes specifically use this porting data **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**. *See, e.g.*, VZWTS-001-00000706 (Verizon Wireless, "Acquisition Promo Effectiveness Report," May 2018); USCC-TMOSPR-000034 (U.S. Cellular, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**, USCC Discussion," Aug. 2018).

⁴¹⁵ *See, e.g.*, SPR-FCC-13962420; SPR-FCC-13962372; SPR-FCC-05147432 (Sprint, "Sprint Weekly Marketing Monitor") (June 2018, May 2018, Apr. 2016); *see also* SPR-FCC-00670207 (Sprint, "iPhone X Launch Update," Nov. 2017); SPR-FCC-00675167 (Sprint, "Samsung GS9/Launch," Mar. 2018). **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** porting data is the basis for Sprint's analysis involving **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]. *See, e.g.*, SPR-FCC-14066410 (Sprint, "2017 Research Overview," Dec. 2017); TMUS-FCC-00211819 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Nov. 2015).

⁴¹⁶ T-Mobile has at times relied on their internal deactivation surveys or deactivation trackers for the diversion rates of those who switch to and from T-Mobile where the primary analysis has been to better understand the reasons why subscribers choose to switch from T-Mobile to another service provider. *See, e.g.*, TMUS-FCC-01891002 (T-Mobile, "Postpaid **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**

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Opposition, submitted survey results from Harris Mobile Insights as an alternative measure of diversion to porting data.⁴¹⁷ The Harris Mobile Insights Survey data were used by the Applicants as a measure of diversion in their initial model submission.⁴¹⁸ Staff has thoroughly analyzed the limited amount of information supplied by the Applicants in the HarrisX Mobile Insights Methodology Overview,⁴¹⁹ and we find that there are a number of significant concerns regarding its validity and reliability, including concerns with sampling techniques, statistical validity, and estimation.⁴²⁰

121. First, the sampling and collection methodology leads to a substantial risk of sample selection bias.⁴²¹ Additionally, the Methodology Overview states that the data are **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]⁴²² To support their claim that the Harris Survey data should be used because the porting data are biased in a way that understates diversion associated with MVNOs, the Applicants pointed to their internal **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** surveys of **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**⁴²³ Many of the concerns that arise in the Harris Survey also apply to the **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** surveys.⁴²⁴ Finally, the record indicates that T-

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September Results,” Sept. 2017); TMUS-FCC-03055858 (T-Mobile, “Postpaid **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** November Results,” (Dec. 2017); TMUS-FCC-03056529 (T-Mobile, “Postpaid **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** May Results,” June 2017); TMUS-FCC-05228490 (T-Mobile, “Postpaid **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** April 2018 Mix-Mode Analysis”); *see also* TMUS-FCC-03906896 (T-Mobile, “MetroPCS **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Study,” Q2 2017).

⁴¹⁷ Joint Opposition, Compass Lexecon Declaration, at 130-31, para. 178 & n.181, n.182, Table 28.

⁴¹⁸ Joint Opposition, Compass Lexecon Declaration at 31 & n.52, 86, Table 16, 130, para. 178 & n.182.

⁴¹⁹ T-Mobile Information Request Additional Response, HarrisX Mobile Insights Methodology Overview (Nov. 6, 2018).

⁴²⁰ *See also* DISH Reply, Brattle Reply Declaration at 14-15; Brattle Jan. 28, 2019 Response at 11; DISH Mar. 25, 2019 *Ex Parte* Letter, Attach. A at 19.

⁴²¹ We infer that the Harris Survey relies on **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] which heightens the risk of sample selection bias. *See, e.g.,* Office of Management and Budget Standards and Guidelines for Statistical Surveys, at 31, 33 (Sept. 2006), https://unstats.un.org/unsd/dnss/docs-nqaf/USA_standards_stat_surveys.pdf. The risk of selection bias is exacerbated by the use of **[BEGIN HIGHLY CONF. INFO.]**

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⁴²² Relatedly, the Applicants have not justified whether the sample size is sufficient to answer questions of interest (i.e., diversion) given the survey methodology.

⁴²³ T-Mobile Dec. 14, 2018 *Ex Parte* Letter, Attach. at 3-4; Compass Lexecon Feb. 7, 2019 Response, Appx. B at 2; T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 2, Fig. 1.

⁴²⁴ These surveys suffer from low sample sizes, response rates below **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] SPR-FCC-04301172 at 2, 6 (Sprint, “Non-Port Churn Survey Results,” July 2017); SPR-FCC-02425213 at 2, 5, 8 (Sprint, “Port Out Survey Results September – October 2017,” Nov. 21, 2017).

Mobile has primarily used Harris Mobile Insights to evaluate customer satisfaction and perceptions,⁴²⁵ rather than for analyzing switching between service providers.

122. In their April 12, 2019 submission, as noted above, the Applicants proposed that the Commission rely on estimated diversion ratios that suggest modest competition between the Applicants' brands.⁴²⁶ In particular, Cornerstone estimates that switching between **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** is only a small proportion of total switching away from these brands. The Cornerstone estimates, however, for the reasons set forth below, appear unreliable considering both the record evidence and the underlying econometrics.⁴²⁷

123. The record shows that T-Mobile and Sprint have closely and separately tracked competition between Boost and Metro. T-Mobile has been particularly intent on analyzing the prepaid segment's competitive dynamics during 2018, and as the documents demonstrate, T-Mobile, relying on porting data, **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]⁴²⁸ Sprint documents reveal that from approximately mid-2017 to mid-2018, Sprint regularly disseminated to many of its executives, including higher-level executives, weekly reports that **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]⁴²⁹ As part of this competitive analysis, Sprint reviewed the changes in porting ratios between **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]⁴³⁰ Sprint's documents demonstrate that they have consistently

⁴²⁵ See, e.g., TMUS-FCC-01889200 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Feb. 22, 2018); TMUS-FCC-01888084, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Apr. 13, 2018); TMUS-FCC-04644961 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Aug. 2016) (**[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]); see also TMUS-FCC-01736115 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** May 2018); TMUS-FCC-05664756 (T-Mobile, Nielsen/HarrisX Monthly Insights, Apr. 2018); TMUS-FCC-03797832; TMUS-FCC-05667405; TMUS-FCC-05652251 (**[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**).

⁴²⁶ T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter at 1, 4.

⁴²⁷ See *infra* section V.B.3: Unilateral Effects.

⁴²⁸ See, e.g., TMUS-FCC-00711342 (T-Mobile, "Prepaid/Metro Industry Assessment," Mar. 12, 2018); TMUS-FCC-07651391 (T-Mobile, "MetroPCS Competitive Overview," June 18, 2018); TMUS-FCC-01727392 (T-Mobile, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** T-Mobile Study," May 2018); TMUS-FCC-04253418 (T-Mobile, "2018 **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** MetroPCS," Oct. 16, 2017); see also TMUS-FCC-00711342 (T-Mobile, "Prepaid/Metro Industry Assessment," Mar. 12, 2018).

⁴²⁹ See, e.g., SPR-FCC-02439442; SPR-FCC-06144553; SPR-FCC-01024170; SPR-FCC-01964198; SPR-FCC-01007749; SPR-FCC-00868026; SPR-FCC-00820803; SPR-FCC-00735439; SPR-FCC-00832194; SPR-FCC-00805095; SPR-FCC-00790252; SPR-FCC-00785615; SPR-FCC-00839512; SPR-FCC-00786740; SPR-FCC-02422230; SPR-FCC-02400929 (Jan. 2018 to June 2018). Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emailed reports.

⁴³⁰ See, e.g., SPR-FCC-01964198; SPR-FCC-00820803; SPR-FCC-00735439; SPR-FCC-00805095; SPR-FCC-00864603; SPR-FCC-00785615; SPR-FCC-02422232 (Feb. 2018 to June 2018). Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** emailed reports; see also SPR-FCC-00837015; SPR-FCC-00837014 (Sprint executives email and internal presentation regarding prepaid porting data results, Mar. 16, 2018); see also SPR-FCC-01025922 (Sprint, "Performance Operations Review, May 2018 Review," June 22, 2018).

analyzed **[BEGIN HIGHLY CONF. INFO.]**

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124. The Applicants claim that the complex modeling and rich data underlying the Cornerstone Report allow them to estimate particularly accurate diversion ratios.⁴³² We note, however, that their estimated diversion ratios look very similar to market share-proportional diversion ratios, i.e., the diversion ratios that would result without any of the complex quality measures or demographic information that lie at the heart of the Cornerstone model. In the Cornerstone model, each consumer's demand for a particular brand is determined by a mathematical formula based on individual-specific data.⁴³³ Parameters for these formulas are statistically estimated from Nielsen survey data of consumer mobile usage in combination with Census data and other market data.⁴³⁴ These demand formulas also imply formulas for diversion ratios, so that if individual-specific variables like demographics or local network quality are strong determinants of demand, then variation in these variables can generate strong diversion between particular brands, regardless of any brand's overall market share.⁴³⁵

125. In contrast to Cornerstone's model, one could assume that all consumers are the same and have the same demand formula for each brand.⁴³⁶ This means that all consumers substitute between brands at the same rates—some brands are more popular than other brands, but there are no product segments in which some brands are especially good substitutes for each other. If one were to use this simplified model, then it implies “share-proportional diversion”: the diversion ratio from brand A to brand B is simply the share of consumers who choose B out of all the consumers who do not choose A.⁴³⁷ We note that this share-proportional diversion resembles the Cornerstone results: when consumers switch from any brand, they switch most to the brands with the highest market shares—AT&T and Verizon Wireless—and least to the brands with the lowest market shares—Metro, Boost, and Cricket.⁴³⁸ Switching to the Applicants' flagship brands of T-Mobile and Sprint, which have modest shares compared to flagship AT&T and Verizon Wireless, have similar modest diversion ratios towards them.

⁴³¹ See, e.g., SPR-FCC-02381255 (Sprint, “Prepaid Competitive Landscape” executives email, June 22, 2018); see also SPR-FCC-00670914 (Sprint, “Sales and Marketing,” executives email, Nov. 15, 2017); SPR-FCC-00743570; SPR-FCC-00743569 (Sprint, **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] presentation and email, Oct. 18, 2017); SPR-FCC-00869363 (Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** email, May 22, 2018); SPR-FCC-00743570; SPR-FCC-00743569 (Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** FY'Q3 2017, and Sprint executives email, Oct. 18, 2017).

⁴³² T-Mobile/Sprint Apr. 12, 2019 *Ex Parte*, Attach 1 at 4.

⁴³³ Consumers in the Cornerstone model are assumed to have a utility level for each brand based on a brand-specific formula of individual demographics and network quality, plus a random component. Consumers choose the brand with the highest utility. The random nature of the utility formulas implies formulas for the probability of choosing each brand. Taking the average of these probabilities over a population implies population demand for that brand. The utility formulas are explained in the Cornerstone Report. Cornerstone Report at 21-24, paras. 49-52.

⁴³⁴ Cornerstone Report at 21-24, 130-33, paras. 48-58, 250-58.

⁴³⁵ The formula for diversion ratios follows from the Cornerstone formula for utility of wireless brands and how price enters into utility. Cornerstone Report at 21-24, 34, paras. 49-58, 75 & n.60.

⁴³⁶ Under this simplification, the model would become the conditional multinomial logit, a popular choice of demand system for academic and antitrust modeling. Werden, G. J., Froeb, L. M., & Tardiff, T. J. (1996). The use of the logit model in applied industrial organization. *International Journal of the Economics of Business*, 3(1), 83-105.

⁴³⁷ Willig, R. D. (1991). Merger analysis, industrial organization theory, and merger guidelines. *Brookings Papers on Economic Activity. Microeconomics*, 1991, 281-332 at 299-305.

⁴³⁸ Cornerstone Report at 35, Exh. 12.

Moreover, this pattern does not hold just at the national level: Staff calculated shares using the more disaggregate markets defined in the NMP data and found a very strong correlation between these shares and the Cornerstone estimates of market-specific diversion.⁴³⁹

126. A model as sophisticated and with as rich a data source as the Cornerstone model should in theory be able to estimate equally rich diversion patterns. However, if the model estimation returns diversion that is proportional to market share, then either the diversion ratios are in reality nearly share-proportional, or other factors are preventing the demographics or quality data from reliably informing the estimation. In this case, we have concerns about certain aspects of the Cornerstone model.

127. For example, the assumed demand model must accurately reflect consumers' true preferences, especially when relevant determinants of demand (like price or quality) change. The Cornerstone model assumes a specific formula for the diversion ratios that both restricts the drivers of difference in diversion ratios to observable individual consumer characteristics and assumes only an indirect effect of these characteristics on price sensitivity, which means that the model will predict non-share proportional diversion only if demographic variables are implausibly predictive of consumer choices.⁴⁴⁰ In addition, the Cornerstone model uses data that are subject to potentially significant measurement error.⁴⁴¹ Further, the NMP sample Cornerstone uses for estimation appears to suffer from selection bias.⁴⁴² Moreover, we agree with commenters that the data do not represent rural areas well,⁴⁴³ and that self-reported incomes from respondents appear inconsistent with U.S. Census incomes in the same locations.⁴⁴⁴ Finally, the estimation must be able to separately identify the impact of the model's explanatory variables on brand choice from all other effects. We agree with commenters that it is not possible in the Cornerstone model to statistically distinguish the impact of network quality on brand choice from the impact of brand choice on network quality or from the potential impact of omitted variables.⁴⁴⁵

⁴³⁹ Staff found a correlation of 0.996 between local market shares and local diversion ratios as estimated by the Cornerstone model. The local market definition used is the same as the Cornerstone model uses, as found in the [BEGIN CONF. INFO.] [END CONF. INFO.]. Cornerstone Report at 24, 110-15, paras. 58, 208-20.

⁴⁴⁰ The Cornerstone diversion ratios can be rewritten as a function of market shares and the covariance and variance of choice probabilities. Consider diversion from brand b to another brand c , with respective market shares S_b and S_c . Each individual i has a probability of choosing either brand b or c of $P_{i|b}$ and $P_{i|c}$, respectively. Then the Cornerstone diversion ratio from brand b to brand c is $\frac{S_c + \text{Cov}[P_{i|b}, P_{i|c}]/S_b}{(1 - S_b) - \text{Var}[P_{i|b}]/S_b}$. The covariance of the choice probabilities, $\text{Cov}[P_{i|b}, P_{i|c}]$, is a measure of how similar the two brands are to consumers. The variance of the choice probability for brand b , $\text{Var}[P_{i|b}]$, is a measure of how important individual-specific variables like demographics are in determining choice of brand b . Assuming the maximum amount of covariance, 1, and the variances Cornerstone estimates for brand choice probabilities, staff found the maximum diversion ratios that the Cornerstone model can generate are limited even for very similar brands. For example, the diversion from Boost to Metro is at most [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%, and from Metro to Boost is at most [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%.

⁴⁴¹ Many demographics are not observed in the data but instead assumed to be equal to the average of the consumer's zip code. Cornerstone Report at 103, paras. 199-201. We note also that the data contain relatively few observations for smaller brands, so Cornerstone imputes network quality data for many locations that have no observations for the smaller brands. Cornerstone Report at 95-97, paras. 185-89.

⁴⁴² The data are [BEGIN CONF. INFO.] [END CONF. INFO.]. Cornerstone Report at 24, para. 58.

⁴⁴³ CWA Dec. 4, 2018 Comments, Appx. B at 4-5, paras. 11-15.

⁴⁴⁴ DISH Feb. 19, 2019 *Ex Parte* Letter, Attach. A at 23-25.

⁴⁴⁵ DISH Dec. 4, 2018 Comments, Attach. at 17; CWA Dec. 4, 2018 Comments, Appx. A at 2, 4-5.

128. We conclude that, based on our detailed evaluation of the record, and our independent analysis of the Cornerstone model, as well the various data sources for measuring consumer substitution patterns, that porting data, while not perfect, is the most reliable diversion proxy available in this record. The other measures proffered by the Applicants' economists—the Cornerstone estimates and the Harris Mobile Insights Survey—do not appear as reliable based on the present record. We find that the millions of observations in the LNP porting database reflect actual consumer substitution behavior better than any other available measure, notwithstanding the limitations discussed above. For purposes of measuring diversion, therefore, while we recognize that the LNP porting data could overstate to some degree the actual diversion ratio between the Applicants, we will continue to rely on these data in our analysis of the likely competitive effects of the proposed transaction.

b. GUPPIs and CMCR

129. Gross upward pricing pressure analysis is an initial competitive effects screen that seeks to quantify the loss of direct competition between merging parties, without accounting for any potential efficiencies or dynamic competitive effects.⁴⁴⁶ The Gross Upward Pricing Pressure Index (GUPPI) has been previously used by the Commission as a measure of the competitive constraint that merging parties exert on each other.⁴⁴⁷ Using available data on prices, profit margins, and customer substitution patterns, GUPPIs provide a simple screen of the likelihood of adverse price effects. Like the HHI screen employed above, however, the GUPPI analysis does not account for potential efficiencies, such as the downward pressure on price associated with the expansion of capacity and the reduction in marginal costs.

130. *Record.* Petitioners argue that the proposed transaction would likely lead to significant upward pricing pressure based on results of a GUPPI analysis.⁴⁴⁸ One analysis estimates postpaid and prepaid GUPPIs at the national geographic market level using publicly available data,⁴⁴⁹ and reports GUPPIs for T-Mobile and Sprint of 9.2% and 9.9%, respectively, in the postpaid segment. In the prepaid segment, it finds GUPPIs of 4.4% and 7.6% for T-Mobile and Sprint, respectively. Compared to the threshold level of 5%, petitioners argue the GUPPI scores indicate that the transaction would likely create significant upward pricing pressure in both the postpaid and prepaid segments.⁴⁵⁰

131. The Applicants did not submit a GUPPI analysis with their initial or subsequent filings. Moreover, the Applicants do not directly respond to opponent's GUPPI analyses, noting instead that these

⁴⁴⁶ Epstein, R. & Rubinfeld, D. (2010). Understanding UPP. *The B.E. Journal of Theoretical Economics*, 10(1)21 at 2-3; Farrell and Shapiro (2010) at 2; Salop, S. & Moresi, S. (2009). Updating the Merger Guidelines: Comments, *Horizontal Merger Guidelines Review Project* (Nov. 9, 2009), https://www.ftc.gov/sites/default/files/documents/public_comments/horizontal-merger-guidelines-review-project-545095-00032/545095-00032.pdf (last visited Oct. 14, 2019) (Salop and Moresi (2009)).

⁴⁴⁷ The GUPPI is not a prediction of the magnitude of upward pricing pressure, but instead provides an indication that the merger is likely to produce significant unilateral effects when compared to a threshold level of 5%. *AT&T-Leap Order*, 29 FCC Rcd at 2740, paras. 70-71; *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16325-26, Appx. C, para. 20. The *2010 DOJ/FTC Horizontal Merger Guidelines* indicate that a merger is unlikely to raise significant unilateral effects concerns if the GUPPI is proportionately small. While the guidelines define proportionately ("in proportion to the lost revenues attributable to the reduction in unit sales resulting from the price increase"), they do not define small. However, a threshold level of 5% is commonly considered. *2010 DOJ/FTC Horizontal Merger Guidelines* at § 6.1, 21; see also Shapiro, C. (2010); Remarks as Prepared for the American Bar Association Section of Antitrust Law Fall Forum, at 24 (Nov. 18, 2010), <http://www.justice.gov/atr/public/speeches/264295.pdf> (last visited Oct. 14, 2019); Farrell and Shapiro (2010) at 14.

⁴⁴⁸ DISH Aug. 27, 2018 Petition at 76-77.

⁴⁴⁹ DISH approximates switching data from either gross subscriber additions (postpaid segment) or market shares (prepaid segment). DISH Aug. 27, 2018 Petition, Brattle Declaration at 43-45. Price and margin data are sourced from 2017 company filings and earnings reports. *Id.* at 29-37.

⁴⁵⁰ DISH Aug. 27, 2018 Petition, Brattle Declaration at 29-37.

and other indices, such as the HHI, are intended primarily as screening tools and do not model the transaction in full.⁴⁵¹ The Applicants argue generally, however, that residual upward pricing pressure does not necessarily mean the transaction is anticompetitive, as standard merger analyses do not account for market entry, product repositioning, or dynamic effects.⁴⁵²

132. *Discussion.* Staff conducted an upward pricing pressure analysis, using data submitted by the Applicants.⁴⁵³ Importantly, like all GUPPIs, the GUPPIs that staff estimated predicted whether the proposed transaction without conditions is likely to raise prices, but made no determination about the magnitude of any upward pricing pressure. Further, the estimated GUPPIs do not take into account potential marginal cost reductions that may result from transaction-specific efficiencies which may partially or fully offset the upward pricing pressure. We note that all else equal, the greater the switching between T-Mobile and Sprint, and the larger the value of each product's profit margins, the greater the likelihood for adverse price effects.⁴⁵⁴

133. The GUPPI, as measured by the value of diverted sales from T-Mobile that are now recaptured by Sprint can be expressed as:

$$GUPPI_T = D_{T \rightarrow S} \times M_S \times P_S / P_T$$

where $D_{T \rightarrow S}$ is the "diversion ratio" from T-Mobile to Sprint, or the fraction of customers leaving T-Mobile that would choose wireless service from Sprint following a price increase by T-Mobile (i.e., the customer switching rate), M_S is the percentage profit margin at Sprint, and P_S and P_T are the prices of the Sprint and T-Mobile products, respectively.⁴⁵⁵ The GUPPI calculation for Sprint is analogous.

134. An alternative measure to understand the competitive constraint that Sprint currently exerts on T-Mobile prices is the Compensating Marginal Cost Reduction (CMCR),⁴⁵⁶ which is closely related to the GUPPI. Given the same assumptions underlying the GUPPI, the CMCR provides the percentage reduction in marginal costs that would be required to occur at both of the combined firms to just offset the upward pricing pressure (i.e., GUPPI = 0%).⁴⁵⁷ The CMCR for T-Mobile can be expressed as follows:

⁴⁵¹ Joint Opposition, Compass Lexecon Declaration at 2-3 & n.4.

⁴⁵² Joint Opposition at 12-13.

⁴⁵³ Staff used data on prepaid and postpaid prices (e.g., ARPU), profit margins derived from Sprint and T-Mobile ordinary course customer lifetime value models, and estimates of consumer switching that are derived from submitted postpaid and prepaid data. T-Mobile Response to Sept. 10, 2018, Data Request, Attach. B; Sprint Response to Sept. 10, 2018, Data Request, Attach. B.

⁴⁵⁴ Staff also accounted for the ability of customers to leave the market entirely following a price increase. The more customers who leave the market, the lower the likelihood of adverse price effects. Staff accounted for market exit by scaling estimated switching rates by a "recapture rate." The recapture rate is defined as the fraction of customers who leave either T-Mobile or Sprint due to a price increase but still remain in the mobile wireless market. All results assume a recapture rate of 90%.

⁴⁵⁵ See 2010 DOJ/FTC Horizontal Merger Guidelines at § 6, 20-22; Salop and Moresi (2009) at 19-20.

⁴⁵⁶ Unlike merger simulation models or elasticity and pass-through rate estimation, the CMCR does not depend on the assumed functional form of demand. The CMCR depends only on diversion ratios or demand elasticities measured pre-merger and does not require knowledge of how these values may differ post-merger. Further, like the GUPPI, the CMCR does not account for potential efficiencies or dynamic competitive effects. Hence, as with the GUPPI, we treat the CMCR as an alternative initial competitive effects screen. See, e.g., Froeb, L., Tschantz, S., & Werden, G. J. (2005). Pass-through rates and the price effects of mergers. *International Journal of Industrial Organization*, 23(9-10), 703-15.

⁴⁵⁷ As the Applicants note, both firms would not be required to exhibit marginal cost reductions as large as the CMCR if one firm were to have marginal cost savings greater than its CMCR as a result of the transaction. Joint

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$$CMCR_T = [M_T * D_{T \to S} * D_{S \to T} + M_S * D_{T \to S} * (P_S / P_T)] / (1 - D_{T \to S} * D_{S \to T})$$

where $D_{S \to T}$ is the fraction of customers leaving Sprint that would choose to buy instead at T-Mobile (i.e., the customer switching rate), M_T is the percentage profit margin at T-Mobile and the remaining variables are as previously defined.⁴⁵⁸ The CMCR for Sprint is analogous.

135. As shown in Fig. 1, staff calculated GUPPIs for T-Mobile and Sprint as [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%, respectively, in the postpaid segment. In the prepaid segment, the estimated GUPPIs were [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% for T-Mobile and Sprint, respectively. As previously noted, adverse unilateral effects are often considered unlikely if the GUPPI is less than 5%. Although just the beginning of our analysis of unilateral price effects, these findings suggest that the proposed transaction—without conditions and ignoring efficiencies—would provide a unilateral incentive to increase price post-transaction.

136. The CMCRs as a percentage of price are also shown in Fig. 1. To offset the upward pricing pressure, staff estimated marginal cost reductions for T-Mobile and Sprint of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of price in the postpaid market, respectively. In the prepaid market, the marginal cost reductions for T-Mobile and Sprint were estimated as [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of price, respectively. We note that both the GUPPI and CMCR calculations do not factor expected quality improvements, expansions into new markets, or conditions that may be imposed on the transaction that would alleviate harm.

Fig. 1: GUPPI and CMCR Calculations
[BEGIN HIGHLY CONF. INFO.]

	Prices	Margins	Switching to Sprint (or T-Mobile)	GUPPI	CMCR
T-Mobile Postpaid					
T-Mobile Prepaid					
Sprint Postpaid					
Sprint Prepaid					

Note: Prices and profit margins correspond to the 2019 values included in the Applicants' economic model and Financial Backend model. Diversion based on porting data is aggregated from monthly and county level data to a weighted national average using submitted subscriber data as weights. LNP ratios derived from Applicants' submitted data.

[END HIGHLY CONF. INFO.]

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Opposition at para. 84.

⁴⁵⁸ Werden, G.J. (1996). A robust test for consumer welfare enhancing mergers among sellers of differentiated products. *Journal of Industrial Economics* 44(409) 409-13, Equation 5; Werden, G. J., & Froeb, L. M. (2011). Choosing among tools for assessing unilateral merger effects. *European Competition Journal* 7(2), 155-78.

c. Merger Simulation and Predicted Price Effects

137. Merger simulations are commonly used by the Commission and antitrust regulators worldwide to evaluate potential unilateral effects that may arise from the elimination of competition between merging parties.⁴⁵⁹ A merger simulation attempts to evaluate the pricing and other competitive incentives of the merging parties and their competitors, and it relies on data or assumptions about factors like demand, product characteristics, the nature of competition in the market, and predicted marginal cost savings resulting from the proposed transaction.

138. The Applicants submitted a merger simulation (the IKK model)⁴⁶⁰ to support their claim that the proposed transaction will increase consumer welfare in every year modeled such that no conditions or divestitures would be necessary.⁴⁶¹ That result depends, however, on certain modeling assumptions and choices with which we have concerns, as we discuss below. As a result, in our evaluation of the IKK model, we predict it is likely that there would be harmful price effects for the transaction without conditions. We recognize that these effects will be mitigated by dynamic competitive benefits and quality improvements that a static merger simulation fails to take into account. However, we ultimately conclude that the divestiture of Boost Mobile is necessary to ensure that the transaction will not substantially lessen competition.

139. *Record.* Both the Applicants and DISH submitted merger simulations that estimate the likely economic effect on consumers from the proposed transaction. Each of these models assesses the likely competitive effects of the transaction absent conditions, in which T-Mobile would acquire both the Sprint and Boost Mobile brands. DISH asserts that its model (HBVZ model)⁴⁶² demonstrates that the proposed transaction would result in higher prices for New T-Mobile consumers.⁴⁶³ The Applicants assert their simulation demonstrates that the proposed transaction is procompetitive and claim that the HBVZ simulation would yield a similar result after key modifications.⁴⁶⁴

140. **The HBVZ model.** The HBVZ model simulates nationwide mobile wireless competition, evaluating retail postpaid and prepaid brands in separate national markets.⁴⁶⁵ Depending on the level of demand, the HBVZ analyses estimate weighted average price increases for T-Mobile and

⁴⁵⁹ See, e.g., 2010 DOJ/FTC Horizontal Merger Guidelines at § 6.1, 21; AT&T-DIRECTV Order, 30 FCC Rcd at 9140, para. 86; AT&T-T-Mobile Staff Report, 26 FCC Rcd at 16190-91, Appx. C, para. 29; EchoStar-DIRECTV HDO, 17 FCC Rcd at 20574, paras. 158-69, Appx. E; *U.S. v. H&R Block, et al.*, Civ. Action No. 11-00458 at 78 (BAH) (Nov. 11, 2011).

⁴⁶⁰ The Applicants submitted a merger simulation model by Mark Israel, Michael Katz, and Bryan Keating. Joint Opposition, Compass Lexecon Declaration. During the proceeding, the Applicants submitted a number of different merger simulations, including modifications and revisions to earlier-filed modeling. For convenience, we use the term “IKK model” when referring broadly to the collective network modeling relied upon by the Applicants as it evolved over the course of the proceeding.

⁴⁶¹ See, e.g., Joint Opposition, Compass Lexecon Declaration at 86, Table 16; T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, Attach. 1 at 1, Fig. 1.

⁴⁶² DISH submitted a merger simulation model by Joseph Harrington, Coleman Bazelon, Jeremy Verlinda, and William Zarakas. DISH Aug. 27, 2018 Petition, Brattle Declaration.

⁴⁶³ DISH Aug. 27, 2018 Petition, Brattle Declaration at 76-78.

⁴⁶⁴ Joint Opposition, Compass Lexecon Declaration at paras. 5-6.

⁴⁶⁵ DISH calibrates consumer demand using either the Antitrust Logit Model (ALM) or the Proportionally Calibrated Always Ideal Demand System (PC-AIDS). According to DISH, both models share the same structural assumptions and input requirements but differ on the degree of consumer response to price changes. Therefore, the two models represent an upper and lower bound to predicted price effects from the merger. DISH Aug. 27, 2018 Petition, Brattle Declaration at 27, 48. Crooke, P., Froeb, L., Tschantz, S., and Werden G.J. (1999). Effects of assumed demand form on simulated postmerger equilibria. *Review of Industrial Organization* 15(3), 205-17.

Sprint brands of between 4.8% and 8.8%, respectively, in the postpaid segment and between 4.2% and 10.4%, respectively, in the prepaid segment.⁴⁶⁶

141. The Applicants criticize elements of the HBVZ model.⁴⁶⁷ For example, the Applicants claim that cost estimates used in the HBVZ model (such as the cost of adding a radio or the number of LTE channels) are not substantiated.⁴⁶⁸ The Applicants also argue that the HBVZ model improperly fails to allow for transaction-specific efficiencies or quality improvements that would be passed on to consumers.⁴⁶⁹ The Applicants claim that transaction-specific marginal cost efficiencies would counterbalance any predicted price effects.⁴⁷⁰ The Applicants also claim that the HBVZ model would demonstrate consumer benefits if transaction-specific efficiencies are credited.⁴⁷¹ In their replication of the HBVZ model, the Applicants maintain that efficiencies of approximately \$3 per-subscriber, per-month would be sufficient to eliminate the simulated upward pricing pressure.⁴⁷² In addition, the Applicants object to the HBVZ model's separate modelling of the postpaid and prepaid retail markets, which the Applicants claim may not adequately capture consumer substitution patterns between providers' prepaid and postpaid products.⁴⁷³ The Applicants indicate that modeling separate markets also improperly assumes that the pricing decisions that brands make in the postpaid product market have no effect on the equilibrium decisions that brands make in the prepaid product market.⁴⁷⁴

142. **The IKK model.** According to the Applicants, the IKK model, which employs a nested logit demand structure, provides a more comprehensive approach to modeling the strategic interaction between firms in the wireless industry.⁴⁷⁵ Unlike the HBVZ model, the IKK simulation defines a product market in which prepaid and postpaid brands compete nationally,⁴⁷⁶ which, the Applicants assert, allows for richer substitution patterns between products.⁴⁷⁷ In particular, the IKK model incorporates five groups of wireless products,⁴⁷⁸ where products within the same group—or nest—are treated as closer substitutes than products in another group.⁴⁷⁹

⁴⁶⁶ DISH Aug. 27, 2018 Petition at 77-78.

⁴⁶⁷ See, e.g., Joint Opposition, Compass Lexecon Declaration; Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. B, Extension of the Israel, Katz, and Keating Analysis To 2019-2020, at 1-3 (filed Feb. 21, 2019) (T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach.).

⁴⁶⁸ Joint Opposition, Compass Lexecon Declaration at para. 9.

⁴⁶⁹ Joint Opposition, Compass Lexecon Declaration at paras. 2, 15, 28.

⁴⁷⁰ Joint Opposition, Compass Lexecon Declaration at paras. 6, 29 & n.32.

⁴⁷¹ Joint Opposition, Compass Lexecon Declaration at para. 19.

⁴⁷² Joint Opposition, Compass Lexecon Declaration at para. 6.

⁴⁷³ Joint Opposition, Compass Lexecon Declaration at para. 33.

⁴⁷⁴ Joint Opposition, Compass Lexecon Declaration at para. 10.

⁴⁷⁵ Joint Opposition at 9-12.

⁴⁷⁶ Joint Opposition, Compass Lexecon Declaration at para. 33.

⁴⁷⁷ Joint Opposition, Compass Lexecon Declaration at para. 34. Under the alternative approaches in the HBVZ model, substitution between products (e.g., diversion) is proportional either to quantity share or revenue share. DISH Aug. 27, 2018 Petition, Brattle Declaration at 48 & n.63. In general, the more substitution or diversion between T-Mobile and Sprint brands, the greater the predicted harm from the unilateral effects of the proposed transaction.

⁴⁷⁸ Products are segmented into two prepaid nests, two postpaid nests, and a fifth nest that represents a choice that is not explicitly modeled (i.e., the outside good).

⁴⁷⁹ Joint Opposition, Compass Lexecon Declaration at para. 34. Diversion is proportional to share for products

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143. The Applicants use the outputs of the Network Build Model to calculate the marginal cost value per subscriber as inputs into the IKK model.⁴⁸⁰ Specifically, the Network Build Model, along with the Financial Backend Model, calculates the marginal cost per gigabyte of usage of the network, which is then converted to the monthly marginal cost per additional subscriber based on the amount of expected usage per subscriber per month, as discussed in detail in the Technical Appendix.⁴⁸¹

144. The first of several iterations of the IKK model submitted by the Applicants predicts competitive effects for the period beginning December 31, 2021, when the Applicants claimed the transaction integration process would be substantially complete, and continues through the end of 2024.⁴⁸² The IKK model was later updated to also include the transaction integration period (2019-2020), when the Applicants acknowledge anticipated efficiencies would likely be lower.⁴⁸³ The submissions are substantially similar in their implementation, and we refer to them interchangeably as the IKK model. The proposed transaction is simulated in each year using projected future values of the model's key variables (e.g., prices, shares, marginal cost reductions and margins) in an attempt to replicate the dynamic nature of the industry.⁴⁸⁴ The Applicants claim that the forward-looking methodology allows them to capture a more complete view of benefits from the buildout of New T-Mobile's mature network through 2024.⁴⁸⁵ Depending on the product, network, and year modeled, the Applicants claim marginal cost savings of between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] and \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per-subscriber, per-month.⁴⁸⁶

145. The Applicants claim that the IKK model demonstrates that the transaction-specific cost efficiencies and quality benefits of an unconditioned transaction outweigh any potential anticompetitive harm.⁴⁸⁷ Citing the IKK model, the Applicants argue that the proposed transaction is pro-competitive because mobile wireless industry prices would fall and output would rise in comparison to the wireless industry without the proposed transaction.⁴⁸⁸ The Applicants thus contend that by the end of 2021,

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within the same nest; and diversion to products in other nests is lower.

⁴⁸⁰ Joint Opposition, Compass Lexecon Declaration at para. 53. *See infra* Appx. F: Technical Appendix.

⁴⁸¹ Joint Opposition, Compass Lexecon Declaration at para. 87. *See infra* Appx. F: Technical Appendix.

⁴⁸² Joint Opposition, Compass Lexecon Declaration at para. 4. Network efficiencies begin to accrue at the end of 2021, while annual run-rate non-network cost savings of approximately \$2.4 billion are achieved by 2024. Joint Opposition, Compass Lexecon Declaration at paras. 4, 102.

⁴⁸³ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 1-3.

⁴⁸⁴ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 26. Anticipated network marginal cost efficiencies come from the Applicants' Network Buildout and Financial Backend models. Assumed non-network cost savings—such as reductions in dealer commissions, device costs, and insurance costs associated with device repair—are also incorporated into the simulation on a per-subscriber, per-month basis. Joint Opposition, Compass Lexecon Declaration at para. 103.

⁴⁸⁵ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 26.

⁴⁸⁶ Joint Opposition, Compass Lexecon Declaration at para. 122, Table 12; T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 9.

⁴⁸⁷ Joint Opposition, Compass Lexecon Declaration at paras. 5-6. Although not initially incorporated in the Applicants' merger simulation, claimed consumer benefits from improvements in network quality were integrated in a subsequent update to the model. Joint Opposition, Compass Lexecon Declaration at para. 133; T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 26. In most scenarios, the IKK model predicts that marginal cost efficiencies are sufficiently high for the proposed transaction to be pro-competitive, but in some instances, quality improvements—and the value that consumers place on those improvements—are necessary to avoid a finding of predicted harm. Joint Opposition, Compass Lexecon Declaration at paras. 6, 115.

⁴⁸⁸ Joint Opposition, Compass Lexecon Declaration at paras. 20-22.

consumers would benefit from increased competition, improved quality and lower prices, such that no divestitures would be necessary.⁴⁸⁹

146. The Applicants do not report price effects for the proposed transaction, but instead calculate efficiency thresholds equal to the dollar amounts by which quality must rise to make consumers at least as well off after the proposed transaction as before the proposed transaction.⁴⁹⁰ They also report the net present value of annual consumer welfare effects. In their initial filing, which did not include 2019-2020, the Applicants state that efficiencies of approximately \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per-subscriber, per-month would be sufficient for the proposed transaction to be procompetitive without conditions.⁴⁹¹ For the filing that includes a commitment not to raise prices in 2019 and 2020, the IKK model calculates the net present value of consumer welfare benefits in a baseline specification of between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] billion and \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] billion, depending on the discount rate and terminal value of projected consumer benefits.⁴⁹²

147. DISH submitted numerous comments analyzing the IKK model.⁴⁹³ In addition to disagreeing with IKK's choice of data sources to calculate diversion ratios, DISH primarily comments on: (1) the Applicants' quantification of harm and the application of an aggregate welfare standard; and (2) the merger-specificity and calculation of network and non-network efficiencies. DISH criticizes what it says is the IKK model's failure to report standard price effects as an output of the modeling.⁴⁹⁴ While DISH also disputes the overall magnitude of the claimed benefits, it argues that the IKK model's methodology of reporting average consumer welfare effects obscures the more disaggregated anticompetitive effects that fall on some consumers net of efficiencies.⁴⁹⁵ DISH argues that even crediting cost savings in full in each model year would result in Sprint consumers facing predicted price increases.⁴⁹⁶ DISH maintains that its analysis shows that Sprint consumers would experience price increases through 2024, even under more favorable assumptions regarding consumer switching patterns and efficiencies.⁴⁹⁷ Moreover, DISH argues that consumers who are most affected by the price increase would be unwilling to pay for the network quality improvements the Applicants claim would result from the proposed transaction.⁴⁹⁸

⁴⁸⁹ Joint Opposition, Compass Lexecon Declaration at paras. 20-22.

⁴⁹⁰ Joint Opposition, Compass Lexecon Declaration at paras. 45-46.

⁴⁹¹ Joint Opposition, Compass Lexecon Declaration at para. 6.

⁴⁹² T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 15.

⁴⁹³ DISH Reply, Brattle Reply Declaration; DISH Jan. 28, 2019 *Ex Parte* Letter; Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Feb. 4, 2019) (DISH Feb. 4, 2019 *Ex Parte* Letter); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Feb. 7, 2019) (DISH Feb. 7, 2019 *Ex Parte* Letter); DISH Feb. 19, 2019 *Ex Parte* Letter; DISH Mar. 18, 2019 *Ex Parte* Letter; Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Apr. 16, 2019) (DISH Apr. 16, 2019 *Ex Parte* Letter); DISH May 1, 2019 *Ex Parte* Letter.

⁴⁹⁴ DISH Reply, Brattle Reply Declaration at 11.

⁴⁹⁵ DISH Reply, Brattle Reply Declaration at 7; *see also, e.g.*, Altice Information Request Response, Cragg/Garcés Declaration at 28 (Jan. 28, 2019) (expressing similar concerns about failure to present the modeled effects of the transaction on a more disaggregated basis).

⁴⁹⁶ DISH Reply, Brattle Reply Declaration at 27; DISH Mar. 18, 2019 *Ex Parte* Letter at 7.

⁴⁹⁷ DISH Mar. 18, 2019 *Ex Parte* Letter at 7.

⁴⁹⁸ DISH Feb. 19, 2019 *Ex Parte* Letter at 3-5; DISH Mar. 18, 2019 *Ex Parte* Letter at 7.

148. Petitioners also question the extent to which the IKK model depends on the results of the Applicants' engineering modeling, and they further question the results of the IKK model by arguing that the engineering modeling overstates the likely network benefits and efficiencies. For example, DISH argues that the Applicants overstate the benefits from improvements in the capacity offered and carried by New T-Mobile.⁴⁹⁹ DISH also criticizes the Applicants for what it says is a failure to incorporate the planned acquisition of additional spectrum by standalone T-Mobile and Sprint into their engineering modeling.⁵⁰⁰ In DISH's view, including additional spectrum in the engineering modeling would reduce network efficiencies by billions of dollars (**[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**).⁵⁰¹ DISH further argues that reasonable adjustments to the IKK model's marginal cost calculations reflecting additional adjustments to the engineering modeling eliminates a significant amount of the proposed transaction's claimed benefits.⁵⁰²

149. Petitioners also criticize the Applicants' pricing commitments.⁵⁰³ According to these criticisms, the Applicants needed to impose an external constraint ensuring fixed prices in the IKK model during the integration period of 2019 through 2021 for the IKK model to show no anti-competitive effects during that transition period. The Applicants counter that under conservative assumptions, consumers would benefit from the proposed transaction in each year through 2024.⁵⁰⁴ They also dispute the existence of significant upward pricing pressure, and contend that net effects should be considered—including cost efficiencies, quality improvements, and expansion into new product markets.⁵⁰⁵

150. *Discussion.* Staff carefully evaluated the IKK model and have concerns with some of the assumptions used in the model that, staff's analysis suggests, are material to the model's conclusion that the transaction would be competitively beneficial even without the divestiture of Boost. The IKK model's findings that the proposed transaction would be welfare enhancing in every year are driven by at least three modeling assumptions that require closer scrutiny: (1) for the first two years, the IKK model assumes the existence of the Applicants' pricing commitment; (2) the IKK model assumes relatively low diversion between the Applicants' brands, including between their prepaid Boost Mobile and Metro brands; and (3) the IKK model's reduction in standalone T-Mobile's marginal costs raises certain questions that we must examine more closely.⁵⁰⁶

⁴⁹⁹ DISH Reply, Brattle Reply Declaration at 31.

⁵⁰⁰ DISH Reply at 85-86. Spectrum is among the resources the network build model relies on to reduce congestion, it directly affects the usage cost per-subscriber, per-month for both the standalone networks and New T-Mobile. *See, e.g.*, Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, AU Docket No. 18-85 (filed July 23, 2018); Sprint Corporation Petition for Expedited Declaratory Ruling or Waiver Regarding Joint Bidding and Request for Limited Waiver of Auction Form Rules, AU Docket No. 18-85 (filed Aug. 6, 2018).

⁵⁰¹ DISH Reply, Brattle Reply Declaration at 36.

⁵⁰² DISH maintains that other adjustments it makes to the engineering modeling, such as changing the level of spectral efficiency for 2.5 GHz spectrum, reduce the expected efficiencies to a fraction of what is claimed in the Joint Opposition. DISH Reply, Brattle Reply Declaration at 32-37; DISH Feb. 4, 2019 *Ex Parte* Letter at 7; DISH May 1, 2019 *Ex Parte* Letter at 8-9.

⁵⁰³ DISH Feb. 7, 2019 *Ex Parte* Letter at 1-7; DISH May 1, 2019 *Ex Parte* Letter at 3.

⁵⁰⁴ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-4 (filed Mar. 11, 2019) (T-Mobile Mar. 11, 2019 DISH Response *Ex Parte* Letter).

⁵⁰⁵ T-Mobile Mar. 11, 2019 DISH Response *Ex Parte* Letter at 2, 5-6. *See also infra* section V.B.6: Commitments to Address the Potential for Lost Price Competition.

⁵⁰⁶ The IKK model incorporates a market structure that leads to relatively restrictive substitution patterns between products in the market. Staff recoded the simulation to allow for more flexible assumptions about consumer switching between products. Specifically, staff reduced the number of nests (e.g., product groups) to four: prepaid, postpaid, MVNO, and the outside good. The results indicate that the nesting structure itself has no substantive impact on the direction of the model's ultimate predicted harm or benefit in any given year.

151. Further, the IKK baseline model specification incorporates a quantitative estimate of certain quality benefits of the proposed transaction.⁵⁰⁷ The Applicants argue that static merger simulations generally do not adequately capture the benefit of quality improvements when evaluating the net effect of the transaction.⁵⁰⁸ We agree. Consumers' valuation of increased throughput from New T-Mobile's mature 5G network may indicate the transaction is welfare-enhancing even if claimed efficiencies are not sufficient to counterbalance post-transaction price increases, according to the Applicants.⁵⁰⁹ As noted, staff recognizes that generally quality improvements are not adequately accounted for in static merger simulations, and had questions about the IKK modelling approach to incorporating consumers' willingness to pay for quality improvements. Thus, staff did not credit it in our analysis.⁵¹⁰ Staff instead recoded the IKK model to estimate price effects without incorporating the Nevo et al. (2016) estimates. We recognize that the results likely overstate harms in terms of the quality-adjusted price effects.

152. **Near-term price commitment.** The results of the IKK model for 2019 and 2020—including whether the proposed transaction is expected to be welfare-enhancing—is sensitive to the Applicants' decision to superimpose a constraint on pricing based on a commitment made in the record. Consistent with T-Mobile's public commitment to "make available the same or better rate plans as those offered by T-Mobile or Sprint . . . for three years following the merger," the IKK model imposes retail price constraints on rate plans for T-Mobile and Sprint products after the proposed transaction.⁵¹¹ The IKK model also considers the alternative case in which the retail price constraints are removed to illustrate a lower bound on consumer benefits.⁵¹²

153. The price commitment is a potential remedy for harms arising from the proposed transaction, rather than a constraint appropriate for inclusion in economic modeling designed to predict the market changes resulting from the proposed transaction.⁵¹³ As the Applicants recognize, merger simulations make predictions about the effects of a proposed transaction on competition and consumer

⁵⁰⁷ Nevo, A., Turner, J. L., & Williams, J. W. (2016). Usage-based pricing and demand for residential broadband. *Econometrica*, 84(2), 411-443 (Nevo et al. (2016)).

⁵⁰⁸ Joint Opposition, Compass Lexecon Declaration at 5.

⁵⁰⁹ See Joint Opposition, Compass Lexecon Declaration at para. 6.

⁵¹⁰ In the backup code and data underlying the Applicants' model filed Feb. 21, 2019, the Applicants incorporate consumer valuation of quality improvements using an exogenous shift in demand for T-Mobile and Sprint products based on the Nevo et al. (2016) estimates of consumer valuation of post-transaction quality improvements. Thus, demand for the Applicants' brands increases post-transaction and quality-loving consumers may be better off on average. The IKK model's Nevo et al. (2016) methodology has a counterintuitive effect on predicted price increases, however, because the demand for quality pushes prices to increase more than they otherwise would have absent the incorporation of the taste for quality. In aggregate, price increases are higher when the merger is simulated with the Nevo et al. (2016) quality valuations than when the merger is simulated without them.

⁵¹¹ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 3.

⁵¹² T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 3.

⁵¹³ In its review of proposed transactions, the Commission begins its analysis by considering "whether the proposed transaction complies with the specific provisions of the Act, other applicable statutes, and the Commission's rules," and if so, it then "considers whether the transaction could result in public interest harms by substantially frustrating or impairing the objectives or implementation of the Act or related statutes." *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585-86, paras. 8-9. In the event the Commission finds harms, it then determines whether "any such harms have been ameliorated by narrowly tailored conditions." *Id.* at 9586, para. 10; see also e.g., *Applications of Western Wireless Corporation and ALLTEL Corporation For Consent to Transfer Control of Licenses and Authorizations*, Memorandum Opinion and Order, 20 FCC Rcd 13053, 13112, paras. 159-60 (2005) (After having "found that the Applicants' proposed transaction would pose significant competitive harms" that "would not be outweighed by the proposed transaction's alleged public interest benefits," the Commission then considered "conditions [] tailored to address the specific harms anticipated.").

welfare.⁵¹⁴ Imposing a price commitment departs from the key analysis of the unilateral effects arising from the proposed transaction. In Fig. 4 below, we present the IKK model's results including staff modifications to several assumptions and excluding the price commitment. Adjusting for these changed assumptions, the model predicts larger potential post-transaction price effects for the Applicants' brands in 2019 and 2020 before efficiencies have been fully realized from network integration.⁵¹⁵

154. **Diversion.** The Applicants rely on a variety of data sources for the calculation of diversion ratios used to calibrate the IKK model,⁵¹⁶ but significantly, they do not use LNP porting data in their analysis. For the reasons discussed above, we find that relative to the various datasets that the Applicants used to predict diversion rates, LNP data are the more reliable record data to measure diversion. Diversion ratios based on the LNP data indicate that the Applicants' model would tend to understate harms relative to what the use of porting data would imply, particularly for the Applicants' prepaid brands.⁵¹⁷ Staff modified the IKK model by calculating diversion between the Applicants' prepaid and postpaid products using porting data submitted by the Applicants.⁵¹⁸

155. Staff analysis of porting data (shown in Fig. 2) estimated prepaid diversion from T-Mobile to Sprint to be [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% from Sprint to T-Mobile.⁵¹⁹ Postpaid diversion from T-Mobile to Sprint is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% from Sprint to T-Mobile. These values are significantly higher than the values calculated from the Applicants' preferred data sources. For instance, porting-based diversion ratios indicate 39.3% to 258.1% more switching between the Applicants' products than Harris ratios would imply, and from 45.5% to 1142.0% more substitution between the Applicants' products than indicated by the Cornerstone diversion ratios. As discussed above, we find that porting data is the most reliable proxy for diversion available in this record.

⁵¹⁴ Joint Opposition, Compass Lexecon Declaration at para. 19.

⁵¹⁵ Even under the Applicants' preferred specification—including crediting efficiencies in full, using Cornerstone-based or Harris Mobile Insights diversion, and incorporating Nevo et al. (2016) estimates into the simulation procedure—the IKK model predicts price effects for the Sprint brands in 2021 through 2024; the near-term price commitment limits this effect in 2019 and 2020.

⁵¹⁶ The parties utilize diversion ratios based on four sources: 1) the Cornerstone Report; 2) the Harris Mobile Insights Survey; 3) the Sprint Brand IQ survey, and; 4) T-Mobile estimates of gross additions and deactivations. The two survey sources contain questions which identify previous and current mobile service providers for consumers who have recently switched. The number of gross additions and deactivations are drawn from internal consumer databases. The Applicants' baseline merger simulation specification relies on Cornerstone estimates. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. B at 12-13. In previous filings, the Applicants relied on estimates from Harris Survey data in their baseline specification; the other two sources of diversion serve as robustness checks to the sensitivity of that baseline model. Joint Opposition, Compass Lexecon Declaration at para. 178 & n.181.

⁵¹⁷ An analysis of a Commission database of monthly LNP data from 2011 through 2017, which includes each instance of a consumer porting a phone number from one mobile provider to another and indicates both the origin and destination provider shows that [BEGIN LNP/NRUF HIGHLY CONF. INFO.] [END LNP/NRUF HIGHLY CONF. INFO.], and vice versa. It also indicates that the degree of switching between the Applicants has [BEGIN LNP/NRUF HIGHLY CONF. INFO.] [END LNP/NRUF HIGHLY CONF. INFO.].

⁵¹⁸ T-Mobile Response to Sept. 10, 2018, Data Request, Attach. B; Sprint Response to Sept. 10, 2018, Data Request, Attach. B.

⁵¹⁹ [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

Fig. 2: Diversion Ratios by Data Source
[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

156. **Demand and Marginal Cost Savings.** The IKK model results also depend heavily on the magnitude of claimed marginal cost reductions derived from the Applicants' engineering and financial modeling. The IKK model predicts that substantial post-merger efficiencies realized from 2021 to 2024 will be passed through to consumers in the form of lower prices. The Applicants estimate that efficiencies will lead to marginal cost savings in the post-integration period of \$**[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** to \$**[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** per subscriber, per-month in the baseline scenario.⁵²⁰

157. While we are confident that the transaction will lead to significant marginal cost savings, developing a precise estimate of those savings is a difficult and inherently uncertain task. In the first place, the degree of marginal cost savings depends in part on estimating demand for network usage years in the future, something it is not possible to do with a high degree of certainty. As discussed in the Technical Appendix, there is a wide range of demand forecasts in the record, and we do not know for certain which one, if any, will turn out to be accurate.⁵²¹ But we do know that as demand increases, the marginal cost savings increase. And as demand decreases, the marginal cost savings decrease.

158. Additionally, as discussed in the Technical Appendix, while we agree that the merger will allow the Applicants to realize substantial efficiencies, we are not confident that the Applicants have accurately quantified the magnitude of those efficiencies.⁵²² Attempting to exactly calculate the amount of any overestimate is a difficult task. But obviously, the greater any such overestimate, the smaller the marginal cost savings will be.

159. For these reasons, staff have calculated marginal cost efficiencies for three scenarios. While we cannot say for certain which scenario is most likely to be accurate, taken together, they show a range of possible outcomes. In the first scenario (Fig. 3a), staff replicated the Applicants' February 2019 submission. Thus, staff relied on the Applicants' demand estimates in which New T-Mobile would maintain per subscriber demand faced by the standalone firms (a result of applying the Applicants' cost constraint—the assumption about how much cost the market would bear)⁵²³ and credited all Applicant network marginal cost efficiencies per the Applicants' February 2019 submission. For the year 2024, this would lead to a quantity demanded of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** GB, which is substantially lower than the Applicants' relaxed usage demand estimate of

⁵²⁰ Joint Opposition, Compass Lexecon Declaration at para. 110.

⁵²¹ See *infra* Appx. F: Technical Appendix.

⁵²² See *infra* Appx. F: Technical Appendix.

⁵²³ Joint Opposition, Ewens Reply Declaration at 14-15, paras. 31-32.

[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB—again, a result of the Applicants’ cost constraint.⁵²⁴ To the extent that the relaxed usage demand estimate turned out to be more accurate, marginal cost savings would be substantially larger.

160. In the second scenario (Fig. 3b), staff credited only 50% of the Applicants’ claimed network marginal cost efficiencies from the February 2019 submission. We note that staff did not model any potential increased consumer usage as a result of the marginal cost reduction due to limitations in the information provided, although applying the Applicants’ other modeling assumptions (data demand, cost constraint, and the Network Build Model’s solutions to congestion) would result in higher consumer usage and a higher marginal cost at that usage. In the third scenario (Fig. 3c), staff modified the first scenario (Fig. 3a) by reducing the demand estimate all the way down to the Sprint demand forecast.

161. The marginal cost savings for the three scenarios that were simulated are shown in Figs. 3a, 3b, and 3c. As shown below, staff estimated that marginal cost savings in the post-integration period range from \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] to \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber, per-month in the baseline scenario. In all three scenarios, substantial marginal cost savings are predicted.

Fig. 3a: Marginal Cost Savings; New T-Mobile Baseline Scenario
[BEGIN HIGHLY CONF. INFO.]

			2019	2020	2021	2022	2023	2024
Postpaid	Sprint	Non-Network						
		Network						
		Total						
T-Mobile	Sprint	Non-Network						
		Network						
		Total						
Prepaid	T-Mobile	Non-Network						
		Network						
		Total						

Source: T-Mobile Feb. 21, 2019 Ex Parte Letter, Compass Lexecon Attach. at Table 1, 13.

Note: We include roaming efficiencies along with other marginal network cost efficiencies.

[END HIGHLY CONF. INFO.]

⁵²⁴ The Applicants claim that relaxing usage restrictions would improve service quality that would benefit consumers, leading to greater demand for data than if the Applicants were to maintain usage by the standalone firms. Joint Opposition, Compass Lexecon Declaration, at 53-54, para. 77.

Fig. 3b: Marginal Cost Savings; New T-Mobile Baseline Scenario at 50% of Claimed Efficiencies [BEGIN HIGHLY CONF. INFO.]

		2019	2020	2021	2022	2023	2024
Postpaid	Sprint	Non-Network					
		Network					
		Total					-
T-Mobile		Non-Network					
		Network					
		Total					-
Prepaid	Sprint	Non-Network					
		Network					
		Total					-
T-Mobile		Non-Network					
		Network					
		Total					-

Note: Fig. 4 includes modifications Commission staff made to network and non-network efficiencies. We include roaming efficiencies along with other marginal network cost efficiencies.

[END HIGHLY CONF. INFO.]

Fig. 3c: Marginal Cost Savings; New T-Mobile Baseline Scenario with Sprint-Demand Adjustment⁵²⁵ [BEGIN HIGHLY CONF. INFO.]

		2019	2020	2021	2022	2023	2024
Postpaid	Sprint	Non-Network					
		Network					
		Total					-
T-Mobile		Non-Network					
		Network					
		Total					-
Prepaid	Sprint	Non-Network					
		Network					
		Total					-
T-Mobile		Non-Network					
		Network					
		Total					-

Note: Fig. 4 includes modifications Commission staff made to network and non-network efficiencies. We include roaming efficiencies along with other marginal network cost efficiencies.

[END HIGHLY CONF. INFO.]

162. **Predicted Effects of the Transaction on Consumers.** Staff then modified the IKK simulation in four ways to evaluate the likely competitive effects of the proposed transaction absent any conditions. The modifications are as follows: (1) staff removed the price commitment from the modeling; (2) staff predicted price effects without incorporating Nevo et al. (2016) estimates into the simulation procedure; (3) staff used porting data to measure diversion;⁵²⁶ and (4) staff used various sets of marginal

⁵²⁵ Sprint demand is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB in 2024 and is based on the assumption that initially “a 5G smart phone consumes [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% more data than a 4G smart phone if 5G coverage reaches 100% of 4G coverage.” See SPR-FCC-04338918 at 5.

⁵²⁶ T-Mobile Response to Sept. 10, 2018, Data Request, Attach. B; Sprint Response to Sept. 10, 2018, Data Request, Attach. B. The Applicants’ submitted data tables. Prepaid porting-based diversion ratios between T-Mobile and Sprint are reduced to 55% of their calculated values to maintain model integrity.

cost efficiencies as shown in Figs. 3a, 3b, and 3c above.⁵²⁷ Staff recoded the IKK model to report estimates of predicted price changes from the proposed transaction in each year from 2019 through 2024. In all of the simulations run, we report both industry-wide and brand-level price effects. We first report the results where the only change made to the IKK model is to replace their measure of diversion with the LNP data and to apply Applicants’ cost constraint, per Fig. 3a.⁵²⁸ Second, we report the results crediting 50% of the claimed efficiencies but without modeling changes in data usage, per Fig. 3b. Third, we report the results using Sprint-adjusted demand, again crediting all other claimed network efficiencies.

163. In the absence of any conditions, staff found that by simply using porting data, the model predicts both industry-wide and brand-level price effects, before considering quality and dynamic competitive benefits as shown in Fig. 4.⁵²⁹ In our analysis of the claimed marginal cost efficiencies from Fig. 3b and Fig. 3c and the resulting effects on price, staff found that the transaction will likely lead to price increases in each year modeled. At the industry-level, staff estimated overall weighted average price increases of between [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% over this time period under the various simulations run.⁵³⁰ In terms of the weighted average price effects for the Applicants’ brands, staff estimated the smallest price increase for the Applicants’ brands to be [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% and the highest price increase to be [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% under the various simulations run.

Fig. 4: Weighted Average Price Effects for New T-Mobile Brands under the Adjusted IKK Model
[BEGIN HIGHLY CONF. INFO.]

Efficiencies	Price effects	2019	2020	2021	2022	2023	2024
100% of claimed efficiencies	Applicant						
	Industry						
50% of claimed efficiencies	Applicant						
	Industry						
Sprint-Demand efficiencies	Applicant						
	Industry						

Note: Applicant price effects are a weighted average across all six of the Applicants' brands using model-predicted post-merger market shares. Industry price effects are the percentage difference in share-weighted pre-merger industry average price and the share-weighted post-merger industry average price.

[END HIGHLY CONF. INFO.]

4. Quality Benefits and Dynamic Competition

164. The Applicants also submitted economic declarations arguing that mobile wireless competition is dynamic, and that this dynamic competition is a factor that offsets any prospective harms that might be evident from any static pricing incentives analysis.⁵³¹ While we are not persuaded that the

⁵²⁷ As previously noted, IKK calculated critical marginal cost efficiencies and the net present value of annual consumer welfare effects in lieu of price effects.

⁵²⁸ Note that we do not credit all non-network efficiencies in the simulations run where we analyze the marginal cost savings for the reasons discussed in section VII.C: Non-Network Efficiencies.

⁵²⁹ As previously noted, staff did not include the price commitment or Nevo et al. in any of the simulations run.

⁵³⁰ Industry level price effects are obtained by taking the percentage difference in the share-weighted, pre-merger industry average price and the share-weighted, post-merger industry average price.

⁵³¹ See generally Public Interest Statement, Appx. G, Declaration of David Evans (June 18, 2018) (Public Interest Statement, Evans Declaration); Public Interest Statement, Salop/Sarafidis Declaration; Joint Opposition, Appx. G,

(continued....)

competitive benefits from increased quality and dynamic competition outweigh and totally counterbalance the price increases predicted by our static competition analyses in the absence of conditions, we do recognize that static analyses are unable to fully capture these competitive effects that the record suggests tend to counteract the predicted price effects. We agree with the Applicants that the proposed transaction will significantly increase New T-Mobile's coverage, speed, and capacity, which should increase competition in quality. Moreover, the network benefits are likely to engender competitive responses from AT&T and Verizon Wireless that are not fully accounted for in a static merger simulation. As such, we find that quality benefits and dynamic competition serve as countervailing forces to the static analysis that substantially address its predicted harmful price effects even in the absence of conditions.

166. *Record.* First, the Applicants claim that the proposed transaction will enable New T-Mobile to deploy a more robust network, which should increase competition in quality, and force AT&T and Verizon Wireless to accelerate their 5G deployment; these developments in turn should lead to quality improvements coupled with price declines.⁵³² The Applicants argue that the transaction will intensify quality competition, leading to industry-wide quality improvements coupled with quality-adjusted price declines.⁵³³ Specifically, the Applicants contend that the proposed transaction would result in approximately 55% lower mobile wireless data prices on a per-GB basis and 120% more wireless capacity per smartphone subscriber in 2024.⁵³⁴ Second, the Applicants claim that demand at a given point in time is positively correlated with past demand, which implies that expected marginal cost reductions in the future will not only incentivize price reductions in the future, but also the present.⁵³⁵ As a consequence of anticipated increases in network capacity and marginal cost reductions, the Applicants argue that dynamic competition will lead to reduced prices in the present and in the future.⁵³⁶

166. Whereas certain commenters agree with the Applicants' assertions,⁵³⁷ others counter that the Applicants rely on "questionable assumptions" including, for instance, that: (1) AT&T and Verizon Wireless would match T-Mobile's practical capacity with or without the proposed transaction,⁵³⁸ (2) no new spectrum will be made available to wireless providers in the near future,⁵³⁹ or that (3) available

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Reply Declaration of David Evans (Sept. 17, 2018) (Joint Opposition, Evans Reply Declaration); Joint Opposition, Salop/Sarafidis Reply Declaration.

⁵³² Public Interest Statement, Evans Declaration at 131-32, 138-44, paras. 211-13, 226-40.

⁵³³ Public Interest Statement, Evans Declaration at 131-32, 138-44, paras. 211-13, 226-40.

⁵³⁴ Public Interest Statement, Evans Declaration at section V.C. The Evans analysis proceeds as follows. It calculates Sprint and T-Mobile capacity with and without the proposed transaction to support the claim that New T-Mobile would deploy a network with greater capacity than the standalone companies would. It assumes that AT&T and Verizon Wireless would match T-Mobile's capacity to argue that effective nationwide capacity would likewise rise as a result of the proposed transaction. It then argues that dynamic competition to build network capacity would substantially increase the supply of wireless data, causing mobile wireless prices to fall. Public Interest Statement, Evans Declaration at section V.A, 121, paras. 191, 128-29, para. 206, Table 17.

⁵³⁵ Public Interest Statement at 125-26; Public Interest Statement, Salop/Sarafidis Declaration at 23, para. 55.

⁵³⁶ Public Interest Statement at 124.

⁵³⁷ ACLP Comments at 3-6, 18; Digital Liberty Comments, Attach. at 2; Free State Comments at 1, 5; ICLE Opposition at 9, 16-17, 33-38; William Rinehart Comments at 1-3.

⁵³⁸ DISH Aug. 27, 2018 Petition at 36; DISH Aug. 27, 2018 Petition, Sappington Declaration at 6-9. DISH argues that this assumption leads to the prediction that the proposed transaction would induce AT&T and Verizon Wireless to increase their practical capacities per subscriber even when the proposed transaction does not increase the combined practical capacity of T-Mobile and Sprint. DISH Aug. 27, 2018 Petition, Sappington Declaration at 7-8.

⁵³⁹ DISH Aug. 27, 2018 Petition, Sappington Declaration at 11.

capacity would be fully utilized,⁵⁴⁰ each of which could exaggerate the extent to which the proposed transaction exerts downward pressure on the price of wireless data.

167. The Applicants argue that claims that their analysis is biased are based on the premise that when making capacity decisions, AT&T and Verizon Wireless would seek to match, at least in part, the capacity per subscriber on Sprint's network.⁵⁴¹ The Applicants contend, however, that AT&T and Verizon Wireless would seek to match T-Mobile, and not Sprint, on the grounds that Sprint is not a significant investment constraint given its poor network coverage.⁵⁴² Finally, the Applicants claim that wireless providers do not willingly choose to leave capacity materially unutilized.⁵⁴³

168. Opponents respond that the estimates concerning the price per-GB of wireless data are based on the most optimistic forecast of the proposed transaction's impact on industry capacity.⁵⁴⁴ Public Knowledge suggests that arguments about dynamic competition were insufficient to overcome concerns raised in the Commission's evaluation of the AT&T/T-Mobile proposed transaction and should not be considered sufficient now.⁵⁴⁵ Public Knowledge also asserts that historical trends in the wireless industry show that disruptions associated with technological change have only short-lived competitive effects that are overshadowed by the threat of long-term parallel behavior.⁵⁴⁶

169. The Applicants further argue that, as a consequence of dynamic demand, New T-Mobile will engage in penetration pricing—lowering prices in the present to build future demand⁵⁴⁷—based on its prediction that profit margins will be greater in the future due to a lower cost future network relative to the standalone firms.⁵⁴⁸ The Applicants define dynamic demand as occurring where a service provider's demand in one period depends upon that provider's quantity demanded in previous periods.⁵⁴⁹ The Applicants argue that this intertemporal demand relationship exists because: (1) it is less costly to add a given number of subscribers over the course of two periods of time than to add them all in a single period;⁵⁵⁰ (2) success in attracting new subscribers can lead to momentum and become self-reinforcing;⁵⁵¹

⁵⁴⁰ DISH Aug. 27, 2018 Petition, Sappington Declaration at 12-13. Under the Evans methodology, a smaller level of utilized capacity translates into a higher estimate of the price of wireless data in 2024.

⁵⁴¹ Joint Opposition at 8-9; Joint Opposition, Evans Reply Declaration at 12, para. 18.

⁵⁴² Joint Opposition at 8-9; Joint Opposition, Evans Reply Declaration at 14-15, para. 21.

⁵⁴³ Joint Opposition, Evans Reply Declaration at 5-6, 16-17, paras. 10, 24.

⁵⁴⁴ DISH Reply at 49-50; DISH Reply, Sappington Declaration at 2-3.

⁵⁴⁵ Public Knowledge Reply at 21.

⁵⁴⁶ Public Knowledge Reply at 20-21.

⁵⁴⁷ Public Interest Statement at 126; Public Interest Statement, Salop/Sarafidis Declaration at 23, para. 57.

⁵⁴⁸ Public Interest Statement at 126; Public Interest Statement, Salop/Sarafidis Declaration at 24, para. 58. The Applicants argue that future cost and quality efficiencies reduce the opportunity cost of expanding output and lowering price before New T-Mobile realizes those efficiencies. Joint Opposition at 15; Joint Opposition, Salop/Sarafidis Reply Declaration at 5, para. 14. To support their claims, Salop and Sarafidis cite to various articles, including de Roos, N., & Sarafidis, Y. (2018). Momentum in dynamic contests. *Economic Modelling*, 70, 401-16 (de Roos and Sarafidis (2018)); T. Krishnan, F.M. Bass, & D. Jain (1999). Optimal Pricing Strategy for New Products. *Management Science*, 45, pp. 1650-63 (Krishnan et al. (1999)); Spann, M., Fischer, M., & Tellis, G. J. (2014). Skimming or penetration? Strategic dynamic pricing for new products. *Marketing Science*, 34(2), 235-49 (Spann et al. (2014)).

⁵⁴⁹ Public Interest Statement, Salop/Sarafidis Declaration at 23, para. 55.

⁵⁵⁰ Public Interest Statement, Ewens Declaration at 12, para. 22; Public Interest Statement, Salop/Sarafidis Declaration at 26, para. 66.

⁵⁵¹ Public Interest Statement, Ewens Declaration at 12-13, para. 23; Public Interest Statement, Salop/Sarafidis

(continued....)

and (3) stickiness in consumer choice implies that customers added in one period remain in future periods.⁵⁵²

170. Petitioners contend, however, that switching costs imply that it is easier for a firm to retain an existing customer than to attract new customers because switching customers incur switching costs if they were to leave the firm.⁵⁵³ This implies that existing customers are less responsive to price increases than new customers, and consequently, that firms would charge existing customers a higher price.⁵⁵⁴ CWA adds that any dynamic effects that would reduce price are transitory,⁵⁵⁵ and that the Applicants' claims concerning dynamic demand conflict with their other expert submissions.⁵⁵⁶

171. *Discussion.* Our evaluation of the static competition models in the record primarily focuses on the proposed transaction's predicted effect on prices in markets where the Applicants presently compete, with their current competitive strength. Importantly, quality increases would counteract some price effects, and the consideration of dynamic competition allows us to anticipate whether and how investments in the Applicants' 5G network could encourage competitive responses in existing and new markets. We conclude that the transaction would likely generate significant quality and dynamic competitive benefits not considered in our static analysis, but that conditions are nonetheless necessary in light of the potential for harm to price-sensitive customers in densely-populated areas.

172. Staff's network benefits analysis, described in detail in section VI, finds that the transaction likely will significantly increase the coverage and capacity of New T-Mobile's network.⁵⁵⁷ The corresponding consumer benefits, such as network reliability and speed, would deliver significant additional value to consumers. For example, the tens of millions of additional Americans who would receive local mid-band 5G coverage because of the transaction would see material increases in the quality, and in turn the value, of wireless services provided by the Applicants.⁵⁵⁸ Likewise, to many rural customers, the transaction would markedly increase their ability to access robust 5G services at all, or to have more choice in which provider they purchase 5G services from.⁵⁵⁹ These and other significant competitive benefits from quality improvements are not factored into staff's static merger analysis.

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Declaration at 26-27, para. 67. Salop and Sarafidis state that momentum can result from word-of-mouth recommendations that consumers receive from their acquaintances or due to market signaling, whereby people treat a growing or large subscriber base, low churn, or retail store growth as signals that the service provider is a good buy. Public Interest Statement, Salop/Sarafidis Declaration at 26-27, para. 67.

⁵⁵² Public Interest Statement, Salop/Sarafidis Declaration at 27, para. 68. The Applicants argue that switching costs reinforce incentives to lower price because a service provider that wants a larger installed base in the future because of projected cost reductions will have an incentive to begin attracting subscribers during the transition period before the efficiencies materialize. Joint Opposition, Salop/Sarafidis Reply Declaration at 5, 14, paras. 14-15, 36.

⁵⁵³ DISH Aug. 27, 2018 Petition, Brattle Declaration at 68.

⁵⁵⁴ DISH Aug. 27, 2018 Petition, Brattle Declaration at 68. The more existing customers that a firm has relative to the number of potential new customers, the more its price decision is driven by extraction of profit from existing customers rather than attracting new customers. *Id.*

⁵⁵⁵ CWA Reply, Appx. B at 1-2.

⁵⁵⁶ Specifically, CWA notes that in simulating the merger through year 2024, one set of Applicant experts makes predictions about the mobile wireless industry and consumer demand well into the future, while a different set of experts argues how industry participants' product offerings will likely change in unpredictable ways in the next few years. CWA Reply at 26.

⁵⁵⁷ See *infra* section VI: Potential Public Interest Benefits of Increased Network Deployment.

⁵⁵⁸ *Id.*

⁵⁵⁹ *Id.*

173. In addition, the transaction's quality benefits would lead to dynamic competitive benefits that help offset the harms predicted in static merger simulations. A key concern in evaluating dynamic competition as a countervailing force is the extent to which the proposed transaction would promote competitive responses from AT&T and Verizon Wireless, such as through their own network investment and capacity growth. The benefits from dynamic competition depend upon the extent that the four existing nationwide service providers would have acquired additional spectrum,⁵⁶⁰ and invested in 5G on a standalone basis,⁵⁶¹ and on lags between New T-Mobile's implementation of an improved network and consumers' recognition of the benefits of New T-Mobile's improved service.⁵⁶² By committing to an ambitious and specific timeline for geographic coverage and speed thresholds,⁵⁶³ the Applicants have agreed to make high-speed wireless broadband available far beyond what they likely would deploy in a similar timeframe on a standalone basis. The deployments reflected by these commitments, adopted herein as conditions to our approval, will likely elicit a competitive response from other mobile wireless providers.⁵⁶⁴

174. Further, although the Applicants have attempted to quantify the benefits of dynamic competition, finding they will yield a 55% reduction in consumer per-GB prices, we agree with those commenters that identify uncertainty in the assumptions used to quantify these effects in the Applicants' economic analysis.⁵⁶⁵ It is important to note, however, that any such benefits, which we find likely to occur, would tend to offset the low single-digit industry-wide price effects otherwise predicted by the static merger simulation model in the absence of conditions. And while we are not able to confidently quantify the precise magnitude of the dynamic competitive effects, we can reach several qualitative conclusions as to their likely impacts.

175. First, for consumers who place a premium on network quality, the competitive benefits from establishing a third high-quality national network will likely outweigh potential harms. It is

⁵⁶⁰ The record suggests that the standalone Applicants had considered means of procuring additional spectrum other than through the proposed transaction. *See, e.g.*, TMUS-FCC-02549725; SPR-FCC-12628875; SPR-FCC-13771237 (throughout which the Applicants discuss the possibility of acquiring additional spectrum for 5G deployment [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]). *See also* TMUS-FCC-00958397 at 9 ("5G Spectrum Strategy & Spending," Apr. 2018) [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]; TMUS-FCC-07683357 [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]; SPR-FCC-01174571 at 1-3 (Oct. 1, 2016) [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]; SPR-FCC-13199457 at 22-30 [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.].

⁵⁶¹ We note that AT&T has asserted that the major service providers are in the midst of a race to 5G services and that prior to the proposed transaction, both Sprint and T-Mobile aggressively pursued 5G. AT&T Comments at 2-7. Verizon Wireless has also emphasized its leadership in the 5G space. Letter from William H. Johnson, Senior Vice President, Federal Regulatory and Legal Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Oct. 2, 2018) (Verizon Oct. 2, 2018 *Ex Parte* Letter).

⁵⁶² DISH Aug. 27, 2018 Petition, Sappington Declaration at 13.

⁵⁶³ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-4, Attach. 1 at 1-2.

⁵⁶⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6-7.

⁵⁶⁵ For instance, the record shows that the assumptions underlying the Applicants' dynamic competition analysis are uncertain, including assumptions concerning acquisition of additional spectrum and the extent to which AT&T and Verizon Wireless would match Applicants' per smartphone practical capacity with and without the proposed transaction as well as the extent to which consumers benefit from realized differences in capacity levels. DISH Aug. 27, 2018 Petition, Sappington Declaration at 13. With regard to the last point, the record contains many estimates of 5G data demand, as we discuss in the Technical Appendix. *See infra* Appx. F: Technical Appendix.

accepted in the economics literature, and demonstrated in our review of the record, that consumers vary in their taste for network quality, so that some proportion of consumers would prefer the enhanced network quality likely to result from the proposed transaction even if the price were to rise somewhat.⁵⁶⁶ Second and similarly, the transaction would likely be competitively beneficial for those who live in the many rural and suburban areas where Sprint would be unlikely to offer robust 5G services. Finally, and in contrast, we are concerned that these offsetting competitive effects may not be sufficient to overcome predicted unilateral upward pricing pressure for price-sensitive consumers in those densely-populated areas where T-Mobile and Sprint are relatively stronger competitors today. Accordingly, we cannot confidently conclude that the significant quality and dynamic competitive benefits we identify will entirely outweigh the competitive harms predicted by the static merger simulation in the absence of conditions, particularly for price-sensitive customers in densely-populated areas.

176. With respect to the Applicants' claim that dynamic demand will lead New T-Mobile to engage in penetration pricing, we cannot fully accept this claim for the reasons discussed below. First, the literature cited by the Applicants is ambiguous as to the likelihood of penetration pricing.⁵⁶⁷ Second, although the Applicants argue that momentum could reinforce penetration pricing by making it less costly to add subscribers over time rather than all at once,⁵⁶⁸ they do not provide any evidence that momentum is a substantive factor in mobile wireless competition or that such momentum, even if verified, would create a continuing incentive for the Applicants post-transaction.⁵⁶⁹ Of course, this does not mean that New T-Mobile, given its increased capacity as a result of the transaction, will not have the incentive to take market share from its competitors. That is a separate issue from the issue of penetration pricing.

177. Arguments concerning switching costs likewise lead to an ambiguous conclusion. Both the Applicants and commenters agree that switching costs lead to two countervailing effects: (1) they make it more difficult to attract customers through price cuts and other competitive actions, which makes such strategies less desirable, and (2) they make existing customers easier to retain, which makes strategies to lure those customers more desirable. Empirically, either effect may dominate, which suggests that in general, the impact of switching costs on competition is ambiguous.⁵⁷⁰

5. Coordinated Effects

178. As part of our competitive analysis, we also evaluate whether the proposed transaction may lessen competition by making coordination among rival service providers more likely. Coordinated effects arise when competing firms, on recognizing their interdependence, take actions that are profitable

⁵⁶⁶ For instance, Nevo et al. (2016) find that residential broadband consumers are willing to pay up to \$5 more for an additional 1 Mb/s, with an average of \$2.02 and a median of \$2.48. Nevo et al. (2016) at 434. *See also* VZWTS-001-00034721 at 2, 4, 11-12, 27-28, 49; VZWTS-001-00194967 at 14, 19, 24, 27; ATT-STMOFCC-00110305 at 5, 11-12; SPR-FCC-00717150 at 3, 6-12, 21, 38-39.

⁵⁶⁷ *See generally* Krishnan et al. (1999); Spann et al. (2014). For example, Spann et al. (2014) note that rather than follow a penetration strategy, Apple's iPhone seems to follow a skimming strategy involving a high initial price that is lowered over time. Spann et al. (2014) at 236.

⁵⁶⁸ de Roos and Sarafidis (2018). The idea behind this argument is that there exists a complementarity between current and past efforts to add subscribers.

⁵⁶⁹ Through this transaction, the Applicants effectively would add millions of subscribers to New T-Mobile, and in doing so, may find it more profitable to weaken existing momentum that may be the result of ongoing price competition. *See, e.g.*, DISH Reply, Brattle Reply Declaration at 67.

⁵⁷⁰ Switching costs have been shown to lead to higher prices in the market for toll-free calling services. Viard, V. B. (2007). Do switching costs make markets more or less competitive? The case of 800-number portability. *The RAND Journal of Economics*, 38(1), 146-63. However, in a flexible framework with differentiated products, the impact of switching costs on prices has been shown to be non-monotonic and broadly ambiguous. Dubé, J. P., Hitsch, G. J., & Rossi, P. E. (2009). Do switching costs make markets less competitive? *Journal of Marketing Research*, 46(4), 435-45.

for them only as a result of the accommodating reactions of the other firms.⁵⁷¹ Mergers that reduce the number of firms in the market may increase concentration sufficiently to make coordination more likely, successful or complete.⁵⁷² In markets where only a few firms compete, those firms may be able to exercise market power by either explicitly or tacitly coordinating their actions.⁵⁷³ The ability of rival firms to engage in coordinated conduct depends on the strength and predictability of rivals' responses to a price change or other competitive action.⁵⁷⁴

179. A market typically is more vulnerable to coordinated conduct if a firm's reward from attracting customers away from its rivals can be greatly reduced by the speed and effectiveness of those rivals' responses. The strength and speed of rivals' responses to a non-coordinating or "deviating" firm are theoretically greater if there are few significant competitors, relatively homogeneous products, and if consumers find it relatively easy to switch between firms.⁵⁷⁵ In contrast, non-coordinating firms are less likely to be deterred by rival responses if, for example, the non-coordinating firm has a relatively low market share and an ability to quickly expand by deviating from the status quo.⁵⁷⁶ Non-coordinating firms are also less likely to be deterred by rival responses if the relevant market is marked by leapfrogging technological innovation, so that responses by rivals leave the gains from successful innovation largely intact.⁵⁷⁷ Further, a maverick firm may effectively constrain coordination either through its disruptive behavior or refusal to follow industry consensus on prices or other strategic actions, to the benefit of consumers.⁵⁷⁸ The creation or strengthening of a maverick firm may therefore reduce, and the elimination or weakening of one may raise, the potential for coordination.⁵⁷⁹

180. *Record.* The Applicants contend that coordination would be less likely post-transaction.⁵⁸⁰ Broadly speaking, the Applicants' assert that: (1) dynamic demand incentivizes maverick (non-coordinating) behavior;⁵⁸¹ and (2) network investment competition incentivizes deviating from any coordination scheme.⁵⁸² In addition, regarding increased concentration and comparisons to four-to-three

⁵⁷¹ See, e.g., *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336-37, para. 43; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21570, para. 114; see also *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.

⁵⁷² See, e.g., *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10460-61, para. 65; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336-37, para. 43; see also *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.

⁵⁷³ See, e.g., *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10460-61, para. 65; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336-37, para. 43; see also *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.

⁵⁷⁴ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7; see also *Alaska Wireless-GCI Order* at 10460-61, para. 65; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2336-37, para. 43.

⁵⁷⁵ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.2.

⁵⁷⁶ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.2.

⁵⁷⁷ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.2.

⁵⁷⁸ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 2.1.5. See also Baker, J.B. (2002). *Mavericks, mergers, and exclusion: Proving coordinated competitive effects under the antitrust laws.* *NYUL Rev.*, 77, 135-203, at 140; Harrington, J.E. Jr. (2012). *Evaluating Mergers for Coordinated Effects and the Role of Parallel Accommodating Conduct.* 78 *Antitrust L.J.* 651-68, at 664 (Harrington (2012)); Lang C. (2014). *The Maverick Theory: Creating Turbulence for Mergers.* *St. Louis U.L.J.* 257-82, at 257; Kaplow, L. & Shapiro, C. (2007). *Antitrust. Handbook of Law and Economics* (Vol 2.), at 36, 38 (Kaplow and Shapiro (2007)).

⁵⁷⁹ *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7. If all firms but the maverick firm join a collusive scheme or otherwise understand the appeal of parallel accommodating conduct, then acquisition of the maverick could lead to collusion. Kaplow and Shapiro (2007); Harrington (2012).

⁵⁸⁰ Public Interest Statement at 128-32; Joint Opposition at 13-17.

⁵⁸¹ Public Interest Statement, Salop/Sarafidis Declaration at 18-19, paras. 41-46.

⁵⁸² Public Interest Statement, Salop/Sarafidis Declaration at 16-17, paras. 37-40.

mergers elsewhere, the Applicants argue that these comparisons are “attenuated by a multiplicity of different market, regulatory and local conditions or circumstances.”⁵⁸³ The Applicants argue that four-to-three mergers in other industries, in other countries, or at other points in time are irrelevant to the assessment of the particular circumstances of this proposed transaction.⁵⁸⁴

181. **Dynamic Demand and Maverick Behavior.** The Applicants argue that the proposed transaction would “supercharge T-Mobile’s Un-carrier movement,” which they assert has historically provided significant price and non-price benefits to the public.⁵⁸⁵ The Applicants posit that T-Mobile has a long history as a maverick competitor, tracing back to its use of assets acquired following the abandonment of its proposed merger with AT&T in 2011.⁵⁸⁶ The Applicants argue that the dynamic nature of wireless demand, coupled with expected future efficiencies resulting from New T-Mobile’s higher capacity and quality network, creates procompetitive incentives for New T-Mobile to grow its subscriber base.⁵⁸⁷ The Applicants claim that New T-Mobile would continue its “disruptive” Un-carrier strategy rather than settle into a coordinated outcome.⁵⁸⁸ The Applicants provide several reasons why coordination on pricing and quality would be unlikely: (1) merger efficiencies would lead to an increased incentive to deviate from any coordinated outcome;⁵⁸⁹ (2) New T-Mobile’s anticipated superior 5G quality;⁵⁹⁰ (3) service packages that differ according to each service provider’s unique mix of assets;⁵⁹¹ (4) geographic differences in 5G network rollout;⁵⁹² and (5) prospective cable MVPD entry.⁵⁹³ The Applicants further claim that the incentive to behave like a maverick firm is reinforced by the existence of switching costs, which means that only a limited pool of potential new subscribers is generally available in any period, incentivizing New T-Mobile to build its share in advance by deviating from

⁵⁸³ Joint Opposition at 22-23; T-Mobile Dec. 18, 2018 Cornerstone Report *Ex Parte* Letter, Attach. A at para. 21 (disputing the conclusions that commenters seek to draw from international comparisons); Letter from Trey Hanbury, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, 1-7, Attach. at 7-8 (T-Mobile Mar. 11, 2019 4Competition Coalition and Competition Advocates Response *Ex Parte* Letter); *see also* ICLE Comments at 5-9, 17-23, 26-29 (criticizing commenters’ attempts to rely on foreign marketplace examples to support concerns about a four-to-three merger.).

⁵⁸⁴ Joint Opposition at 22; *see also* International Center for Law & Economics Comments in Opposition to Petitions to Deny at 5-9, 17-23, 26-29 (Sept. 17, 2018) (ICLE Comments).

⁵⁸⁵ Public Interest Statement at 121; Public Interest Statement, Ewens Declaration at 2, para. 4.

⁵⁸⁶ Public Interest Statement, Salop/Sarafidis Declaration at 9-10, paras. 19, 21-23.

⁵⁸⁷ Public Interest Statement at 121; Public Interest Statement, Salop/Sarafidis Declaration at 18, 24, paras. 42, 60; Joint Opposition at 15; Joint Opposition, Salop/Sarafidis Reply Declaration at 4-5, 8, paras. 13-14, 23.

⁵⁸⁸ Public Interest Statement at 121; Joint Opposition, Salop/Sarafidis Reply Declaration at 5, para. 16.

⁵⁸⁹ Public Interest Statement at 130; Public Interest Statement, Salop/Sarafidis Declaration at 18, 24, paras. 42, 61; Joint Opposition, Salop/Sarafidis Reply Declaration at 8, para. 23. The Applicants emphasize that relative to the standalone firms, New T-Mobile will have increased capacity, superior quality of experience, and reduced marginal cost of capacity expansion as well as reductions in non-network marginal costs that will be achieved during the transition period. Joint Opposition, Salop/Sarafidis Reply Declaration at 3-4, paras. 9-11.

⁵⁹⁰ Public Interest Statement at 130-31; Public Interest Statement, Salop/Sarafidis Declaration at 18, 30-31, paras. 43, 77-79; Joint Opposition, Salop/Sarafidis Reply Declaration at 8, para. 23.

⁵⁹¹ Public Interest Statement at 131; Public Interest Statement, Salop/Sarafidis Declaration at 19, 29-30, paras. 44, 73-76; Joint Opposition, Salop/Sarafidis Reply Declaration at 8, para. 23.

⁵⁹² Public Interest Statement at 131; Public Interest Statement, Salop/Sarafidis Declaration at 19, para. 45; Joint Opposition, Salop/Sarafidis Reply Declaration at 8, para. 23.

⁵⁹³ Public Interest Statement at 131; Public Interest Statement, Salop/Sarafidis Declaration at 19-20, 34-35, paras. 46, 87; Joint Opposition, Salop/Sarafidis Reply Declaration at 8, para. 23.

coordination.⁵⁹⁴

182. **Competition in Network Investment.** The Applicants also assert that there are several factors that would reduce the likelihood of coordinating to reduce network investments.⁵⁹⁵ The Applicants claim coordination is less likely because: (1) the differences in providers' spectrum portfolios yield different capacity outcomes for a given level of investment, undercutting monitoring of tacit agreements;⁵⁹⁶ (2) adding 5G spectrum and sites has a multiplicative effect on capacity, making deviation more beneficial;⁵⁹⁷ (3) differences in non-wireless assets such as wired infrastructure and related lines of business can lead to asymmetric incentives;⁵⁹⁸ (4) lack of specific or local network investment data would make deviation difficult to detect;⁵⁹⁹ and (5) the potential for leapfrogging technical innovation means that competitors are less likely to be deterred by possible responses to deviation.⁶⁰⁰ In addition, rival responses may be slow in part because network investments are irreversible decisions and necessitate long lead-times.⁶⁰¹ As a result, a competitive firm that vigorously invests, deviating from a possible coordinating strategy to lower investment industry wide, may be able to capture a first-mover advantage for a long period of time.⁶⁰²

183. Though some commenters agree that the proposed transaction would not increase the likelihood of coordination,⁶⁰³ others argue that post-transaction coordinated effects are likely because coordination already is occurring today and will simply be worsened by the transaction.⁶⁰⁴ Other commenters contend that the presence of standalone T-Mobile and Sprint reduces the possibility of anticompetitive coordination that otherwise would occur, but the transaction would make future harms from coordination more likely.⁶⁰⁵ Commenters also argue that reducing the number of service providers

⁵⁹⁴ Public Interest Statement, Salop/Sarafidis Declaration at 33, para. 83; Joint Opposition, Salop/Sarafidis Reply Declaration at 5, para. 15. By contrast, DISH argues that switching costs reinforce the incentive to increase post-transaction prices by causing existing customers to be "locked in" to some degree, implying that a firm's optimal price is increasing in market share. DISH Aug. 27, 2018 Petition, Brattle Declaration at 68.

⁵⁹⁵ Public Interest Statement at 129-30; Public Interest Statement, Salop/Sarafidis Declaration at 16, para. 37.

⁵⁹⁶ Public Interest Statement at 129; Public Interest Statement, Salop/Sarafidis Declaration at 16-17, para. 38.

⁵⁹⁷ Public Interest Statement at 129.

⁵⁹⁸ Public Interest Statement at 129. The Applicants point out that AT&T and Verizon Wireless have the ability to bundle wireline cable and broadband, whereas New T-Mobile would face higher content costs due to its smaller size. Public Interest Statement, Salop/Sarafidis Declaration at 31, para. 80.

⁵⁹⁹ Public Interest Statement at 129.

⁶⁰⁰ Public Interest Statement at 130.

⁶⁰¹ Public Interest Statement at 129-30; Public Interest Statement, Salop/Sarafidis Declaration at 17, para. 40; Joint Opposition, Salop/Sarafidis Reply Declaration at 7, para. 21.

⁶⁰² Public Interest Statement, Salop/Sarafidis Declaration at 17, para. 40; Joint Opposition, Salop/Sarafidis Reply Declaration at 7, para. 21.

⁶⁰³ ITIF Opposition at 6, 9 (arguing that mobile wireless services are converging into a broader broadband service market); TechFreedom Opposition at 8-9 (arguing that even if New T-Mobile would have lessened incentive to lower price, it would have an increased ability to compete on network investment).

⁶⁰⁴ AAI Petition at 9-10 (discussing private antitrust cases alleging anticompetitive coordination); Free Press Petition at 39, 41 (citing "historically high margins earned by AT&T and Verizon relative to T-Mobile and Sprint" as "strong evidence of existing coordination"); *Id.* at 42-43 and attached Appx. (arguing that investor reactions to announcements of a potential T-Mobile/Sprint transaction suggest that AT&T and Verizon Wireless investors are more concerned about those providers being subject to competition from the standalone companies than from the merged entity).

⁶⁰⁵ DISH Aug. 27, 2018 Petition at 81-86; Public Knowledge Petition at 18-19; Union Telephone Petition at 39; *see also* Free Press Petition at 44.

from four to three would set the stage for coordination,⁶⁰⁶ and some point to the asserted negative effects of four to three mergers across Europe.⁶⁰⁷ Further, some commenters argue that past mergers in the U.S. that increased market concentration and reduced the number of national competitors had harmful effects,⁶⁰⁸ and point to the higher prices and lower quality of mobile wireless services in Canada and other countries with only three nationwide providers.⁶⁰⁹

184. Commenters argue that there are a variety of characteristics of the wireless marketplace today and/or post-transaction that increase the risk of coordination, including: (1) that competitive entry or expansion is unlikely;⁶¹⁰ (2) the relevant product market is largely homogeneous, and price can be readily observed by competitors;⁶¹¹ (3) there is little buyer-side market power;⁶¹² (4) a significant number of customers concentrated in a small number of providers makes the harms of coordination substantial even if not all providers engaged in coordination;⁶¹³ (5) demand elasticity is relatively low, making coordination more profitable;⁶¹⁴ and (6) post-transaction there would be three roughly homogenous providers reducing the incentive of any one provider to compete aggressively to try to gain market

⁶⁰⁶ AAI Petition at 4 (Aug. 27, 2018) (AAI Petition); Free Press Petition to Deny at 3-4 (Aug. 27, 2018) (Free Press Petition); Public Knowledge et al. Petition to Deny at 3-7 (Aug. 27, 2018) (Public Knowledge Petition).

⁶⁰⁷ DISH Aug. 27, 2018 Petition at 7-8, 78-79; DISH Reply at 24-25; Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 5-11 (filed Apr. 8, 2019) (DISH Apr. 8, 2019 European Market Response *Ex Parte* Letter). DISH cites econometric analyses, including multi-country studies conducted by European regulators as well as in-depth examinations of mergers in specific countries, and asserts that these studies establish that four-to-three mergers resulted in increased prices by comparison with control countries or “but-for” scenarios. DISH claims that these price increases were alleviated in a few countries only after divestitures mandated by regulators enabled a fourth provider to enter the market. DISH Apr. 8, 2019 European Market Response *Ex Parte* Letter at 5-6; *see also* Public Knowledge Reply Comments at 19-21 (Oct. 31, 2018) (Public Knowledge Reply); Competition Advocates Dec. 20, 2018 *Ex Parte* Letter at 1; Letter from 4Competition Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Feb. 7, 2019) (4Competition Coalition Feb. 7, 2019 *Ex Parte* Letter).

The Applicants argue that the economic studies comparing prices in countries with four major nationwide wireless providers versus those with three such providers yield mixed results, and that the vast improvements in wireless technologies over the past decade, as well as the overall decline in price levels in developed countries around the world, variations in industry structure, regulation, geography, and regulatory structures, compound the difficulty of deriving clear conclusions from the economic evidence. Joint Opposition at 22-23; T-Mobile Dec. 18, 2018 Cornerstone Report *Ex Parte* Letter, Attach. A at para. 21 (disputing the conclusions that commenters seek to draw from international comparisons); T-Mobile Mar. 11, 2019 4Competition Coalition and Competition Advocates Response *Ex Parte* Letter at 1-7, Attach. at 7-8.

⁶⁰⁸ AAI Petition at 4-5 (discussing past U.S. wireless transactions); *Id.* at 12-13 (discussing past four-to-three mergers in other industries); Common Cause et al. Petition at 10-11; Free Press Petition at 3-4; 18-19, 24-27; Public Knowledge et al. Reply at 19-21; Competition Advocates Dec. 20, 2018 *Ex Parte* Letter at 1.

⁶⁰⁹ AAI Petition at 11-12; Common Cause et al. Petition at 11; DISH Petition at 8, 80-81; Public Knowledge et al. Reply at 21; 4Competition Coalition Feb. 7, 2019 *Ex Parte* Letter at 2.

⁶¹⁰ AAI Petition at 10; DISH Aug. 27, 2018 Petition at 59-60, 82; Free Press Petition at 40-41; Public Knowledge Petition at 4; Charter Comments at 5-6; *see also* AAI Petition at 9 (discussing similar concerns raised regarding the proposed AT&T/T-Mobile transaction).

⁶¹¹ AAI Petition at 9 (discussing concerns raised regarding the proposed AT&T/T-Mobile transaction); DISH Aug. 27, 2018 Petition at 82 (discussing the “mobile voice/broadband market”); Free Press Petition at 39 (discussing a product market of “smartphone service plans”).

⁶¹² AAI Petition at 9 (discussing concerns raised regarding the proposed AT&T/T-Mobile transaction); DISH Aug. 27, 2018 Petition at 82.

⁶¹³ Free Press Petition at 41.

⁶¹⁴ Free Press Petition at 41.

share.⁶¹⁵ Commenters also assert that one or both standalone providers have acted as a “maverick” in the marketplace, but argue that post-transaction, New T-Mobile would no longer be a “maverick.”⁶¹⁶

185. **CPPI.** DISH argues that the Applicants’ own economic experts have developed a tool—the CPPI—to evaluate incentives to engage in tacit collusion, and applying that tool here demonstrates that the transaction would make such collusion more likely.⁶¹⁷ The Applicants contend, however, that DISH’s economists misapply the CPPI, which was designed only to evaluate potential coordination between the two leading firms in a market, making it inappropriate to use in this context.⁶¹⁸ We note that although the CPPI is intended to screen for coordination between two firms, we disagree with the Applicants that they need to be leading firms.⁶¹⁹ However, we point out that DISH also argues that successful collusion would require the participation of all nationwide service providers, but then relies on a screen for coordination between two firms.⁶²⁰ We are not persuaded overall that the CPPI is an appropriate analytical tool for us to use to evaluate the likelihood of coordinated effects post-transaction, and in any event, we note that the CPPI is a screen, whereas our analysis must factor in the totality of circumstances that could increase or lessen the likelihood of coordination.

186. *Discussion.* Based on our careful evaluation of the record, and in light of the factors pointing in either direction, we do not conclude that the likelihood of coordination would increase post-transaction. On the one hand, the likelihood of coordination is increased by several factors related to the prospect of the elimination of a maverick and the level of concentration post-transaction. The record broadly supports the notion that at present, T-Mobile is a maverick while Sprint seeks to attract subscribers through discounts and promotions.⁶²¹ It is unclear, however, the extent to which post-

⁶¹⁵ AAI Petition at 8-10; DISH Aug. 27, 2018 Petition at 60-61, 82-84; DISH Reply at 26-27, 48-49; OTI Reply at 5-6; Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-187, Attach. B at 13 (filed Nov. 19, 2018) (DISH Nov. 19, 2018 *Ex Parte* Letter).

⁶¹⁶ In other words, they claim that New T-Mobile would not find it rational to forego short-run profit by adopting low prices because there would be less benefit from market share gains from those low prices. AAI Petition at 4; C Spire Petition at i; DISH Aug. 27, 2018 Petition at 59-60, 84-85; DISH Aug. 27, 2018 Petition, Brattle Declaration at 68; Free Press Petition at 28, 38, 41-44, 65-66; Public Knowledge Reply at 8-9; Union Telephone Reply at 4-6. Blue Wireless questions the likelihood of New T-Mobile continuing its “Un-carrier” strategy post-transaction given the Applicants’ claims that its use by T-Mobile only resulted in relatively modest market share gains. Blue Wireless Reply at 20-21 & n.50.

⁶¹⁷ DISH Aug. 27, 2018 Petition at 85-86; DISH Aug. 27, 2018 Petition, Brattle Declaration at 84-85. DISH argues that the CPPI index shows an increase of about 20% in the risk of coordinated effects.

⁶¹⁸ Joint Opposition at 16-17; Joint Opposition, Salop/Sarafidis Reply Declaration at paras. 51-53.

⁶¹⁹ See generally Moresi, S., Reitman, D., Salop, S. C., & Sarafidis, Y. (2011). Gauging Parallel Accommodating Conduct Concerns with the CPPI. SSRN, <https://ssrn.com/abstract=1924516> (last visited Oct. 14, 2019).

⁶²⁰ DISH Aug. 27, 2018 Petition at 83. Specifically, DISH argues that collusion by AT&T and Verizon Wireless without Sprint and T-Mobile is likely to break down not long after it begins. *Id.*

⁶²¹ The Applicants have emphasized T-Mobile’s history as a maverick, noting in particular, its disruptive and successful Un-carrier approach to customers. Public Interest Statement, Appx. A, Declaration of John Legere, at 6, para. 16 (June 18, 2018) (Public Interest Statement, Legere Declaration); Public Interest Statement, Appx. C, Declaration of G. Michael Sievert, at paras. 2, 4 (June 18, 2018) (Public Interest Statement, Sievert Declaration). In response to the Commission’s Information Request, T-Mobile submitted a list with 58 separate dates as of the start of 2012 during which the company launched what it categorized as a major pricing, plan or promotional action. T-Mobile Information Request at 9 (Aug. 15, 2018); T-Mobile Information Request Response at 58, Exh. C (Sept. 5, 2018). Sprint similarly submitted 10 Exhibits describing major wireless service plans and promotions, including, but not limited to, 15 time periods since the start of 2012, during which the company offered promotions that frequently included unlimited voice, text, and data along with multiline discounts. Sprint Information Request at 9 (Aug. 15, 2018); Sprint Information Request Response at 38-39. Although not explicitly characterizing itself as a maverick, Sprint explained that its pricing and promotional goal was to retain existing subscribers and attract new ones by offering discounted pricing plans and promotions. Sprint Information Request Response at 40. Moreover,

(continued....)

transaction, New T-Mobile would continue to remain a maverick competitor. In addition, and as noted in section V.B.2., the mobile telephony/broadband services market would be significantly concentrated post-transaction.⁶²² Further contributing to the risk of price-based coordination is the fact that prices are set nationwide, can be readily monitored, and are easily changed,⁶²³ which compounds the effects of high concentration to make the market vulnerable to coordinated conduct.⁶²⁴

187. On the other hand, a number of important factors either mitigate the likelihood of harmful coordination or suggest that harmful coordination will be less likely to occur as a result of the proposed transaction. We find that there are certain barriers to successful coordination, hardened in part by the Applicants' commitments,⁶²⁵ which would lead to an increased likelihood of leapfrogging technological innovation, higher capacity, and an increased potential for entry.⁶²⁶ We agree with the Applicants that variation in service packages and local network quality have the potential to mitigate coordination concerns.⁶²⁷ Specifically, the proposed transaction promotes leapfrogging technological innovation nationwide by allowing the Applicants to achieve an expanded, higher speed 5G network.⁶²⁸ The transaction will also permit the Applicants to enter service areas—particularly rural markets—in which neither standalone Applicants would be likely to develop a strong competitive presence absent the transaction. These factors are bolstered by the Applicants' network commitments, adopted herein as conditions to our approval, which help assure that, post-transaction, the Applicants do not coordinate to limit network investment.⁶²⁹ These commitments lessen the risk of coordination as follows: At the nationwide level, they limit New T-Mobile's ability to coordinate to keep investment low. While, in theory, T-Mobile could still coordinate on investment, if, in doing so, it fails to meet its coverage and speed commitments, it would face significant penalties.⁶³⁰ At the local level, the Applicants'

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various commenters characterize one or both standalone Applicants as mavericks. AAI Petition at 4; C Spire Petition at i; Public Knowledge Reply at 8; Free Press Petition at 28, 38, 41-44; DISH Aug. 27, 2018 Petition at 17-22; DISH Reply at 102.

⁶²² Public Interest Statement, Salop/Sarafidis Declaration at 3, para. 8.

⁶²³ Public Interest Statement, Salop/Sarafidis Declaration at 29, para. 73; DISH Aug. 27, 2018 Petition, Brattle Declaration at 56-58; Joint Opposition, Salop/Sarafidis Reply Declaration at 11-12, para. 32; DISH Reply, Brattle Reply Declaration at 77. The Applicants' documents suggest that Applicants' were cognizant of market monitoring and the information inherent in price changes and promotions. *See, e.g.*, TMUS-FCC-04047483 (emails between T-Mobile executives on Feb. 22, 2018 regarding the [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]; SPR-FCC-02508625 (Oct. 22, 2017 email from a high-level Sprint executive stating “[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]”); SPR-FCC-02748927 (June 13, 2017 email from Sprint CEO Marcelo Claure stating [BEGIN HIGHLY CONF. INFO.]

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⁶²⁴ 2010 DOJ/FTC Horizontal Merger Guidelines at § 7.2.

⁶²⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-7, Attach. 1 at 1-3, Attach. 2 at 1-3.

⁶²⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-7, Attach. 1 at 1-3, Attach. 2 at 1-3.

⁶²⁷ 2010 DOJ/FTC Horizontal Merger Guidelines at § 7.2. Specifically, the *Horizontal Merger Guidelines* state that markets are more vulnerable to coordinated conduct when prices are relatively transparent, so that conversely, to the extent that variation in service quality diminishes this transparency, such variation may frustrate attempts at coordination.

⁶²⁸ 2010 DOJ/FTC Horizontal Merger Guidelines at § 7.2.

⁶²⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-4, Attach. 1 at 1-2.

⁶³⁰ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5.

commitments to rural coverage likely broaden the number of potential local markets in which New T-Mobile could compete on network quality, and thereby, make it more difficult to coordinate by focusing on specific market segments (i.e., urban consumers).

188. While we find that the record does not support a conclusion that post-transaction coordination is likely, the Applicants' divestiture of its Boost Mobile business⁶³¹ lessens any remaining concerns with respect to the potential for coordinated effects.⁶³² The buyer of Boost will have a relatively small market share compared to other competitors, and a significant incentive to expand or grow in response to any coordinated price increases by the larger firms in the market.⁶³³

6. Commitments to Address the Potential for Lost Price Competition

a. Boost Mobile Divestiture

189. As discussed above, we find that the proposed transaction in the absence of conditions risks eliminating price competition between the Applicants' brands for some customers, but its network benefits would likely increase competition in many respects, and it is not clear as to which weighs more heavily in assessing overall competitive effects. Specifically, we are concerned that in densely-populated areas, the lost price competition is relatively larger and the network benefits gained relatively smaller. To address these concerns, the Applicants will be required to divest Boost Mobile, a prepaid wireless brand that has been successful in those same densely-populated areas—particularly for price-sensitive customers—where the risk of harm to competition would otherwise be greatest. With the Boost Mobile divestiture described below, we are confident that our concerns regarding potential harm to this segment of the wireless market are eliminated.⁶³⁴

190. *Record.* In a May 20, 2019 submission, the Applicants proposed to divest the Boost Mobile business and sell it to a “serious and credible buyer” that “has, or has access to, the financial resources to acquire, maintain, and expand the Divested Business” and is unrelated to either Sprint or T-Mobile.⁶³⁵ Further, the Applicants state that the identity of the buyer is subject to the approval of WTB.⁶³⁶ The Applicants state that the business will be sold at “commercial terms of [New T-Mobile’s and the Buyer’s] choosing,” including a price that yields “the fair value of the assets” to New T-Mobile.⁶³⁷ The Applicants commit that New T-Mobile will “undertake commercially reasonable efforts to maintain Boost’s competitiveness prior to completion of the divestiture” and “through its transition to independent ownership.”⁶³⁸

⁶³¹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 5-6, Attach. 2 at 1-3.

⁶³² T-Mobile/Sprint May 20, 2019 Commitments Letter at 5-6, Attach. 2 at 1-3.

⁶³³ Market power among coordinating firms is diminished by the presence of other market participants with small market shares and little stake in the outcome resulting from the coordinated conduct, if these firms can rapidly expand their sales in the relevant market. *2010 DOJ/FTC Horizontal Merger Guidelines* at § 7.2.

⁶³⁴ For convenience, we refer to the conditions associated with the divestiture of Boost Mobile as the “Boost Divestiture Conditions.” T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2.

⁶³⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2.

⁶³⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3.

⁶³⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 1. The Applicants define the Boost Mobile business to be sold as consisting of (1) all “customers with ... ‘active’ Boost Mobile account[s];” (2) all “assets, properties, systems, management teams and employees” that are “necessary to operate the Boost Mobile business as it is conducted as of the merger closing date” and are “solely and exclusively allocated for use by Boost Mobile”; and (3) “all ownership interests in, and rights to use, the Boost Mobile brand and its associated brands and trademarks.” *Id.*

⁶³⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 1, 2.

191. Various commenters point to the significance of Boost Mobile in the mobile wireless marketplace, particularly for prepaid services and low-income consumers. For example, Peter Adderton, the founder of Boost Mobile, contends that Boost was founded “to bring affordable cellular service to low-income and credit-challenged Americans,” with “Boost and competing brands such as Metro PCS succeed[ing] in connecting millions of Americans” and “competition between them continu[ing] to provide lower prices and access to devices.”⁶³⁹ Mr. Adderton states that the competitive harms that he expects would likely from the proposed transaction “can be effectively mitigated by the divestiture of one of the prepaid brands and transfer of approximately 8 million customers to an independent operator.”⁶⁴⁰ Mr. Adderton also contends that such a divestiture would address competitive concerns from the proposed transaction without “undermin[ing] the positive business case for the proposed merger.”⁶⁴¹

192. Other commenters refer to Boost Mobile and Metro as “fierce competitors,” with this competition having “incentivized both providers to roll out innovative offerings that have helped drive prices for prepaid service down.”⁶⁴² Similarly, commenters recount a multi-year history of competitive actions and responses between Boost and Metro.⁶⁴³ Commenters also emphasize the role of Boost Mobile in serving lower-income consumers,⁶⁴⁴ and highlight the large share of Boost subscribers with lower incomes.⁶⁴⁵ Greenlining points out that Boost Mobile “has recently proposed a Lifeline pilot project in the Commission’s Lifeline proceeding to target specific low income communities,”⁶⁴⁶ and expresses concern that the proposed transaction might eliminate Boost as a potential entrant in the provision of Lifeline services.⁶⁴⁷ Some commenters also express concern that after the proposed transaction New T-Mobile would push Boost subscribers to shift to postpaid service “removing from the marketplace one of

⁶³⁹ Adderton Aug. 29, 2018 *Ex Parte* Letter.

⁶⁴⁰ Adderton Aug. 29, 2018 *Ex Parte* Letter at 2. Mr. Adderton further argues that “[s]uch a divestiture . . . must also be supported by a limited three-year agreement guaranteeing robust network access at reasonable rates. Adderton Aug. 29, 2018 *Ex Parte* Letter at 2; *see also* Comments of Gene Retsky at 2 (Aug. 28, 2018) (Retsky Comments) (“Based on my 45 years in telecommunications, the last 26 focused on prepaid services, I concur with Mr. Adderton and urge the FCC to require the divestiture of Boost during the merger to protect the interests of the most vulnerable of consumers, the low income and unbanked.”).

⁶⁴¹ Adderton Aug. 29, 2018 *Ex Parte* Letter at 2. Some commenters propose additional conditions piggy-backing on the Boost divestiture based on their concerns about roaming or wholesale access. *See, e.g.*, Letter from Eric Steinmann, Development Manager, NTCH, and Thomas Wise, President, Wise Electronics, to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197 (filed June 12, 2019) (NTCH/Wise June 12, 2019 *Ex Parte* Letter). We discuss roaming and MVNO issues below in section VII: Other Potential Harms and Benefits.

⁶⁴² Public Knowledge Aug. 27, 2018 Petition at 26-27; *see also* DISH Reply at 18-19 (“Sprint’s Boost Mobile and T-Mobile’s MetroPCS brands are prominent players in the prepaid market.”); Comments of Media Alliance at 2 (Dec. 3, 2018) (Media Alliance Comments) (“in the prepaid niche . . . T-Mobile subsidiary MetroPCS and Sprint subsidiary Boost Mobile are the market leaders”).

⁶⁴³ CWA Aug. 27, 2018 Comments at 28-30; CWA Reply at 7; Free Press Reply at 38-40.

⁶⁴⁴ Free Press Aug. 27, 2018 Petition at 14; Free Press Reply at 17; Retsky Comments at 2.

⁶⁴⁵ Free Press Aug. 27, 2018 Petition at 69, Fig. 10 (citing Boost as having a larger share of its customers with annual incomes less than \$25,000 than any other provider); Public Knowledge Aug. 27, 2018 Petition at 27 (“T-Mobile is most popular among customers who make less than \$75,000 per year and Sprint’s prepaid Boost service counts 83 percent of its users in that income range.”); Kim Keenan Comments at 3 & n.6 (same); Letter from Phillip Berenbroick, Senior Counsel, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Dec. 12, 2018) (Public Knowledge Dec. 12, 2018 *Ex Parte* Letter) (“30 percent of T-Mobile-owned Metro’s customers, and 34 percent of Sprint-owned Boost Mobile’s customer, have annual incomes below \$25,000.”).

⁶⁴⁶ Greenlining Petition at 10.

⁶⁴⁷ Greenlining Petition at 11.

the largest and most attractive prepaid operators, depriving those who can least afford it, of these services.”⁶⁴⁸

193. In response to the Applicants’ May 20, 2019 filing, CWA questions the effectiveness of the commitment to divest Boost based on prior internal Sprint analyses.⁶⁴⁹ In addition, CWA expresses concerns about the particular aggregation of assets involved and the use of behavioral conditions to address ongoing interactions between New Boost and New T-Mobile.⁶⁵⁰ It also questions how strong a competitor New Boost will be insofar as it is an MVNO.⁶⁵¹

194. Subsequently, on July 26, 2019, it was announced that DISH agreed to acquire Boost as part of a broader agreement with the Applicants under a settlement with the DOJ.⁶⁵² As part of that arrangement to divest Boost, “T-Mobile must also provide Dish with robust access to the T-Mobile network for a period of seven years while Dish builds out its own 5G network.”⁶⁵³ Assistant Attorney General Makan Delrahim stated that the “settlement will provide Dish with the assets and transitional services required to become a facilities-based mobile network operator that can provide a full range of mobile wireless services nationwide.”⁶⁵⁴

195. DISH likewise contends that its ability “to compete in the market for retail wireless services upon consummation of the acquisition of Boost Mobile and other assets” obviates concerns it previously raised about the transaction.⁶⁵⁵ In particular, DISH’s “studies conducted and submitted in the record . . . do not apply to the recently entered into set of arrangements.”⁶⁵⁶ Furthermore, DISH’s “set of agreements with the Applicants provide more attractive economics than traditional MVNO agreements, including pricing, packaging and marketing flexibility, a mechanism for costs to drop over time, and access to core control (infrastructure MNO agreement).”⁶⁵⁷ In light of these features, “DISH’s concerns about the inability of an MVNO to compete effectively are therefore not applicable to the agreements in question.”⁶⁵⁸

196. *Discussion:* We are persuaded for the reasons discussed below that the divestiture of Boost will lead to meaningful competitive constraints that address the potential for competitive harms raised by the proposed transaction. We note that Boost is an important competitor in the marketplace today, particularly in the densely-populated areas where the transaction raises the greatest risk of net competitive harm. We find that the Boost Divestiture Conditions will enable Boost to remain a strong

⁶⁴⁸ Retsky Comments at 2.

⁶⁴⁹ CWA May 31, 2019 *Ex Parte* Letter at 4.

⁶⁵⁰ CWA May 31, 2019 *Ex Parte* Letter at 4-5.

⁶⁵¹ Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed May 23, 2019) (CWA and Public Knowledge May 23, 2019 *Ex Parte* Letter); CWA May 31, 2019 *Ex Parte* Letter at 4.

⁶⁵² DOJ, Office of Public Affairs, *Justice Department Settles with T-Mobile and Sprint in Their Proposed Merger by Requiring a Package of Divestitures to Dish* (July 26, 2019), <https://www.justice.gov/opa/pr/justice-department-settles-t-mobile-and-sprint-their-proposed-merger-requiring-package> (DOJ July 26, 2019 Press Release); Letter from Jeffrey H. Blum, Senior Vice President, Public Policy and Government Affairs, DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed July 30, 2019) (DISH July 30, 2019 *Ex Parte* Letter).

⁶⁵³ DOJ July 26, 2019 Press Release.

⁶⁵⁴ DOJ July 26, 2019 Press Release (internal quotation marks omitted).

⁶⁵⁵ DISH Aug. 1, 2019 *Ex Parte* Letter at 2.

⁶⁵⁶ DISH Aug. 1, 2019 *Ex Parte* Letter at 2.

⁶⁵⁷ DISH Aug. 1, 2019 *Ex Parte* Letter at 2.

⁶⁵⁸ DISH Aug. 1, 2019 *Ex Parte* Letter at 2-3.

competitor going forward, with the potential to assume an increased competitive role as market forces demand.⁶⁵⁹

197. **Boost Mobile’s Competitive Significance.** The marketplace importance of Boost Mobile is demonstrated by the pleadings, data, and documents in the record. For example, Boost’s competitive relevance is illustrated by the frequency with which commenters’ concerns about the proposed transaction center on Boost’s competition for prepaid consumers generally and with Metro specifically,⁶⁶⁰ as well as Boost’s important role in serving lower-income consumers.⁶⁶¹ The record also reveals that the Boost Mobile brand is likely to be of particular competitive significance for consumers that are less quality sensitive.⁶⁶² Similarly, data on switching among providers are consistent with the view that Boost Mobile is a significant competitor today, particularly for prepaid consumers, making its divestiture likely to substantially mitigate the static competitive harms we have identified. For example, analysis of porting data reveal that prepaid-segment diversion from T-Mobile to Sprint is approximately **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%**, while prepaid diversion from Sprint to T-Mobile is approximately **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%**.⁶⁶³ In addition, a June 2018 Metro presentation citing **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.].⁶⁶⁴ Internal documents likewise reveal that Sprint closely tracked competition between Boost and Metro, including through reports based on porting data,⁶⁶⁵ and tracking promotional offerings,⁶⁶⁶ and that T-Mobile also closely tracked competition between Metro and Boost Mobile.⁶⁶⁷

⁶⁵⁹ See *infra* paras. 199-200.

⁶⁶⁰ Public Knowledge Aug. 27, 2018 Petition at 26-27; CWA Aug. 27, 2018 Comments at 28-30; DISH Reply at 18-19; CWA Reply at 7; Free Press Reply at 38-40; Retsky Comments at 2; Media Alliance Comments at 2.

⁶⁶¹ Free Press Aug. 27, 2018 Petition at 14, 69; Public Knowledge Aug. 27, 2018 Petition at 27; Greenlining Petition at 10-11; Kim Keenan Comments at 3; Free Press Reply at 17; Retsky Comments at 2; Public Knowledge Dec. 12, 2018 *Ex Parte* Letter at 2.

⁶⁶² See, e.g., Free Press Reply at 17 (observing that “T-Mobile’s MetroPCS pre-paid brand, and Sprint’s Boost pre-paid brand, are marketed to customers who are primarily concerned with the monthly price of service”); Cornerstone Report at 16, para. 40 & n.37 (discussing the quality difference associated with Sprint’s non-premium brands Boost and Virgin Mobile).

⁶⁶³ See *supra* section V.B.3: Unilateral Effects.

⁶⁶⁴ TMUS-FCC-01904503 (T-Mobile, “Metro growth strategy discussion,” June 6, 2018).

⁶⁶⁵ See, e.g., SPR-FCC-02439442 (Sprint, Email from Stephen Lines to Dow Draper et al., June 25, 2018) **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**; SPR-FCC-06144553 (Sprint, Email from Angela Rittgers to David Kim and Christy Drummond, June 18, 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; SPR-FCC-00820803 (Sprint, Email from Stephen Lines to Dow Draper, et al., Apr. 30, 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; SPR-FCC-00805095 (Sprint, Email from Stephen Lines to Dow Draper, et al., Apr. 9, 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; SPR-FCC-00837014 (Sprint, Email from Angela Rittgers to Dow Draper, Mar. 16, 2018) **[BEGIN HIGHLY CONF. INFO.]**

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⁶⁶⁶ See, e.g., SPR-FCC-02381255 (Sprint, email from Angela Rittgers to Dow Draper, June 22, 2018) **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY**

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198. The divestiture of Boost Mobile will not merely impact prepaid customers but will work to constrain postpaid pricing as well. The record indicates significant competitive interaction between Boost and T-Mobile's postpaid offerings.⁶⁶⁸ For example, a June 2018 Metro strategy presentation citing **[BEGIN HIGHLY CONF. INFO.]**

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[END HIGHLY CONF. INFO.]⁶⁶⁹ The evidence is consistent with our view that although there is product differentiation in the offering of prepaid or value-conscious wireless services, it is appropriate to define a single mobile/telephony broadband services market that includes both prepaid and postpaid services.⁶⁷⁰

199. In assessing the competitive significance of the divestiture of Boost, we consider not only its strong current market position but its potential to expand to further constrain the larger firms in the market. The principal concern in our competitive effects analysis is with the Applicants unilaterally raising prices post-transaction. The Boost Divestiture Conditions, however, require that New Boost not be limited in how it sells its services, allowing for repositioning and expansion should marketplace conditions—such as price increases—create an opportunity to do so.⁶⁷¹ Were the Applicants to consider or attempt to raise price, the potential of Boost's resulting growth and expansion would serve as a significant constraining factor.

200. In light of this record, we conclude that the divestiture of Boost to an independent competitor under the Boost Divestiture Conditions would meaningfully restructure the post-transaction market so as to address our concerns about the potential for lost price competition. By placing Boost in the hands of an independent competitor—instead of the merging parties—the divestiture results in a transaction structurally distinct from the complete consolidation of the Applicants' brands modeled in our static merger simulation analysis. Not only will the Applicants have a lower share of the market than modeled in the static simulation by virtue of not acquiring Boost, they will also face an additional

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CONF. INFO.]; SPR-FCC-00869363 (Sprint, email from Dow Draper to Nestor Cano, May 22, 2018) **[BEGIN HIGHLY CONF. INFO.]**

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CONF. INFO.]; SPR-FCC-00743569 (Sprint, email from Brandon Timm to Dow Draper, et al., Oct. 18, 2017) **[BEGIN HIGHLY CONF. INFO.]**

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⁶⁶⁷ See, e.g., TMUS-FCC-00711342 (T-Mobile, "Prepaid/Metro Industry Assessment," Mar. 12, 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; TMUS-FCC-07651391 (T-Mobile, "MetroPCS Competitive Overview," June 18, 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; TMUS-FCC-00224211 (T-Mobile, "Marketing Learning System For Week Ending 2/10," Feb. 2018) **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]; TMUS-FCC-02452965, at 10 (T-Mobile, "Metro growth strategy discussion," May 2018) **[BEGIN HIGHLY CONF. INFO.]**

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⁶⁶⁸ CWA Aug. 28, 2018 Comments at 29 (while MetroPCS "had reportedly bundled costs since 2010," in 2017 Boost "announced plans to bundle in taxes and fees into plan costs," which "[a]nalysts viewed . . . motivated by T-Mobile, which announced earlier in the year that it would bundle costs for its newest plans").

⁶⁶⁹ TMUS-FCC-01904503 (T-Mobile, "Metro Growth Strategy Discussion," June 6, 2018).

⁶⁷⁰ See *supra* section V.A.1: Product Market.

⁶⁷¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2.

independent competitor. Accordingly, we conclude that the divestiture of Boost will address the potential for competitive harm otherwise created by the transaction.

201. **New Boost’s Wholesale Network Access.** We carefully considered the extent to which the efficacy of the Boost divestiture would be impeded by the buyer’s initial reliance, through an MVNO agreement, on New T-Mobile’s network. The Commission typically has seen MVNOs as limited in their ability to constrain the prices of facilities-based service providers because they rely on those facilities-based providers for network access. It is important to note here, however, that New Boost’s wholesale network access agreement will be unique among MVNO agreements in the industry, with more favorable terms and conditions that, in turn, will enable New Boost to more effectively constrain potential price increases. Indeed, the Boost Divestiture Conditions include specific principles guiding New T-Mobile’s wholesale relationship with New Boost that will ensure that New Boost is well-positioned to be a significant competitive force in the mobile wireless marketplace.⁶⁷²

202. Under the Boost Divestiture Conditions, the pricing provisions of the wholesale arrangement between New Boost and New T-Mobile must comply with three key principles. First, the rates that New T-Mobile charges New Boost for wholesale service must be low enough to “create a strong incentive and ability” for New Boost and T-Mobile to compete with one another, enabling competition at least as strong as Boost provides today.⁶⁷³ Second, in addition to requirements ensuring that New Boost has access to that improved New T-Mobile network,⁶⁷⁴ the wholesale pricing must “allow [New Boost] to benefit from the long-run network cost efficiencies of New T-Mobile’s 5G network deployment.”⁶⁷⁵ This increases New Boost’s competitive capabilities just as it will for New T-Mobile. And third, the pricing in New T-Mobile’s wholesale MVNO agreement must “meaningfully improve upon the commercial terms” in T-Mobile’s existing wholesale contracts with its largest three MVNO customers, as well as Sprint’s existing wholesale contracts with its largest three MVNO customers.⁶⁷⁶

203. The principles incorporated in the Boost Divestiture Conditions will ensure that New Boost can maintain and expand its role as an effective competitor and has all available options to continue to be effective well into the future. In the short term, New T-Mobile must “maintain Boost’s

⁶⁷² We also note that under the *DOJ Proposed Final Judgment*, among other things, the divestiture of Boost “will be accomplished in such a way as to satisfy the United States, in its sole discretion, that the Divestiture Assets can and will be used by [DISH] as part of a viable, ongoing operation relating to the provision of retail mobile wireless service” and that “none of the terms of any agreement between” the Applicants and DISH “gives [New T-Mobile] the ability unreasonably to raise [DISH’s] costs, to lower [DISH’s] efficiency, or otherwise to interfere with the ability of [DISH] to compete.” *DOJ Proposed Final Judgment* at 16-17. In addition, DISH must use the divested assets “to offer retail mobile wireless services, including offering nationwide postpaid retail mobile wireless service within (1) year of the closing of the sale of” Boost, and, among other things, New T-Mobile “shall not take any action that will impede in any way the permitting, operation, or divestiture” of Boost. *DOJ Proposed Final Judgment* at 17.

⁶⁷³ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 1-2.

⁶⁷⁴ New T-Mobile must accord New Boost nondiscriminatory treatment by comparison to its treatment of its leading low-cost brand (at present, Metro) with regard to network management practices (“unwanted discriminatory throttling [and] de-prioritization”), and New T-Mobile may not subject New Boost to “limitations on access to new network technologies” that do not also apply to Metro or any New T-Mobile successor leading low-cost brand. T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2. New T-Mobile also must give New Boost access to its network “on the same timeline as Sprint;” it must allow New Boost to activate new (or modified) customer connections on its network “on a nondiscriminatory basis;” and it must give New Boost “reasonable advance notice of network transition plans that could affect New Boost’s customers. *Id.*, Attach. 2 at 2-3. We note that somewhat similar requirements would apply under the *DOJ Proposed Final Judgment*. *DOJ Proposed Final Judgment* at 19-20.

⁶⁷⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2.

⁶⁷⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2.

competitiveness through its transition to independent ownership.”⁶⁷⁷ In the medium term (i.e., up to two years after the closing of the divestiture), New T-Mobile must provide New Boost with “customary transitional services” at cost, to the extent New Boost needs such services.⁶⁷⁸ And the wholesale agreement must enable New Boost “to compete effectively on a long-term basis”—i.e., over the (at minimum) six-year term of the agreement.⁶⁷⁹ Those principles dovetail with other requirements that ensure that New Boost has access to the technological and cost benefits flowing from New T-Mobile’s 5G network deployment. Furthermore, the wholesale agreement must leave New Boost considerable flexibility in how it proceeds as a marketplace competitor.⁶⁸⁰ Accompanying that flexibility, further wholesale rate reductions may be appropriate to reflect the “reasonable cost benefits” of New Boost’s use of “its own spectrum, systems, network infrastructure, [or] other facilities,” rather than those of New T-Mobile, if and when New Boost begins to do so.⁶⁸¹ Thus, unlike a typical MVNO arrangement with standard wholesale provisions, New Boost will be able to use its wholesale arrangement with New T-Mobile as the jumping-off point to grow into an even stronger competitor—whether continuing as an MVNO, as an infrastructure-based reseller (iMVNO), and/or a full-fledged facilities-based provider.

204. The Boost Divestiture Conditions also provide for strong Commission oversight to ensure the effectiveness of these principles to ensure New Boost is a meaningful competitor. For one, New Boost must be acquired by “a ‘serious and credible third party buyer,’”⁶⁸² and the Bureau will evaluate whether that requirement has been satisfied.⁶⁸³ In addition, prior to consummating the divestiture, New T-Mobile must submit for Bureau approval the negotiated wholesale MVNO agreement for the Bureau to

⁶⁷⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2. We note that a similar requirement would apply under the *DOJ Proposed Final Judgment* and the related Stipulation and Order. *DOJ Proposed Final Judgment* at 24; *DOJ Stipulation and Order* at 8-11.

⁶⁷⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3. We note that a somewhat similar requirement would apply under the *DOJ Proposed Final Judgment*. *DOJ Proposed Final Judgment* at 10.

⁶⁷⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2. “New T-Mobile will not unreasonably withhold consent to changes in New Boost ownership (for example, it would not be unreasonable for New T-Mobile to withhold consent to a change of control to a facilities-based provider who refuses to provide New T-Mobile with reciprocal access to the provider’s facilities on reasonable terms; it would be unreasonable to withhold consent to a sale with the objective of keeping New Boost in the hands of an unsuccessful owner).” *Id.* We note that under the *DOJ Proposed Final Judgment*, an MVNO agreement of “no fewer than seven (7) years” would be required. *DOJ Proposed Final Judgment* at 19.

⁶⁸⁰ The wholesale agreement “will not constrain how [New Boost] prices or packages its retail services,” and it “will permit [New Boost] to deploy and utilize its own spectrum, systems, network infrastructure, and other facilities if it chooses, and enjoy reasonable cost benefits of doing so.” T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2. We note that under the *DOJ Proposed Final Judgment*, New T-Mobile could not “delay, impede, or frustrate” DISH’s “ability to use any Full MVNO Agreement” and the divested facilities “to become a nationwide facilities-based retail mobile wireless services provider.” *DOJ Proposed Final Judgment* at 20; *see also Id.* at 23 (discussing additional requirements related to DISH’s provision of facilities-based service).

⁶⁸¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 2. At the same time, the wholesale rates cannot be so low as to “prevent New T-Mobile from recouping its full network costs associated with serving New Boost customers.” *Id.*

⁶⁸² This means “an entity that: 1. has, or has, access to, the financial resources to acquire, maintain and expand the Divested Business, and 2. is unrelated to either of the Applicants.” T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3.

⁶⁸³ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3-4. Section IV of the Boost Divestiture Conditions requires New T-Mobile to “submit the wholesale MVNO agreement negotiated with the Buyer to the Bureau for review prior to consummating the divestiture.” *Id.*, Attach. 2 at 3. Because “the Buyer” must meet the specified criteria, a wholesale MVNO agreement negotiated with an entity that the Bureau determines does not meet the criteria would not satisfy the requirements, and would be subject to contributions to the U.S. Treasury. *Id.*, Attach. 2 at 3-4.

determine whether the agreement is consistent with the associated principles in the Boost Divestiture Conditions.⁶⁸⁴ In conjunction with this evaluation of the wholesale MVNO agreement, the Bureau also will evaluate New T-Mobile's compliance with the requirement that it "undertake commercially reasonable efforts to maintain Boost's competitiveness prior to completion of the divestiture."⁶⁸⁵ In addition to potential financial contributions should the Bureau determine that New T-Mobile failed to meet that requirement,⁶⁸⁶ New T-Mobile "must take appropriate steps to restore Boost's competitiveness to the Bureau's satisfaction."⁶⁸⁷

205. Taken as a whole, we are persuaded that the Boost Divestiture Conditions will ensure that New Boost will serve as a meaningful competitor, especially for price-conscious consumers. We also conclude that the requirements governing the negotiated wholesale MVNO agreement collectively provide important protections likely to ensure that New Boost is a meaningful competitor. We reject commenters' concerns about the adequacy of the Boost divestiture that fail to account for the many important protections built in to the Boost Divestiture Conditions.⁶⁸⁸ Moreover, we disagree that the Bureau will fail to effectively police the Boost Divestiture Conditions. Likewise, generalized references to prior Commission decisions regarding the competitive significance of MVNOs fail to account for the unique aspects of the wholesale agreement required by the Boost Divestiture Conditions.⁶⁸⁹ Similarly, prior internal analyses by Sprint—cited by some commenters as undercutting the efficacy of the Boost Divestiture Conditions—did not account for the important details of the Boost Divestiture Conditions adopted here.⁶⁹⁰

206. **Additional Competitive Benefits of DOJ Settlement and DISH Buildout Commitments.** Although not determinative to our conclusions regarding the efficacy of the Boost Divestiture Conditions, we note that several aspects of the DOJ settlement reinforce our confidence. First, requirements related to the use of eSIM will tend to lower switching costs for wireless consumers, increasing the ability of Boost to win subscribers from T-Mobile and, in turn, Boost's ability to constrain pricing for T-Mobile's brands.⁶⁹¹ Second, the requirement that DISH offer postpaid services bolsters our conclusion that the Boost divestiture buyer will not merely constrain price increases within the prepaid segment, but across the differentiated retail mobile wireless services market.⁶⁹² Indeed, the DOJ

⁶⁸⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3. In the event that the Bureau finds any failures to meet these requirements, New T-Mobile will be subject to making contributions to the U.S. Treasury, including among other things the possibility of \$3.5 million per day contributions until New T-Mobile acts to address the failure(s) in specified ways. T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3-4.

⁶⁸⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 1, 3.

⁶⁸⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3-4.

⁶⁸⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 4; *see also Id.*, Attach. 2 at 4 (in the event that the wholesale MVNO agreement is not consistent with section III.A and New T-Mobile has not met the obligations in section II, it is subject to making certain contributions "until both of these problems have been remedied and the divestiture is complete").

⁶⁸⁸ CWA May 31, 2019 *Ex Parte* Letter at 4-5.

⁶⁸⁹ CWA May 31, 2019 *Ex Parte* Letter at 4 (contending that New Boost would not be "a facilities-based competitor" and citing certain Commission decisions regarding MVNOs without addressing terms of the Boost divestiture condition providing oversight of wholesale prices and allowing New Boost to rely on its own facilities and benefit financially when doing so, for example); *see also* CWA and Public Knowledge May 23, 2019 *Ex Parte* Letter at 2 ("divesting Boost Mobile, Sprint's prepaid brand, will do nothing to benefit prepaid customers, as Boost is currently just another brand name for a service that uses Sprint's network on the back end").

⁶⁹⁰ CWA May 31, 2019 *Ex Parte* Letter at 4.

⁶⁹¹ *DOJ Proposed Final Judgment* at 21-23.

⁶⁹² *DOJ Proposed Final Judgment* at 17 (discussing DISH's obligation to use the divested assets to, among other things, "offer[] nationwide postpaid retail mobile wireless service within one (1) year of the closing of the sale of the

(continued....)

settlement reinforces New Boost's flexibility in how it sells its services, including through repositioning and expansion as marketplace conditions warrant.⁶⁹³ Third, the oversight of the DOJ and a monitoring trustee, combined with prohibitions on T-Mobile discriminating against Boost traffic, reinforce our view that T-Mobile will be prevented from using its supply of wholesale services to Boost as a means of limiting Boost's competitive strength.⁶⁹⁴

207. We also note that DISH would be "a 'serious and credible third party buyer,'" under the conditions in that it both "is unrelated to either of the Applicants" and "has, or has, access to, the financial resources to acquire, maintain and expand the Divested Business."⁶⁹⁵ Not only does DISH have the necessary independence and financial resources, but it also has considerable experience providing communications services to end-user customers, and has spectrum licenses of its own that ultimately can and will be used in providing wireless service to end users. In these respects, DISH's status as the buyer of Boost would confirm the Commission's expectation that the purchaser of Boost under the terms of the Boost Divestiture Conditions would be an entity well positioned to take up—and expand upon—Boost's competitive role in the mobile wireless marketplace.⁶⁹⁶

208. Finally, in concert with DISH's acquisition of Boost as part of the DOJ settlement, DISH now plans to build a nationwide 5G network utilizing its existing spectrum assets under the extensions and conditions discussed below.⁶⁹⁷ As the buyer of Boost, DISH's expansion into facilities-based operation further increases our confidence in the efficacy of the divestiture because DISH's planned facilities operation will create an added incentive for it to grow the Boost subscriber base. DISH's spectrum resources will likely yield capacity well in excess of that utilized by the current Boost subscriber base, giving it a significant incentive to grow that subscriber base for a planned transition to facilities-based provisioning of wireless services to those subscribers. Moreover, DISH's planned network build adds certainty that Boost will have a long-term competitive role beyond the term of its wholesale access agreement with T-Mobile.

b. Pricing Commitment

209. In February 2019, the Applicants committed to offer T-Mobile and Sprint legacy rate plans available as of February 4, 2019 for three years following consummation of the transaction or until better plans that offer a lower price or more data are made available.⁶⁹⁸ The pricing commitment includes

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Prepaid Assets").

⁶⁹³ See, e.g., *DOJ Proposed Final Judgment* at 20, 23.

⁶⁹⁴ See, e.g., *DOJ Proposed Final Judgment* at 19-20 (discussing restrictions on discrimination); *Id.* at 25-28 (discussing the monitoring trustee); *Id.* at 30-31 (discussing compliance inspections); *Id.* at 34-36 (discussing enforcement of the proposed final judgment).

⁶⁹⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2 at 3.

⁶⁹⁶ We note that the *DOJ Competitive Impact Statement* reflects a similar view ("The primary purpose of the proposed Final Judgment is to facilitate DISH building and operating its own mobile wireless services network by combining the Divestiture Package of assets and other relief with DISH's existing mobile wireless assets, including substantial and currently unused spectrum holdings, to enable it to compete in the marketplace. . . . The required Divestiture Package and related obligations in the proposed Final Judgment are intended to ensure that DISH can begin to offer competitive services and grow to replace Sprint as an independent and vigorous competitor in the retail mobile wireless service market in which the proposed merger would otherwise lessen competition."). *DOJ Competitive Impact Statement* at 2-3; see also DISH July 30, 2019 *Ex Parte* Letter at 1-2 ("DOJ's Proposed Final Judgment and the related agreements with Sprint and T-Mobile . . . facilitat[e] DISH's entry into the wireless market as a fourth nationwide facilities-based competitor.").

⁶⁹⁷ DISH July 30, 2019 *Ex Parte* Letter at 2, Attach. 2.

⁶⁹⁸ Letter from John Legere, CEO, T-Mobile, to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 1 (filed Feb. 4, 2019); T-Mobile Feb. 4, 2019 Commitment Letter at 2; T-Mobile/Sprint May 20, 2019 Commitments Letter, (continued....)

certain stipulations that would allow the Applicants to modify or raise prices of legacy plans, including (1) to pass through cost increases in taxes, fees and surcharges as well as service from third party partners included in the rate plans; and (2) to modify or discontinue third party partner benefits based on changes in terms of the offering initiated by the third party partner.⁶⁹⁹

210. *Record.* DISH asserts that the Applicants' pricing commitment is ineffective.⁷⁰⁰ Specifically, DISH claims that the agreement contains "loopholes" through which New T-Mobile could evade the commitment following the proposed transaction, including the ability to increase consumer prices due to "small" network improvements or through increases in handset and device prices, elimination of service benefits such as unlimited streaming, or imposing other fees.⁷⁰¹ Characterizing the pricing commitment as a behavioral remedy, DISH and CWA also note that such remedies are disfavored by the DOJ because they often fail to protect competition.⁷⁰² CWA also argues that pricing commitments are particularly undesirable because price caps may discourage the merged entity from lowering its prices and create incentives to reduce quality.⁷⁰³

211. T-Mobile disputes DISH's claim that the pricing commitment is subject to "loopholes" or "evasive strategies," and it points to T-Mobile's reputation as the "Un-carrier" and its focus on consumer value.⁷⁰⁴ T-Mobile maintains that the pricing commitment would ensure that no service plan prices would increase after the proposed transaction, and that consumers would receive higher quality service at their current or lower price levels.⁷⁰⁵ The Applicants further contend that rather than equating to a behavioral merger condition, the pricing commitment formalizes New T-Mobile's business plan set forth in earlier filings by the Applicants.⁷⁰⁶

212. *Discussion.* We find that the price commitment will help to address some of the predicted static harms arising from the proposed transaction in the first three years, and accordingly, we adopt the price commitment as a condition to our approval. While it would be inappropriate to include the price commitment in the static economic modeling, as discussed above, we nonetheless find that it would help offset, in concert with other commitments, the prospective harms associated with the predicted unilateral effects. This is because the price commitment directly serves as a ceiling on potential price increases post-transaction during the network integration period, prior to which the Applicants would not have realized the longer-term network benefits anticipated as a result of this transaction. While we recognize that the price commitment is only binding with regard to existing rate plans, we anticipate

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Attach. 3 at 2.

⁶⁹⁹ T-Mobile Feb. 4, 2019 Commitment Letter at 3.

⁷⁰⁰ DISH Feb. 7, 2019 *Ex Parte* Letter at 1; DISH May 1, 2019 *Ex Parte* Letter at 3.

⁷⁰¹ DISH Feb. 7, 2019 *Ex Parte* Letter at 2-6.

⁷⁰² DISH Feb. 7, 2019 *Ex Parte* Letter at 6-7; Letter from Allen P. Grunes, Counsel to CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-3 (filed May 31, 2019) (CWA May 31, 2019 *Ex Parte* Letter). Specifically, CWA notes that among other factors, behavioral remedies are difficult to craft, entail a high degree of risk of unintended consequences, and raise practical problems such as the need for ongoing monitoring and enforcement.

⁷⁰³ CWA May 31, 2019 *Ex Parte* Letter at 3.

⁷⁰⁴ T-Mobile Feb. 12, 2019 *Ex Parte* Letter at 2.

⁷⁰⁵ T-Mobile Feb. 12, 2019 *Ex Parte* Letter at 2. The Applicants clarify that a "better plan" is one with a lower price, the same price and more data, or a lower price and more data. *Id.* at 2-3. DISH contests that this is a clarification and maintains that the Applicants do not refute two of four loopholes that DISH identified. Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Feb. 13, 2019).

⁷⁰⁶ T-Mobile Mar. 11, 2019 DISH Response *Ex Parte* Letter at 2-4.

that existing rate plans serve as a reasonable substitute for future plans, which creates a competitive constraint on future plan pricing.⁷⁰⁷ Moreover, as discussed above, because service plan offerings and prices typically do not vary for most service providers across most geographic markets,⁷⁰⁸ the commitment has the potential to constrain prospective nationwide post-transaction harms.

213. Regarding record arguments that behavioral remedies are disfavored by the DOJ, we note that our competitive analysis is informed by, but not limited to, traditional antitrust principles.⁷⁰⁹ In particular, the Commission has historically relied on both structural and non-structural remedies to advance the public interest, including, in its review of previous mobile wireless transactions, conditions to make existing rate plans or plan features available to new customers for a pre-determined period.⁷¹⁰ In those transactions, as in this one, the Commission coupled rate plan commitments with other network based commitments intended to spur competition for coverage and quality.⁷¹¹ For this reason, and because the mobile/telephony broadband services market encompasses differentiated services, devices, and contract features, it is unlikely in this case, as commenters assert, that the pricing commitment would have the unintended consequence of preventing New T-Mobile from lowering its prices or hindering its incentives to raise quality.

VI. POTENTIAL PUBLIC INTEREST BENEFITS OF INCREASED NETWORK DEPLOYMENT

214. We next discuss the public interest benefits of the transaction, beyond fostering the free transferability of licenses and authorizations. The Commission has recognized that efficiencies generated through a transaction can mitigate competitive harms “if such efficiencies enhance the merged firm’s ability and incentive to compete and therefore result in lower prices, improved quality, enhanced service or new products.”⁷¹² Moreover, the Commission finds a claimed benefit to be cognizable only if it is transaction-specific—meaning it naturally arises as a result of the transaction and likely could not be accomplished in the absence of the transaction⁷¹³—and verifiable.⁷¹⁴ Because much of the information relating to the potential benefits of a transaction is in the sole possession of the applicants, they are

⁷⁰⁷ We note that to the extent that average retail service prices fall post-transaction, the price commitment will not bind.

⁷⁰⁸ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2749, para. 30; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2333, para. 32; see also *Mobile Spectrum Holdings Report and Order*, 29 FCC Rcd at 6226, para. 239.

⁷⁰⁹ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9585, para. 9; *Verizon-Straight Path Order*, 33 FCC Rcd at 190, para. 6; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10443, para. 25; see also *Northeast Utils. Serv. Co. v. FERC*, 993 F.2d 937, 947 (1st Cir. 1993) (public interest standard does not require agencies “to analyze proposed mergers under the same standards that the Department of Justice . . . must apply”).

⁷¹⁰ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2803-05, paras. 168-71; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10460, para. 63; *Application of AT&T Inc. and Atlantic Tele-Network, Inc., For Consent to Transfer of and Assign Licenses and Authorizations*, Memorandum Opinion and Order, 28 FCC Rcd 13670, 13722, paras. 97-98.

⁷¹¹ Baker, A., Brennan, T., Erb, J., Nayeem, O., & Yankelevich, A. (2014). Economics at the FCC, 2013–2014. *Review of Industrial Organization*, 45(4), 345-78 at 346-53.

⁷¹² See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9604, para. 50; *AT&T-Leap Order*, 29 FCC Rcd at 2793, para. 131; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 86; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 57.

⁷¹³ See, e.g., *2010 DOJ/FTC Horizontal Merger Guidelines* at § 10; see also *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9604, para. 50; *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

⁷¹⁴ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9604, para. 50; *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

required to provide sufficient evidence supporting each claimed benefit so that the Commission can verify its likelihood and magnitude.⁷¹⁵ Further, the Commission is “more likely to find marginal cost reductions to be cognizable than reductions in fixed cost”⁷¹⁶ as, in general, reductions in marginal cost are more likely to result in lower prices for consumers. Further, benefits expected to occur only in the distant future may be discounted or dismissed because, among other things, predictions about the distant future are inherently more speculative than predictions that are expected to occur closer to the present.⁷¹⁷

A. Nationwide 5G Network

215. The Applicants explain that although both standalone T-Mobile and standalone Sprint have announced plans for 5G deployment, it would be cost-prohibitive for T-Mobile or Sprint to develop a robust, nationwide 5G network on a standalone basis.⁷¹⁸ The Applicants argue that, due to the nature of T-Mobile’s spectrum holdings, its standalone 5G network would have broad coverage, but would lack capacity given its relative lack of mid-band and high-band spectrum.⁷¹⁹ While future auctions will make more mmW spectrum available, the Applicants observe that this would not address T-Mobile’s need for mid-band spectrum because of the propagation challenges of mmW spectrum.⁷²⁰ By contrast, the Applicants contend that Sprint’s standalone 5G network deployment would have capacity but given the relatively limited propagation characteristics of the 2.5 GHz mid-band spectrum on which it would rely for its 5G deployment, including rural deployment, Sprint would lack coverage, making the cost of deploying a nationwide 5G network prohibitive.⁷²¹ In particular, the Applicants state that the propagation characteristics of 2.5 GHz spectrum not only limits Sprint’s ability to cover wide geographic areas—including many rural areas—but also its ability to provide strong in-building coverage.⁷²²

216. In light of New T-Mobile’s combined spectrum assets and increased number of cell sites relative to the standalone companies,⁷²³ the Applicants anticipate that New T-Mobile’s 5G network will

⁷¹⁵ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58. In addition, “the magnitude of benefits must be calculated net of the cost of achieving them.” See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

⁷¹⁶ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9604, para. 50; *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

⁷¹⁷ See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

⁷¹⁸ Public Interest Statement at 19-20.

⁷¹⁹ Public Interest Statement at 19-22. T-Mobile’s deployment plans rely primarily on its 600 MHz low-band spectrum for 5G coverage, but that spectrum is constrained by its relatively low bandwidth and limited ability to efficiently support applications that require high data rates. *Id.* at 21.

⁷²⁰ Public Interest Statement at 22.

⁷²¹ Public Interest Statement at 19-20, 23-25; Letter from Regina M. Keeney, Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. C at 9, 17, 21 (filed Oct. 1, 2018) (Sprint Oct. 1, 2018 *Ex Parte* Letter); Sprint Apr. 15, 2019 *Ex Parte* Letter at 3, 13, 26.

⁷²² Public Interest Statement at 20; Sprint Information Request Response at 33-35 (Sept. 5, 2018); Sprint Oct. 1, 2018 *Ex Parte* Letter, Attach. C at 9, 20; Sprint Apr. 15, 2019 *Ex Parte* Letter at 26.

⁷²³ Public Interest Statement at 32-35 (discussing the merged company’s low-, mid-, and high-band spectrum); *Id.* at 30-32 (discussing how the merged company’s spectrum would be deployed across the combined network, including the combined network’s cell sites). A number of commenters agree with the Applicants’ claims regarding the benefits of the combined company’s spectrum assets. Free State Comments at 1-2; Christian Sorgi Comments at 1; Tucows Comments at 3; Comments of Ultra Mobile/Mint Mobile at 2 (Aug. 28, 2019) (Ultra Mobile/Mint Mobile Comments); Comments of Crown Castle (Aug. 29, 2018) (Crown Castle Comments); Comments of Tillman

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provide consumers with much greater capacity and faster data rates than would be possible from the standalone networks.⁷²⁴ The Applicants also maintain that the network coverage footprint for New T-Mobile will be greater than for the standalone companies.⁷²⁵ The Applicants state that these benefits are likely to occur because: (1) it would not make sense to operate two parallel networks, and integrating the networks will involve upgrading or deploying 5G-capable equipment; (2) at that point, the additional incremental cost of 5G deployment will be minimal; and (3) 5G deployment will yield significant incremental gains.⁷²⁶ More broadly, the Applicants contend that the proposed transaction will leave the U.S. “well-positioned to lead in the global race to 5G, allowing consumers and the country as a whole to reap the benefits of new applications that will be delivered over the most advanced nationwide telecommunications network anywhere.”⁷²⁷ A number of commenters agree that the proposed transaction will lead to greater network investment that will enable better performance relative to the standalone providers, made possible not only by the additional spectrum but also as a result of improved capital resources and increased scale.⁷²⁸ Some commenters also echo the Applicants’ views regarding the importance of U.S. 5G leadership and the likely broader benefits from New T-Mobile’s 5G deployment.⁷²⁹

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Infrastructure at 1 (Aug. 29, 2018) (Tillman Infrastructure Comments); Letter from Brian Hendricks, Head of Policy and Public Affairs, Americas Region, Nokia, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Aug. 30, 2018) (Nokia Aug. 30, 2018 *Ex Parte* Letter); Digital Bridge/Vertical Bridge Comments at 4; NPRCC Comments at 4; Comments of Center for Individual Freedom at 5 (Sept. 13, 2018) (Center for Individual Freedom Comments); Comments of OMF Cares, Attach. at 1 (Sept. 13, 2018) (OMF Cares Comments); Comments of TracFone Wireless at 2-3 (Sept. 13, 2018) (TracFone Comments); Comments of Shenandoah Telecommunications at 2 (Sept. 17, 2018) (Shentel Comments); HITN Comments at 4-5.

⁷²⁴ Public Interest Statement at 42-47; Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 6-7 (filed Feb. 13, 2019) (T-Mobile Feb. 13, 2019 *Ex Parte* Letter); T-Mobile Feb. 21, 2019 *Ex Parte* Letter at 2-3.

⁷²⁵ Public Interest Statement at 45-47; T-Mobile Feb. 13, 2019 *Ex Parte* Letter at 6-7.

⁷²⁶ T-Mobile Information Request Response at 34-37 (Sept. 5, 2018).

⁷²⁷ Public Interest Statement at 70; *see also Id.* (stating that “4G leadership enabled the United States to set the pace for global innovation for mobile broadband services and applications for the last decade” and that “[b]y accelerating nationwide 5G in the United States, the merger will help ensure America’s economy, industries, and consumers are among the early beneficiaries of the enormous transformative technological and economic benefits that 5G services will create for the country”).

⁷²⁸ Digital Liberty Comments, Attach. at 2; Free State Comments at 1-2, 11, 16-17; ITIF Opposition at 2-3; Comments of Prepaid Wireless Group at 1-2 (Aug. 30, 2018) (PWG Comments); Ultra Mobile/Mint Mobile Comments at 2; Comments of Cell Nation at 2-4 (Aug. 29, 2018) (Cell Nation Comments); Crown Castle Comments at 2; Tillman Infrastructure Comments at 1-2; Letter from Brien J. Sheahan, Chairman and CEO, Illinois Commerce Commission, to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 2-3 (filed Aug. 30, 2018); Digital Bridge/Vertical Bridge Comments at 4-5; Letter from Michael G. Francis, Commissioner, District 4–Louisiana Public Service Commission, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Sept. 17, 2018) (Commissioner Francis Sept. 17, 2018 *Ex Parte* Letter); Letter from Barry J. Hobbins, Maine Public Advocate, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 1-2 (filed Sept. 7, 2018) (Maine Public Advocate Sept. 7, 2018 *Ex Parte* Letter); Center for Individual Freedom Comments at 5; OMF Cares Comments, Attach. at 1-2; Comments of Consumers’ Research at 5 (Sept. 17, 2018) (Consumers’ Research Comments); Comments of Latino Coalition at 3 (Sept. 17, 2018) (Latino Coalition Comments); Shentel Comments at 2; HITN Comments at 3-5; Letter from Tony Vargas, Senator, Nebraska State Legislature, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (Oct. 31, 2018) (Sen. Vargas Oct. 31, 2018 *Ex Parte* Letter).

⁷²⁹ Free State Comments at 1-4; Digital Liberty Comments at 2-3; PWG Comments at 1-3; Ultra Mobile/Mint Mobile Comments at 2-3; Cell Nation Comments at 2; Crown Castle Comments at 2; Tillman Infrastructure Comments at 2; Comments of Consumer Action for a Strong Economy, Attach. at 1-2 (Aug. 30, 2018) (CASE Comments); Digital Bridge/Vertical Bridge Comments at 4-5; NPRCC Comments at 4; Center for Individual

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217. We agree with the Applicants that the proposed transaction will enable deployment of a more robust, nationwide 5G network than either standalone company could deploy on its own. We were able to confirm a number of the Applicants' nationwide 5G network benefits claims in substantial part. These claimed network benefits, which are bolstered by the Applicants' subsequent 5G network deployment commitments, which we adopt as enforceable conditions of our approval of the proposed transaction, represent significant public interest benefits. The creditable network benefits of the transaction will promote competition, and the rapid deployment of new communications technologies, thus furthering the Commission's core objectives.⁷³⁰

218. **Network-Related Claims.** The Applicants claim significant benefits from the combination of the standalone T-Mobile and Sprint networks and spectrum, including network synergies and capacity and coverage benefits. The Applicants submitted voluminous and detailed data and analyses in support of their claimed network performance and associated marginal cost claims arising from the proposed transaction.⁷³¹ The Applicants assert that a number of benefits accrue organically from the combination of the standalone T-Mobile and Sprint networks. These include deploying higher capacity radios to existing cell sites to access all of New T-Mobile's spectrum.⁷³² They also include cell site and equipment deployment efficiencies that allow New T-Mobile to add more capacity at a lower per unit cost than either standalone Sprint or T-Mobile could achieve.⁷³³ The Applicants also state that retained Sprint cell sites can relieve congestion more effectively on the New T-Mobile network than would be possible on either standalone network.⁷³⁴

219. The Applicants also claim the combination of the networks fundamentally increases the capacity of the New T-Mobile network. In support of these claims, they submitted a variety of detailed 5G and 4G LTE technical inputs to the Network Build Model, as well as outputs such as network capacity, average user throughputs, and incremental network solutions which are used to calculate the network cost benefits of this proposed transaction. This includes information for each of tens of thousands of specific cell sites, such as physical site data, type and amounts of spectrum to be deployed, and the amount of traffic a given amount of spectrum in a cell can support in light of spectral efficiencies and technology gains.⁷³⁵ The Applicants also provided information about congestion measurements and thresholds, the congestion relief associated with particular congestion solutions, and predicted traffic demands.⁷³⁶ In addition, the Applicants claim the combined network will afford significantly increased 5G coverage. In support of their coverage claims, the Applicants submitted 5G coverage maps, cell site

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Freedom Comments at 5; ACLP Comments at 27-28; CAGW Reply at 5; Eric Arrieta Comments at 1 (Sept. 17, 2018); Letter from Christopher Rosario, Representative, Connecticut State House of Representatives, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (Oct. 11, 2018) (Rep. Rosario Oct. 11, 2018 *Ex Parte* Letter); Sen. Vargas Oct. 31, 2018 *Ex Parte* Letter at 1.

⁷³⁰ Telecommunications Act of 1996, Preamble, P.L. 104-104, 100 Stat. 56 (1996) ("To promote competition . . . and encourage the rapid deployment of new telecommunications technologies.").

⁷³¹ See, e.g., T-Mobile Aug. 1, 2018 Engineering Model Response; T-Mobile Information Request Response (Sept. 5, 2018); Joint Opposition; T-Mobile Feb. 21, 2019 *Ex Parte* Letter; T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter; T-Mobile Apr. 22, 2019 *Ex Parte* Letter; see also Public Interest Statement, Appx. B, Declaration of Neville R. Ray (June 18, 2018) (Public Interest Statement, Ray Declaration); Public Interest Statement, Appx. E, Declaration of John Saw (June 18, 2018) (Public Interest Statement, Saw Declaration).

⁷³² See generally Public Interest Statement, Ray Declaration.

⁷³³ *Id.*

⁷³⁴ *Id.*

⁷³⁵ See Appx. F: Technical Appendix.

⁷³⁶ See Appx. F: Technical Appendix.

details—including the location and other characteristics of cell sites—and 4G LTE and 5G radio frequency (RF) link budgets.⁷³⁷

220. To justify the claimed marginal cost benefits of New T-Mobile relative to the standalone companies, the Applicants relied on the comparison of their Network Build Model's⁷³⁸ predictions for New T-Mobile's network and associated costs compared to the networks of the standalone companies. The Applicants' initially submitted network modeling focused on year-end 2021 through 2024,⁷³⁹ relying on "an extended version of [T-Mobile's] ordinary course LTE capacity planning model" that was "integrated . . . with a 5G module."⁷⁴⁰ While the 5G network modeling was developed "using ordinary-course engineering principles," the Applicants explain that the Network Build Model was created specifically to support approval of the transaction, and that T-Mobile otherwise "did not anticipate developing such a model in the ordinary course of its business in the near future (especially one that covered the period through 2024)."⁷⁴¹ The Applicants later supplemented their modeling and network claims to address the integration period—i.e., through the end of 2021.⁷⁴² The Applicants also

⁷³⁷ The Applicants used proprietary RF propagation prediction tools to support their specific claims such as regarding the geographic coverage of cell sites and the associated covered population predictions. *See infra* Appx. F: Technical Appendix.

⁷³⁸ During the course of the proceeding the Applicants submitted separate network modeling for New T-Mobile and the standalone companies and made a number of different network modeling submissions with modifications and revisions to earlier-filed modeling. For convenience, we use the term "Network Build Model" when referring broadly to the collective network modeling relied upon by the Applicants as it evolved and as additional scenarios were presented over the course of the proceeding.

⁷³⁹ Public Interest Statement, Ray Declaration at para. 25; *see also* Public Interest Statement at 27 & n.84 (discussing the network modeling that formed the basis for claims in the Public Interest Statement); Public Interest Statement, Ray Declaration at para. 19 (similar).

⁷⁴⁰ Joint Opposition, Appx. B, Reply Declaration of Neville Ray at para. 14 (Sept. 17, 2018) (Joint Opposition, Ray Reply Declaration); *see also e.g.*, T-Mobile Information Request Response at 30-32 (Sept. 5, 2018) (discussing the extended network modeling); Joint Opposition, Ray Reply Declaration at paras. 17-36 (describing the network modeling); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Sept. 11, 2018) (discussing differences between the initial network modeling and the expanded network modeling); T-Mobile Supplement to and Revision of Information Request Response at 1-2 (filed Sept. 17, 2018) (discussing the revised network modeling); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2, Attach. B (filed Oct. 11, 2018) (further discussing the network modeling); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-3 (filed Oct. 24, 2018) (further discussing the network modeling); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. A (filed Dec. 18, 2018) (T-Mobile Dec. 18, 2018 Compass Lexecon Model *Ex Parte* Letter) (describing and seeking to justify the approach to incremental builds in the Network Build Model); *Id.*, Attach. B (discussing the approach to congestion targets in the network model); Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-4 (filed Dec. 28, 2018) (T-Mobile Dec. 28, 2018 *Ex Parte* Letter) (further discussing aspects of the network modeling).

⁷⁴¹ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-3 (filed Dec. 12, 2018).

⁷⁴² T-Mobile Feb. 21, 2019 *Ex Parte* Letter; Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Mar. 8, 2019) (T-Mobile Mar. 8, 2019 *Ex Parte* Letter); T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. D, Declaration of Ankur Kapoor at para. 9 (Feb. 21, 2019) (T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Kapoor Declaration). While the T-Mobile network capacity model is not used by Sprint and does not precisely reflect standalone Sprint's network plans through the end of 2021, "the model provides a reasonable approximation as to how Sprint developed network plans for 2019 and 2020." T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. C, Supplemental Declaration of John Saw at para. 4 (Feb. 21, 2019) (T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Saw Declaration).

simultaneously incorporated modifications to their modeling for year-end 2021 through 2024,⁷⁴³ and provided additional explanation and justifications for the approach and assumptions reflected in the modeling.⁷⁴⁴

221. **Verifiability of Claims.** Some commenters raise doubts about whether the Applicants can realistically achieve 5G benefits as great as they claim within the timeframe they project. Commenters cite characteristics of the 5G upgrade process in general as calling into question the verifiability of Applicants' predictions, such as what they argue are uncertainties regarding the exact details and characteristics of operational 5G equipment, the precise cost and complexity of upgrading to 5G, and the availability and penetration of 5G handsets.⁷⁴⁵ Other commenters raise questions about how New T-Mobile's 5G deployment would proceed, highlighting what they view as potential challenges that could arise during integration (even beyond the potential complexity of 5G upgrades more generally) and questioning whether the Applicants' predicted data rates would accurately reflect users' actual experiences.⁷⁴⁶

222. DISH also expresses a number of specific concerns about details of the Applicants' Network Build Model. DISH contends that the Applicants understate the practical difficulties that can arise in the network integration process and oversimplify the analysis of how a combined network could use existing network assets and spectrum more efficiently.⁷⁴⁷ In addition, DISH claims that the Network Build Model relies on higher estimates of per-user usage that are "highly speculative and unverifiable."⁷⁴⁸ DISH also cites predicted costs of incremental solutions that it contends are insufficiently justified.⁷⁴⁹ Further, DISH states that according to the Applicants' engineering modeling, for some period of time New T-Mobile's service performance actually would be lower for Sprint consumers than they would experience with standalone Sprint, an outcome that is inconsistent with the assumptions of the Applicants' economists used in the economic modeling.⁷⁵⁰

223. Some commenters also question what, precisely, the Applicants envision by their references to 5G given the wide range of meanings of that term.⁷⁵¹ Commenters point out, for example,

⁷⁴³ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. A (filed Apr. 1, 2019) (T-Mobile Apr. 1, 2019 Engineering Model Adjustments *Ex Parte* Letter).

⁷⁴⁴ Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. B (filed Apr. 1, 2019) (T-Mobile Apr. 1, 2019 Loading Curve *Ex Parte* Letter); Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. B-G (filed Apr. 2, 2019) (T-Mobile Apr. 2, 2019 *Ex Parte* Letter).

⁷⁴⁵ DISH Aug. 27, 2018 Petition at 34-35; NTCA Aug. 27, 2018 Petition at 4-5; CWA Aug. 27, 2018 Comments, Appx. A, Declaration of Andrew Afflerbach at paras. 19-23 (Aug. 27, 2018) (CWA Aug. 27, 2018 Comments, Afflerbach Declaration); Altice Information Request Response, Attach. at 6-7 (Jan. 28, 2019). The Applicants themselves observe that "5G is still in the early development stages and equipment specifications are not yet finalized." T-Mobile Dec. 28, 2018 *Ex Parte* Letter at 2.

⁷⁴⁶ DISH Aug. 27, 2018 Petition at 28-29, 33-35; Free Press Aug. 27, 2018 Petition at 49-51; Public Knowledge Aug. 27, 2018 Petition at 39-41; CWA Aug. 27, 2018 Comments, Afflerbach Declaration at paras. 24-26, 30-32; Altice Information Request Response, Attach. at 6-7 (Jan. 28, 2019).

⁷⁴⁷ DISH Mar. 28, 2019 Comments, Attach. B, Declaration of Peter Tenerelli and Vijay Venkateswaran at paras. 7-20 (Mar. 28, 2019).

⁷⁴⁸ DISH Mar. 28, 2019 Comments at 14-15; *see also* DISH Mar. 28, 2019 Comments, Exh. 1, Reply Declaration of Joseph Harrington, Coleman Bazelon, Jeremy Verlinda, and William Zarakas at 21-23 (DISH Mar. 28, 2019 Comments, Brattle Reply Declaration) (discussing the revised demand assumptions).

⁷⁴⁹ DISH Mar. 28, 2019 Comments, Brattle Reply Declaration at 23.

⁷⁵⁰ DISH Mar. 28, 2019 Comments at 13-14.

⁷⁵¹ OTI Reply at 12.

that some predictions regarding the capabilities of 5G networks presume the availability of mmW spectrum that would not be increasing as a result of the proposed transaction.⁷⁵² Other commenters argue that the Applicants' predicted increase in "national practical capacity per month per smartphone user" is both "wildly speculative" and fails to demonstrate that any such additional capacity actually would be used, given that wireless networks "have ample excess capacity" today.⁷⁵³ Some commenters also question whether 5G adoption would keep pace with any acceleration of 5G deployment that may occur as a result of the transaction.⁷⁵⁴

224. In response to claims that the capacity improvements of New T-Mobile's 5G network would be modest, the Applicants argue that these commenters do not account for all the factors that bear on increased capacity, which include not only improved spectral efficiency but also the number of cell sites and the amount of spectrum deployed per cell site, each of which is greater under New T-Mobile's 5G deployment relative to the standalone companies.⁷⁵⁵ In addition, the Applicants claim that DISH, in particular, misunderstands the 2.5 GHz and AWS spectrum deployment upon which the performance benefits are predicated. The Applicants contend that by assuming more deployment than is actually required, DISH overstates the expense of combining the standalone companies and the timing for delivering consumer benefits, while understating the magnitude of those benefits.⁷⁵⁶

225. **Transaction-Specific Benefits.** Some commenters contend that the Applicants' Network Build Model results for the standalone companies demonstrate that they can deploy 5G successfully on their own and that the proposed merger thus is not needed to enable a robust 5G network.⁷⁵⁷ In support of this view, commenters also cite standalone Sprint's and T-Mobile's already existing plans and initiatives regarding 5G,⁷⁵⁸ cite technological solutions as enabling 5G deployment by the standalone companies,⁷⁵⁹ and describe possible paths forward for standalone Sprint's and T-Mobile's 5G deployments.⁷⁶⁰ Free

⁷⁵² CWA Aug. 27, 2018 Comments, Afflerbach Declaration at paras. 25-30.

⁷⁵³ Free Press Aug. 27, 2018 Petition at 59 (internal quotation marks omitted).

⁷⁵⁴ Free Press Aug. 27, 2018 Petition at 55-56.

⁷⁵⁵ Joint Opposition at 41-43.

⁷⁵⁶ Joint Opposition at 48-50.

⁷⁵⁷ DISH Reply, Appx. A at 5-6; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 26; Altice Information Request Response, Cragg/Garcés Declaration at 29 (Jan. 28, 2019); DISH Mar. 28, 2019 Comments at 15-16; DISH Mar. 28, 2019 Comments, Brattle Reply Declaration at 24.

⁷⁵⁸ AAI Petition at 17-18; C Spire Aug. 27, 2018 Petition at 8-9; DISH Aug. 27, 2018 Petition at 22-25, 31; Free Press Aug. 27, 2018 Petition at 51-52; Public Knowledge Aug. 27, 2018 Petition at 33; Union Telephone Aug. 27, 2018 Petition at 20; Consumer Policy Solutions Comments, Attach. at 2-3; CWA Aug. 27, 2018 Comments at 37-40, 44; Kingsley Ross Comments at 1; Competition Advocates Dec. 20, 2018 *Ex Parte* Letter at 3; 4Competition Coalition Feb. 7, 2019 *Ex Parte* Letter at 5, Attach. C; Letter from Senators Richard Blumenthal, Amy Klobuchar, Tom Udall, Sherrod Brown, Kristen Gillibrand, Elizabeth Warren, Bernard Sanders, Cory Booker, and Edward J. Markey, to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 9-11 (filed Feb. 12, 2019) (Senator Blumenthal et al. Feb. 12, 2019 *Ex Parte* Letter); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 4-5 (filed Apr. 8, 2019) (DISH Apr. 8, 2019 Sprint Response *Ex Parte* Letter); Letter from Jennifer L. Richter, Counsel to Altice, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2, Attach. B at 2 (filed Apr. 12, 2019) (Altice Apr. 12, 2019 *Ex Parte* Letter); CWA Apr. 15, 2019 *Ex Parte* Letter, Attach. at 20; Letter from AFL-CIO et al., to Makan Delrahim, Assistant Attorney General, Antitrust Division, DOJ, and Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 2 (filed Apr. 18, 2019).

⁷⁵⁹ DISH Aug. 27, 2018 Petition at 29 (citing "coverage and capacity enhancements that will result from massive MIMO technology"); *Id.* at 31 (citing "carrier aggregation technologies and the beamforming capabilities of the massive MIMO technology").

⁷⁶⁰ Altice Apr. 12, 2019 *Ex Parte* Letter, Attach. B at 2, 5.

Press argues that the Applicants' cited need for more spectrum than each standalone company holds hinges on "hypothetical use cases" and that "[e]ven considering the speculative predictions about future carried capacity offered by Applicants, it is clear that the standalone firms would have ample excess capacity in both 5G and 4G LTE."⁷⁶¹

226. DISH also expresses its concerns about the modeling expectations for standalone Sprint and New T-Mobile. For example, DISH's engineering experts argue that Massive MIMO deployments in 2.5 GHz spectrum are likely to lead to more spectral efficiency gains than predicted by the Applicants.⁷⁶² The resulting increase in predicted capacity, DISH asserts, would make it less likely for Sprint's network to experience congestion that would need to be remedied—and thus, in DISH's view, would reduce the difference in marginal cost between the standalone Sprint network and the New T-Mobile network.⁷⁶³ DISH also anticipates that refarming of Sprint spectrum from 4G LTE to 5G would be easier than the Applicants predict, and adjusting the modeling to reflect that reduces the predicted marginal cost benefits.⁷⁶⁴ Additionally, DISH criticizes the engineering assumptions as understating New T-Mobile's upgrade costs relative to standalone Sprint.⁷⁶⁵ DISH thus contends that the Applicants understate New T-Mobile's upgrade costs and, as a result, overstate the marginal cost savings from the proposed transaction.⁷⁶⁶

227. While acknowledging the 5G deployment plans of the standalone companies, the Applicants argue that those standalone 5G networks would fall short of the 5G network New T-Mobile could deploy.⁷⁶⁷ As a technical matter, the Applicants argue that neither standalone company has the spectrum—and cell sites for using that spectrum—necessary to deploy a 5G network comparable to that of New T-Mobile.⁷⁶⁸ Further, by design, all networks have more available capacity than carried capacity, and the Applicants thus dispute commenters' claims that the mere presence of excess available capacity demonstrates that the standalone companies have sufficient capacity to meet future needs.⁷⁶⁹ As a financial matter, "under T-Mobile's projections of increased subscriber data usage, standalone T-Mobile's current planned OpEx and CapEx levels for 2021-2024 would be insufficient to allow the company to meet 5G customer data demands while minimizing congestion on the network and maintaining an acceptable user experience."⁷⁷⁰ In addition, the Applicants explain that the proposed transaction is needed to "create cost savings that are indispensable to New T-Mobile's business plan and network plan," and which would not occur with the non-merger alternatives that some commenters propose.⁷⁷¹

⁷⁶¹ Free Press Aug. 27, 2018 Petition at 57-59.

⁷⁶² DISH Reply at 101; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7.

⁷⁶³ DISH Reply at 101-02.

⁷⁶⁴ DISH Reply at 96, 100; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 16; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7.

⁷⁶⁵ DISH Reply at 95-96; *see also* 4Competition Coalition Feb. 7, 2019 *Ex Parte* Letter at 6-7 (citing Sprint statements regarding 5G upgrades and technology solutions).

⁷⁶⁶ DISH Reply at 97-100; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 16; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7.

⁷⁶⁷ Joint Opposition at 37-46. For its part, TechFreedom speculates that the 5G deployment plans discussed shortly before the announcement of the proposed transaction by each standalone company may have anticipated that the proposed transaction would allow those claims to be realized. TechFreedom Opposition at 11-12.

⁷⁶⁸ Joint Opposition at 38-39; Sprint Apr. 15, 2019 *Ex Parte* Letter at 26-27.

⁷⁶⁹ Joint Opposition at 39-40.

⁷⁷⁰ Joint Opposition at 40 (footnote omitted).

⁷⁷¹ Joint Opposition at 43-44. One commenter cites the potential for Sprint's wireline network to provide ready access to backhaul to support New T-Mobile's 5G deployment as an additional reason why New T-Mobile could

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228. The Applicants argue further that there can be significant costs to using mmW spectrum that would need to be accounted for,⁷⁷² and that if the Applicants' network modeling were revised "to account more realistically for the deployment characteristics of mmWave spectrum" it would reveal that the hypothetical addition of additional mmW spectrum does not meaningfully alter the projected marginal costs or consumer benefits from the proposed merger.⁷⁷³ The Applicants also contend that a "sensitivity analysis demonstrates that the inherent efficiencies of the combination, not assumptions regarding planned baseline networks, are what drive the Applicants' results."⁷⁷⁴ The Applicants further state that, contrary to some commenters' claims, the use of massive MIMO would not be an adequate technical solution for standalone Sprint. In particular, the Applicants contend that such an approach would have significant technical and financial shortcomings.⁷⁷⁵

229. The Applicants also argue that commenters neglect the ability of New T-Mobile to achieve 5G benefits on an accelerated basis relative to the standalone companies' 5G transition, because of the immediate availability of sufficient spectrum for both 5G and legacy uses.⁷⁷⁶ Repurposing spectrum for 5G requires careful coordination to avoid undermining the LTE and other legacy services historically relying on that spectrum.⁷⁷⁷ Because T-Mobile's existing spectrum is extensively used for LTE, the Applicants contend that T-Mobile's will be limited in its ability to 'refarm' that spectrum—i.e., transition it from LTE to 5G usage.⁷⁷⁸ Similarly, the Applicants explain that Sprint will need to continue to provide 3G and 4G services in its spectrum bands other than 2.5 GHz.⁷⁷⁹ And even as to 2.5 GHz, Sprint's 5G deployment will be limited by its need to use that spectrum for LTE, with its plans calling for it to divide its 2.5 GHz spectrum between the two uses.⁷⁸⁰ In the Applicants' view, New T-Mobile will enable a quicker transition to 5G because more spectrum will be available for 5G from day one, while ample other spectrum will remain available to maintain high LTE performance as the transition occurs.⁷⁸¹

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have advantages over the standalone companies in providing 5G services. Free State Comments at 12. Another commenter questions that theory. Public Knowledge Aug. 27, 2018 Petition at 43-44 (arguing that there is an unresolved question regarding how New T-Mobile would be able to meet its backhaul needs given that neither T-Mobile nor Sprint have extensive wireline networks). For its part, T-Mobile contends that New T-Mobile will have sufficient backhaul to meet its needs for 5G offerings, but in doing so does not cite the availability of Sprint's wireline network as materially improving the merged company's ability to ensure adequate backhaul. Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Mar. 11, 2019) (T-Mobile Mar. 11, 2019 RWA and C Spire Response *Ex Parte* Letter).

⁷⁷² Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Apr. 22, 2019) (T-Mobile Apr. 22, 2019 *Ex Parte* Letter).

⁷⁷³ T-Mobile Apr. 22, 2019 *Ex Parte* Letter at 2-3; *see also* T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Attach. A, Declaration of Ankur Kapoor at paras. 3-18 (discussing adjustments to the engineering modeling); T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Attach. B at 1-11 (T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Compass Lexecon Attach.) (discussing the effects of the engineering modeling adjustments on predicted marginal costs and consumer benefits).

⁷⁷⁴ T-Mobile Apr. 22, 2019 *Ex Parte* Letter at 3; *see also* T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 11-13 (discussing the sensitivity analysis).

⁷⁷⁵ Joint Opposition at 59-60; Joint Opposition, Appx. D, Declaration of John Saw, at para. 11 (Sept. 17, 2018) (Joint Opposition, Saw Reply Declaration).

⁷⁷⁶ Public Interest Statement at 30-38; Joint Opposition at 44; *see also* Joint Opposition at 44-46 (discussing spectrum refarming and related 5G transition issues).

⁷⁷⁷ Public Interest Statement at 36.

⁷⁷⁸ Public Interest Statement at 19-21.

⁷⁷⁹ Public Interest Statement at 23.

⁷⁸⁰ Public Interest Statement at 24-25, 37.

⁷⁸¹ Public Interest Statement at 32-38. As the Applicants describe, for example, Sprint consumers' 2.5 GHz LTE

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The Applicants also describe more rapid improvements to spectral efficiency—and thus the level of demand the network can support—as a benefit that would flow from an accelerated transition to 5G.⁷⁸²

230. Even under an assumption that the standalone companies need additional spectrum for 5G deployment, however, commenters criticize the Applicants for failing to account for possible sources of additional spectrum in their Network Build Model and predictions of merger benefits. Commenters object that the Applicants have failed to account for spectrum acquisition in the secondary market, through network sharing, or through upcoming auctions as alternative sources of additional mid-band and high-band spectrum not requiring the proposed transaction.⁷⁸³ DISH emphasizes that certain of the Applicants' network modeling fails to account for potential new spectrum the standalone companies might acquire, and it proposes adjustments in that regard, reducing the predicted capacity gains and marginal cost savings.⁷⁸⁴

231. With respect to roaming as an alternative way to access additional spectrum, the Applicants identify a number of shortcomings as compared to the proposed transaction: (1) “the customer experience cannot be guaranteed to be consistent for a roaming subscriber;”⁷⁸⁵ (2) “a roaming agreement would not achieve the network efficiencies of a transaction like the proposed merger;”⁷⁸⁶ and (3) “a roaming agreement would not achieve the non-network efficiencies of a transaction like the proposed merger.”⁷⁸⁷ The Applicants also cite the latter two concerns as drawbacks of spectrum sharing as an alternative to the proposed transaction, and argue that such arrangements also reduce providers' ability to respond to the marketplace, would introduce administrative expenses, and would reduce providers' incentive to invest relative to the proposed transaction.⁷⁸⁸

232. In response to commenters' claims about the potential acquisition of spectrum at auction, the Applicants argue that mmW spectrum auctions would not address either standalone company's need for low- or mid-band spectrum, and speculative, not-yet-scheduled mid-band spectrum auctions are not an adequate substitute during the time period of the network integration and 5G upgrade process contemplated by the Applicants.⁷⁸⁹ Further, to the extent that the 3.5 GHz CBRS mid-band spectrum does become available, the Applicants see a number of shortcomings with that spectrum that limit its usefulness.⁷⁹⁰ Moreover, the Applicants maintain that the standalone companies could not be assured that

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traffic can move to T-Mobile's AWS spectrum, enabling New T-Mobile to implement a pure 5G network in the 2.5 GHz band as rapidly as possible. Public Interest Statement at 37; *see also Id.* at 33, 37-38 (describing the use of various spectrum bands during the transition). In addition, the Applicants argue that they will be able to densify the network infrastructure nearly immediately and reuse spectrum more intensely as a result of deployment of both companies' spectrum on the combined network's sites. Public Interest Statement at 30-31.

⁷⁸² Public Interest Statement at 35-36.

⁷⁸³ DISH Aug. 27, 2018 Petition at 30; Public Knowledge Aug. 27, 2018 Petition at 36-38; Free Press Aug. 27, 2018 Petition at 57-59; Union Telephone Aug. 27, 2018 Petition at 20-21; Senator Blumenthal et al. Feb. 12, 2019 *Ex Parte* Letter at 11-12; DISH Mar. 28, 2019 Comments at 17.

⁷⁸⁴ DISH Reply at 86; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 16, 21, 28; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7-11, 21; DISH Feb. 4, 2019 *Ex Parte* Letter at 1-5, Attach. A; *see also* Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed May 20, 2019) (criticizing further modeling of mmW spectrum by the Applicants).

⁷⁸⁵ Joint Opposition at 60.

⁷⁸⁶ Joint Opposition at 61.

⁷⁸⁷ Joint Opposition at 61.

⁷⁸⁸ Joint Opposition at 62-63.

⁷⁸⁹ Joint Opposition at 53-58; T-Mobile Apr. 2, 2019 *Ex Parte* Letter, Attach. B at 1.

⁷⁹⁰ Joint Opposition at 57 (citing as drawbacks: “(1) this band has significant power restrictions that will inhibit a

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they would be successful in obtaining spectrum from those auctions in any event.⁷⁹¹ The Applicants further argue that, compared to the proposed transaction, neither auctioned spectrum nor technical solutions would enable as rapid a transition to 5G while maintaining service quality.⁷⁹² By contrast, the Applicants contend that “benefits to customers on the New T-Mobile network will accrue rapidly.”⁷⁹³

233. Commenters dispute the Applicants’ claims regarding the shortcomings of spectrum acquisition at auction. DISH asserts that existing uses of the spectrum that could become available undercut the Applicants’ criticisms of the usefulness of that spectrum for 5G.⁷⁹⁴ Commenters also cite descriptions of the usefulness of such spectrum for 5G.⁷⁹⁵ DISH argues further that the viability of the standalone companies to deploy robust 5G services, potentially through the acquisition of additional spectrum that will become available via auction, is confirmed by the standalone companies’ more recent 5G announcements; the views reflected in internal documents submitted in the record here; and the Applicants’ Network Build Model.⁷⁹⁶ Commenters also contend that regardless of the Applicants’ claims regarding the financial circumstances of standalone Sprint, its parent SoftBank has substantial financial resources to allow the necessary 5G investment for Sprint.⁷⁹⁷

234. Finally, regarding the Applicants’ broader claims about U.S. 5G leadership, some commenters argue that Verizon Wireless and AT&T already are pursuing aggressive 5G deployment plans.⁷⁹⁸ Without taking a position on the proposed transaction, AT&T’s comments describe its 5G plans and claim that “AT&T is fully engaged in that [5G] arms race and is leading the industry.”⁷⁹⁹ AT&T agrees with the importance of U.S. 5G leadership, but argues that “the U.S. is already the world leader in 5G, and AT&T and the other major facilities-based wireless carriers are in the midst of a race to deploy next generation 5G services—a race that began long before T-Mobile and Sprint announced their merger plans.”⁸⁰⁰ Similarly, Verizon Wireless describes its actions as showing “leadership in pushing the 5G ecosystem forward, including through our creation of the 5G Technology Forum, and our aggressive

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wireless provider from deploying this spectrum for a wide scale 5G coverage layer; (2) there are substantial sharing requirements with Federal and commercial incumbents that inhibit full deployment of the spectrum for 5G; (3) the small geographic license areas limit 5G deployment; (4) there is no ability for a licensee to have a sufficient license term with a settled renewal expectancy under the current rules; (5) the technology development for this band has been focused on LTE, not 5G; and (6) there is only 70 megahertz of total spectrum available for licensing (with only 40 megahertz available to a single licensee in a license area)” (footnotes omitted)); T-Mobile Apr. 2, 2019 *Ex Parte* Letter, Attach. B at 1.

⁷⁹¹ Joint Opposition at 55; T-Mobile Apr. 2, 2019 *Ex Parte* Letter, Attach. B at 1.

⁷⁹² Joint Opposition at 53-59 (discussing timing and other challenges associated with relying on auctioned spectrum); *Id.* at 59-60; Joint Opposition, Saw Reply Declaration at para. 11 (explaining the limits of relying on massive MIMO in general and the timing and service quality difficulties if Sprint were to rely on massive MIMO in its 1.9 and 2.5 GHz spectrum for its 5G transition).

⁷⁹³ Joint Opposition at 47.

⁷⁹⁴ DISH Reply at 85-86.

⁷⁹⁵ DISH Reply at 66-78, 81-86; OTI Reply at 7-10; Public Knowledge Reply at 12-13.

⁷⁹⁶ DISH Reply at 68-78, 82-86; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 26; Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 3, 8-9 (filed May 13, 2019) (DISH May 13, 2019 *Ex Parte* Letter).

⁷⁹⁷ DISH Aug. 27, 2018 Petition at 16; DISH Reply at 43-44; Public Knowledge Reply at 17; DISH May 13, 2019 *Ex Parte* Letter at 2-4.

⁷⁹⁸ DISH Aug. 27, 2018 Petition at 37; Consumer Policy Solutions Comments, Attach. at 1; RWA Reply at 17.

⁷⁹⁹ AT&T Comments at 1-5.

⁸⁰⁰ AT&T Comments at 2.

efforts to promote and deploy 5G services.”⁸⁰¹ Commenters argue that small service providers also are pursuing 5G deployments.⁸⁰²

235. **Applicants’ Commitments to Build a Highly Robust Nationwide 5G Network.** The Applicants have committed to “a detailed network build schedule with hard deadlines for providing coverage,” for “deploying 5G spectrum and sites,” and for speed commitments verified by nationwide drive tests.”⁸⁰³ The Applicants have committed that within three years of the merger’s closing, New T-Mobile will cover three-quarters of the country’s population with mid-band 5G and 97% of the country’s population with low-band 5G.⁸⁰⁴ The Applicants also committed to deploying **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** 5G sites nationwide, and **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** megahertz of low- and mid-band spectrum averaged over all 5G sites deployed nationwide.⁸⁰⁵ In addition, 70% of the U.S. population will have access to download speeds of at least 50 Mbps, with 63% having access to download speeds of at least 100 Mbps.⁸⁰⁶ “Within six years of the merger’s close, the Applicants commit to deploy a 5G network with: low-band coverage of at least 99% of the population; mid-band coverage of at least 88% of the population; **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** 5G sites nationwide; an average of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band 5G spectrum deployed across the 5G sites; 99% of the population experiencing download speeds equal to, or greater than, 50 Mbps; and 90% of the population experiencing download speeds equal to, or greater than, 100 Mbps.”⁸⁰⁷ Some commenters express concern about the adequacy of these commitments, and in particular, they claim that the Applicants will be unable or unwilling to satisfy them.⁸⁰⁸

236. *Discussion.* The combination of spectrum and other resources brought together as a result of the proposed transaction would give New T-Mobile the capability to deploy a highly robust nationwide 5G network. As the Commission has recognized, “America’s appetite for wireless broadband service is surging” and “[e]nabling next generation wireless networks and closing the digital divide will require efficient utilization of the low-, mid-, and high-bands.”⁸⁰⁹ The Applicants contend that the transaction will help ensure America’s economy, industries, and consumers are among the early beneficiaries of the enormous transformative technological and economic benefits that 5G services will create,⁸¹⁰ consistent with the Commission’s own expectations.⁸¹¹ We agree with the Applicants that New

⁸⁰¹ Verizon Oct. 2, 2018 *Ex Parte* Letter at 1.

⁸⁰² 4Competition Coalition Feb. 7, 2019 *Ex Parte* Letter at 5-6.

⁸⁰³ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-3.

⁸⁰⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3; *see also Id.*, Attach. 1 at 1.

⁸⁰⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 1.

⁸⁰⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 1.

⁸⁰⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3; *see also Id.*, Attach. 1 at 1.

⁸⁰⁸ Letter from Caressa Bennet, General Counsel, RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2-5 (filed May 30, 2019) (RWA May 30, 2019 *Ex Parte* Letter); CWA May 31, 2019 *Ex Parte* Letter at 6-8, 9-10.

⁸⁰⁹ *3.7-4.2 GHz Order and NPRM*, 33 FCC Rcd at 6917, paras. 3, 4.

⁸¹⁰ Public Interest Statement at 70.

⁸¹¹ *Over-the-Air Reception Devices NPRM*, 34 FCC Rcd at 2695, para. 1 (“The deployment of 5G wireless networks and other advanced wireless technologies holds the potential to bring enormous benefits to American consumers by delivering faster speeds and lower latency and by supporting the development of advanced applications like the Internet of Things, smart cities, and telehealth.”); *Accelerating Wireless Broadband Deployment By Removing Barriers To Infrastructure Investment*, Second Report and Order, 33 FCC Rcd 3102, 3142, para. 94 (2018) (predicting that “hastening wireless deployment and freeing up funds for additional deployments [] will benefit

(continued....)

T-Mobile can put that spectrum to more productive use than the standalone companies, and that New T-Mobile will be able to leverage the variety of spectrum at its disposal to deploy more spectrum per cell site to more cell sites throughout the network.⁸¹² We also agree with the Applicants that New T-Mobile will have significantly lower marginal costs for providing advanced wireless services leading, as conditioned, to lower prices for consumers, and that the new network will have much faster speed and improved coverage.⁸¹³ We fully anticipate the proposed transaction will result in a number of benefits in the deployment of a highly robust nationwide 5G network. In particular, we are persuaded that the New T-Mobile network will have substantially increased coverage and capacity (and in turn, user speeds and cost structure) compared to the standalone companies.⁸¹⁴

237. Specifically, as required by the conditions, New T-Mobile will deploy mid-band 5G service to cover at least 88% of Americans by 2025, a significant increase from the standalone companies' likely deployments.⁸¹⁵ This potential for benefits flowing from the proposed transaction with respect to mid-band spectrum is particularly notable. "Mid-band spectrum is well-suited for next generation wireless broadband services due to the combination of favorable propagation characteristics (compared to high bands) and the opportunity for additional channel re-use (as compared to low bands)."⁸¹⁶ As the Applicants observe, T-Mobile currently has relatively little mid-band spectrum.⁸¹⁷ We also are persuaded that Sprint, which has substantial 2.5 GHz mid-band spectrum, would be comparatively limited in its use of that spectrum for 5G for a number of years, focusing in the near-term on sharing that spectrum between LTE and 5G in "population-dense metropolitan areas," rather than providing broader coverage.⁸¹⁸ Furthermore, Sprint lacks the coverage breadth and depth offered by T-Mobile because of its limited number of deployed sites and limited amount of low-band spectrum that can complement its 2.5 GHz mid-band spectrum.⁸¹⁹ Given the significance of mid-band spectrum recognized

(Continued from previous page) _____
consumers, grow the economy, and strengthen the country's 5G readiness").

⁸¹² Public Interest Statement at 46; *see also* Joint Opposition at 38-39; *see also* Nokia Aug. 30, 2018 *Ex Parte* Letter at 2.

⁸¹³ Public Interest Statement at 42-47; Joint Opposition at 41-43; T-Mobile Feb. 13, 2019 *Ex Parte* Letter, Attach. at 6-7; T-Mobile Feb. 21, 2019 *Ex Parte* Letter at 2-3; T-Mobile/Sprint May 20, 2019 Commitments Letter at 2.

⁸¹⁴ Our determination that the proposed transaction will result in substantial 5G-related public interest benefits is not premised on the view that absent the proposed transaction the U.S. somehow would not or could not be the 5G leader. Instead, based on our analysis of the Applicants' engineering claims coupled with the conditions we adopt, we conclude that the proposed transaction will further advance U.S. 5G networks and 5G leadership, and that, as a result, it is appropriate to credit significant public interest benefits.

⁸¹⁵ The Applicants have committed—and we are requiring, as a condition to our approval of the proposed transaction—that New T-Mobile will cover approximately 289 million people with mid-band spectrum versus their claims that standalone T-Mobile would cover approximately 173.2 million with mid-band spectrum and standalone Sprint would cover approximately 194 million with mid-band spectrum. Public Interest Statement, Ray Declaration at para. 39, Table 1; *see also* T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1. *See infra* Appx. F: Technical Appendix for analysis of the coverage claims.

⁸¹⁶ 3.7-4.2 GHz Order and NPRM, 33 FCC Rcd at 6917-18, para. 5.

⁸¹⁷ Public Interest Statement at 19-22; Joint Opposition at 54.

⁸¹⁸ Public Interest Statement at 23-25; Public Interest Statement, Saw Declaration at paras. 17-22; Joint Opposition at 19-20; Joint Opposition, Saw Reply Declaration at para. 8; Nokia Aug. 30, 2018 *Ex Parte* Letter at 1.

⁸¹⁹ Sprint has a total of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] macrocell sites and approximately 14 megahertz of 800 MHz spectrum, compared to 61,000 macrocell sites, approximately 30 megahertz of 600 MHz and 10 megahertz of 700 MHz spectrum for T-Mobile. Public Interest Statement, Saw Declaration at paras. 5, 7; Public Interest Statement, Ray Declaration at paras. 5-6.

both by the Commission and in the record here,⁸²⁰ improvements in the use of that spectrum for 5G and other advanced wireless services would be significant benefits from the proposed transaction.

238. We also recognize a number of network engineering complementarities that will result from the proposed transaction yielding benefits for capacity and coverage. One key example is the complementarity of low-band and mid-band spectrum, particularly for data services. By adding 2.5 GHz mid-band spectrum to a cell site, that spectrum can be used to serve the demand close to the cell site, leaving more capacity on the low-band 600 MHz spectrum free for use by those further from the cell site.⁸²¹ That is to say, even users served by 600 MHz spectrum who are outside the range of 2.5 GHz spectrum on the same cell site will see meaningful quality improvements from the deployment of the 2.5 GHz spectrum, because more 600 MHz capacity will be available for them. In this way, we find that through its simultaneous deployment of both low-band and mid-band spectrum, New T-Mobile could provide higher network coverage and capacity performance than either standalone Sprint or T-Mobile.⁸²²

239. In addition, we expect complementarities to arise from New T-Mobile's use of carrier aggregation and/or spectrum layer management technologies. These will allow low-band spectrum with its superior propagation distances and better indoor signal penetration than mid-band spectrum to more seamlessly interoperate with high-capacity mid-band spectrum.⁸²³ For example, since cell phones broadcast weaker signals than cell towers, uplink propagation tends to be the limiting factor in signal coverage, even though the majority of usage is downlink. Aggregating the greater propagation capability of low-band spectrum for uplink, while utilizing mid-band capacity for downlink to the same device, will yield significant improvements in overall performance, effectively increasing the efficiency of mid-band spectrum. This can provide a more consistent 5G user experience to rural and urban users than is possible with either standalone Sprint's or T-Mobile's networks.⁸²⁴ The combined entity will also enjoy the procurement, deployment, and cost benefits of avoiding duplicative infrastructure sometimes necessary for Sprint and T-Mobile to deploy their spectrum in the same area. On a single cell site, and sometimes with significantly less total equipment, New T-Mobile would be able to deploy an array of spectrum resources that the separate firms would need to spend more to deploy using separate equipment, often on separate cell sites.⁸²⁵

240. These and other significant network complementarities also increase the incentive to deploy network capacity and coverage. Taken together, the network complementarities lower the cost of supplying network services for New T-Mobile, while at the same time they increase the quality of those services, and in turn demand for them. As a result, the network complementarities from the transaction should have the effect of shifting the return on investment of network deployment for New T-Mobile toward building more capacity and coverage. Although we do not have a basis in the record to precisely quantify this effect, we acknowledge that it provides additional reason to credit the substantial network deployment claimed by the Applicants and imposed as a condition of our approval. Our analysis also persuades us that New T-Mobile can offer substantially more baseline network capacity than the

⁸²⁰ Public Interest Statement at 22; Nokia Aug. 30, 2018 *Ex Parte* Letter at 2; Center for Individual Freedom Comments at 4-5; Letter from Elizabeth Andrión, Senior Vice President, Regulatory Affairs, Charter, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Mar. 14, 2019) (Charter Mar. 14, 2019 *Ex Parte* Letter).

⁸²¹ See *infra* Appx. F: Technical Appendix.

⁸²² See *infra* Appx. F: Technical Appendix.

⁸²³ See *infra* Appx. F: Technical Appendix.

⁸²⁴ See *infra* Appx. F: Technical Appendix.

⁸²⁵ Letter from Nancy Victory, Counsel to T-Mobile US, Inc., to Marlene H. Dortch, Secretary, FCC, WT Docket No 18-197, Attach. B at 9 (filed Mar. 18, 2019); T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. A, McDiarmid Declaration at paras. 8-9, 11, 14.

combined standalone companies.⁸²⁶ While there is likely to be some year-by-year variation, we find it reasonable to expect the capacity of New T-Mobile's network likely to be at least almost double that of the standalone companies' networks combined, and more than double in some years.⁸²⁷

241. There remain disputes regarding the verifiability of particular benefit claims because the Applicants' claimed benefits involve 5G technologies and marketplaces that will continue to develop over time—rather than long-established technologies and services.⁸²⁸ However, to the extent that commenters question the nature of the network that New T-Mobile will actually deploy and the associated performance of the services that the network will enable, we are persuaded that the nationwide 5G network commitments, adopted herein as enforceable conditions to our approval, address those concerns. In conjunction with the claims we otherwise have verified in substantial part, these conditions allow us to credit substantial public interest benefits from New T-Mobile's deployment of a highly robust nationwide 5G network.⁸²⁹

242. To the extent that commenters question the verifiability of precise network projections—in particular the claimed marginal cost savings—we agree that it is difficult to determine long-term network performance with precision. As discussed both above and in the Technical Appendix, we acknowledge that the magnitude of the network marginal cost savings could be different than the Applicants project, depending on, for example, the rate at which consumer demand grows in the coming years.⁸³⁰ As a result, for purposes of the competitive effects analysis in section V, we analyzed variations on the predicted network marginal cost savings.⁸³¹

243. The nationwide 5G network commitments establish enforceable obligations on New T-Mobile that address its deployment of a highly robust nationwide 5G network across multiple dimensions. To address near-term spectrum coverage, the nationwide 5G network conditions require that, within three years of the merger's closing, New T-Mobile must cover 97% of the country with low-band spectrum, and three-quarters of the country with mid-band spectrum.⁸³² Consistent with the expectation that the 5G

⁸²⁶ See *infra* Appx. F: Technical Appendix.

⁸²⁷ See *infra* Appx. F: Technical Appendix.

⁸²⁸ “Because much of the information relating to the potential benefits of a merger is in the sole possession of the Applicants, they are required to provide sufficient evidence supporting each benefit claim so that the Commission can verify the likelihood and magnitude of the claimed benefit. . . . [S]peculative benefits that cannot be verified will be discounted or dismissed.” *AT&T Inc. and BellSouth Corporation, Application for Transfer of Control*, Memorandum Opinion and Order, 22 FCC Rcd 5662, 5761, para. 202 (2007); see also *Sprint-Nextel Order*, 20 FCC Rcd at 14014, para. 30; *EchoStar-DIRECTV HDO*, 17 FCC Rcd at 20630-31, para. 190; *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9605, para. 50. Prior Commission orders likewise illustrate potential difficulties in demonstrating the verifiability of benefits claims related to still-developing services or technology. See, e.g., *EchoStar-DIRECTV HDO*, 17 FCC Rcd at 20644-45, para. 227 (“[T]he nascent state of this potential future service raises questions and uncertainties both as to the timing and scope of its implementation and as to the quality and price that will be achieved that cannot reasonably be answered at this time.”); *Applications For Consent to the Transfer of Control of Licenses From Comcast Corporation and AT&T Corp., Transferors, to AT&T Comcast Corporation, Transferee*, Memorandum Opinion and Order, 17 FCC Rcd 23246, 23318-19, para. 189 (2002) (“In weighing the competing arguments, we recognize the inherent difficulty in making judgments about the future deployment of new technologies. It is therefore important that we be convinced that the projected benefit is reasonably certain to be realized as we make our public interest evaluation.” (footnote omitted)).

⁸²⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 1. For convenience, we refer to the 5G network commitments—adopted here as enforceable conditions of our approval of the proposed transaction—as the “nationwide 5G network conditions.”

⁸³⁰ See *infra* Appx. F: Technical Appendix.

⁸³¹ See *infra* Appx. F: Technical Appendix and see *supra* section V: Potential Public Interest Harms: Unilateral and Coordinated Effects.

⁸³² T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 1.

benefits associated with the proposed transaction should increase over time, the nationwide 5G network conditions impose increased coverage requirements on New T-Mobile six years after the merger's closing. Once again, New T-Mobile will face coverage obligations for both low-band and mid-band service—New T-Mobile's 5G network must cover at least 99% of the population with low-band spectrum and at least 88% of the population with mid-band spectrum.⁸³³ Disaggregating the spectrum coverage conditions in this manner helps ensure that New T-Mobile cannot satisfy them based on low-band spectrum alone, but also must ensure significant mid-band coverage, given the substantial improvements in the utilization of that spectrum for advanced services that is made possible by the proposed transaction.

244. The 5G network commitments also include additional measures to address the scope and depth of the 5G network that New T-Mobile will have in place. Within three years after the merger's closing, the Applicants must deploy **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** 5G sites nationwide, and **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** megahertz of low-and band mid-band spectrum averaged over all 5G sites deployed nationwide.⁸³⁴ In addition, within six years of the merger's closing New T-Mobile must have **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** 5G sites nationwide and an average of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band 5G spectrum deployed across the 5G sites.⁸³⁵ These additional metrics add robustness to the Commission's ability to confirm that New T-Mobile has deployed the sort of 5G network that justifies the significant public interest benefits we credit in our review of the proposed transaction.⁸³⁶

245. In addition, these nationwide 5G network deployment conditions establish enforceable measures for the performance consumers will experience on the New T-Mobile network. Specifically, within three years of the merger's closing, 70% of the U.S. population must have access to download speeds of at least 50 Mbps, with 63% having access to download speeds of at least 100 Mbps.⁸³⁷ Further, within six years after the merger's closing, 99% of the population must experience download speeds equal to, or greater than, 50 Mbps; and 90% of the population must experience download speeds equal to, or greater than, 100 Mbps.⁸³⁸ These enforceable conditions provide us with sufficient confidence regarding the network performance improvements that consumers can expect that we can credit them as public interest benefits of the proposed transaction.

⁸³³ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 1.

⁸³⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 1.

⁸³⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 1.

⁸³⁶ We are not persuaded by commenters that the increased pace and magnitude of 5G deployment will lead to RF exposure effects that must be considered. *See, e.g.*, Comment of J.J. Crowell at 1 (Aug. 20, 2018) (J.J. Crowell Comment) (expressing general concern about “the RF exposure risks involved in implementing this technology through small cell sites & massive MIMO”); Comments by Steven Fletcher at 1-5 (Aug. 1, 2018) (expressing concern about RF exposure by Sprint and T-Mobile workers). New T-Mobile will remain subject to our rules governing RF exposure, 47 CFR §§ 1.1307, 1.1310, and to the extent that commenters suggests that harms from RF emissions nonetheless would occur as a result of the proposed transaction, we find those claims unsupported. *See, e.g.*, J.J. Crowell Comment at 1 (making a generalized argument that “much more research needs to be done & safety taken into consideration on the RF exposure risks”). In addition, to the extent that commenters instead believe that the Commission should revise its rules governing RF exposure as a general matter, that is more properly addressed as part of the pending rulemaking proceeding in that regard, particularly insofar as the concerns are not traceable to the effects of the proposed transaction. *Reassessment of FCC Radiofrequency Exposure Limits and Policies*, First Report and Order, Further Notice of Proposed Rulemaking, and Notice of Inquiry, 28 FCC Rcd 3498 (2013).

⁸³⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 1.

⁸³⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 1.

246. We recognize the theoretical possibility that New T-Mobile might fail to satisfy the nationwide 5G network deployment commitments in some respects and instead incur the financial consequences associated with falling short,⁸³⁹ but find that unlikely given the recurring financial consequences of missed deadlines and obligations.⁸⁴⁰ In addition to our conclusions about the nationwide 5G network benefits likely to result from the transaction independent of the conditions, we further conclude that the conditions' verification and enforcement mechanism will operate in a manner that makes compliance a reasonable expectation given the scaling of the financial contributions associated with differing percentages of missed conditions and the continuing nature of the longer-term conditions that remain applicable—and subject to enforcement—until they are satisfied.⁸⁴¹ Finally, we note that should New T-Mobile fail to meet its substantial service obligations under any of its licenses, those licenses would also be subject to forfeiture,⁸⁴² which would increase the overall risk to New T-Mobile if it does not build the 5G network for which it has committed.

247. We reject commenters' criticisms of strength of the verification process, including by citing concerns that have been raised in the past about T-Mobile statements.⁸⁴³ It will be for the Commission to both interpret the obligations imposed by the conditions and to confirm for itself—through WTB in the first instance—whether they have been shown to be satisfied.⁸⁴⁴ We also reject

⁸³⁹ RWA May 30, 2019 *Ex Parte* Letter at 4; *see also* T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5 (discussing enforcement applicable to the nationwide 5G network conditions); Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed June 16, 2019) (correcting an internal cross-reference).

⁸⁴⁰ “New T-Mobile’s obligation to fulfill the commitments in sections I(B), II(B), and III(B) remains until satisfied. Within one year after a Bureau determination that New T-Mobile was deficient with respect to any element of these commitments, New T-Mobile shall submit to the Bureau a report demonstrating whether it has satisfied any remaining deficient element(s). A determination by the Bureau that New T-Mobile has failed to meet any of the remaining deficient elements shall be subject to the same contribution amounts described in section V(B) and the process described in this section V(C) until satisfied.” T-Mobile/Sprint May 20, 2019 Commitments Letter at 3, Attach. 1 at 5.

⁸⁴¹ *See* T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5. In addition, we impose as a condition to our approval that New T-Mobile file with the Bureau, within five calendar days of their submission to the DOJ, copies of all reports that relate to its build-out obligations under this MO&O that New T-Mobile is required to submit to the DOJ by the *DOJ Proposed Final Judgment*. The Bureau is directed to modify in its reasonable discretion the dates by which these reports and any other reports required by this MO&O must be filed.

⁸⁴² Under our service rules for various spectrum bands, New T-Mobile's licenses are subject to forfeiture or cancellation if build-out requirements are not met. 47 CFR §24.203(a) (Broadband PCS licensees must serve at least one-third of the population of each license area, and failure to do so will result in forfeiture or non-renewal of the license); 47 CFR §27.14(a) (AWS licensees must demonstrate “substantial service,” and failure to do so results in forfeiture of the license); 47 CFR §27.14(g) (700 MHz A Block licensees must provide service over at least 70% of the geographic area of each license, and failure to do so results in automatic termination for those geographic portions of the license in which the licensee is not providing service); 47 CFR §27.14(h) (700 MHz C Block licensees must provide service over at least 75% of the geographic area of each Economic Area (EA) comprising the Regional Economic Area Grouping license area, and failure to do so results in automatic termination for those geographic portions of the license in which the licensee is not providing service); 47 CFR §27.14(o) (BRS/EBS licensees must demonstrate “substantial service,” and failure to do so results in forfeiture of the license); 47 CFR §27.14(s) (AWS-3 licensees must provide coverage and offer service to at least 75% of the population in each license area, and failure to do so results in automatic termination of the license); 47 CFR §27.14(t) (600 MHz band licensees must provide coverage and offer service to at least 75% of the population in each license area, and failure to do so results in automatic termination of the license).

⁸⁴³ RWA May 30, 2019 *Ex Parte* Letter at 4-5; CWA May 31, 2019 *Ex Parte* Letter at 9.

⁸⁴⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5 (the Wireless Bureau will determine whether conditions have been satisfied and direct New T-Mobile to make any required contributions to the U.S. Treasury). We thus reject CWA’s erroneous assertion that making the contributions are “subject to the discretion of

(continued....)

CWA's specific concerns about the drive testing used to verify the speed benchmarks.⁸⁴⁵ First, although CWA claims that performing the tests within nine months after the three- and six-year deadlines is too late, the Applicants' obligations under the conditions must be understood in their totality—in conjunction with the verification and enforcement mechanisms—so there is no reason to interpret that timing as “miss[ing] the promised benchmarks.”⁸⁴⁶ Nor does CWA offer any reason such tests inherently must be performed at a different time. In addition, we agree with CWA that “[i]t is critical to have appropriate testing criteria,”⁸⁴⁷ and we conclude that WTB's oversight will ensure that.⁸⁴⁸ Similarly, contrary to CWA's concerns, we see no basis for concern in the conditions' recognized potential for modification in response to circumstances beyond New T-Mobile's control.⁸⁴⁹ Commenters offer no justification for holding New T-Mobile to conditions set at levels not attainable through unforeseeable circumstances outside its control. Any modifications to the metrics resulting from such circumstances will simply account for those circumstances, rather than providing unbounded discretion for changes, as some commenters apparently fear.⁸⁵⁰

248. We also find commenters' criticisms of the potential magnitude of contributions to be faulty.⁸⁵¹ RWA, for example, draws a high-level comparison between the contributions and the penalties provided for under the Commission's forfeiture authority,⁸⁵² but provides no analysis of why forfeitures under Title V of the Communications Act would result in greater financial consequences for New T-Mobile in light of both statutory caps on such penalties and the factors the Commission must weigh in determining the magnitude of any such forfeitures.⁸⁵³ Moreover, RWA does not consider the more streamlined procedure possible under the conditions' enforcement mechanism relative to the process required by Title VI of the Act, nor that the Applicants' existing license obligations—and associated forfeiture penalties—remain in addition to, and are not replaced by, the Commitments. Indeed, those violations that simultaneously fail to satisfy the Commitments and the Applicants' existing license

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the Applicants.” CWA May 31, 2018 *Ex Parte* Letter at 9.

⁸⁴⁵ CWA May 31, 2019 *Ex Parte* Letter at 7-8.

⁸⁴⁶ CWA May 31, 2019 *Ex Parte* Letter at 7.

⁸⁴⁷ CWA May 31, 2019 *Ex Parte* Letter at 7.

⁸⁴⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 1 & n.1 (“[t]he drive tests will utilize a methodology mutually agreed to by New T-Mobile and the Wireless Telecommunications Bureau”). Although CWA cites what it sees as shortcomings in the testing methodology in the Applicants' settlement agreement with the California Emerging Technologies Fund (CWA May 31, 2019 *Ex Parte* Letter at 8), its apparent concern that the Wireless Bureau will agree to an inadequate methodology represents nothing more than speculation.

⁸⁴⁹ CWA May 31, 2019 *Ex Parte* Letter at 9.

⁸⁵⁰ CWA May 31, 2019 *Ex Parte* Letter at 9. To the extent that CWA expresses concern about the modifications being made by the Wireless Bureau in the first instance, *Id.*, as always is the case the Commission can review such decisions on its own motion or in response to applications. 47 U.S.C. § 155(c).

⁸⁵¹ RWA May 30, 2019 *Ex Parte* Letter at 4-5; CWA May 31, 2019 *Ex Parte* Letter at 9-10.

⁸⁵² RWA May 30, 2019 *Ex Parte* Letter at 4-5.

⁸⁵³ 47 U.S.C. § 503(b)(2). Nor do commenters otherwise justify particular levels of financial consequences as more appropriate even while criticizing the levels of contributions specified in the conditions. At some point the financial consequences would be so great as to lead the Applicants to forgo the proposed transaction—and thus the public would miss out on the associated benefits—and we are persuaded that the levels of contributions reflected in the conditions strikes the appropriate balance. Furthermore, based on rough estimates that could be done using available data regarding the average cost to deploy towers and the average cost to complete buildout requirements in rural areas, we predict that completing the buildout through deploying towers is likely to be similar to, or less expensive than, the contribution required for failing to satisfy the deployment requirement, which we thus conclude provides a strong incentive to satisfy the conditions..

obligations would subject them to financial contributions combined with action under the Commission's forfeiture authority,⁸⁵⁴ such that the two regimes will be complementary in incentivizing network buildout.

249. Further, even if commenters wish for contributions that represent an even larger portion of New T-Mobile's revenues, we conclude that the enforcement mechanism will operate in a manner that makes compliance a reasonable expectation given the level and scaling of the financial contributions associated with differing percentages of missed conditions, increased contributions for the rural 5G conditions, and the continuing nature of the longer-term conditions that remain applicable—and subject to enforcement—until they are satisfied.⁸⁵⁵ In addition, we find that the use of multiple metrics for evaluating different aspects of a single set of conditions makes it more likely that if New T-Mobile falls short on one metric, it will fall short on others, as well.⁸⁵⁶ In sum, we conclude that the verification and enforcement mechanisms are sufficient for us to rely on the nationwide 5G network deployment conditions, coupled with our verification of a number of the Applicants' claims in substantial part, to credit significant network deployment and service improvements as public interest benefits of the proposed transaction.

250. Having found that the national 5G network deployment conditions address any lingering questions about the verifiability of the public interest benefits flowing from New T-Mobile's deployment of a highly robust nationwide 5G network, we are not persuaded by commenters' other concerns about benefits relative to the standalone companies' 5G plans. Both the Applicants' claims and our benefit findings presume that the standalone companies could deploy some level of 5G networks—the benefits enabled by this transaction instead arise from the improved network synergies, capabilities and accelerated timeframe for the 5G transition. The frequent high-level marketing statements of the standalone companies' executives cited by commenters do not set forth plans and descriptions of 5G network deployments that would represent reasonable alternatives and improvements by the standalone companies relative to the network benefits we credit. In addition, we note that significant questions have been raised as to Sprint's ability to fund the level of 5G network deployment reflected in the Network Build Model.⁸⁵⁷

251. We also reject the suggestion of some commenters that beyond a certain level of network performance—which they contend could be attained by the standalone companies—additional improvements that New T-Mobile could attain should not be counted as public interest benefits.⁸⁵⁸

⁸⁵⁴ 47 U.S.C. §§ 503, 504.

⁸⁵⁵ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5.

⁸⁵⁶ We thus reject as overly simplistic those criticisms based on illustrative examples presuming violation of one metric alone. CWA May 31, 2019 *Ex Parte* Letter at 10.

⁸⁵⁷ In Sprint's most recent SEC Form 10-K filing, it notes as a risk factor that the success of its 5G deployment depends, among other factors, on the timing, extent and cost of implementation and the availability of financial resources. Sprint Corporation, SEC Form 10-K, at 19 (filed May 29, 2019). In addition, since Sprint reported its most recent earnings, analysts have increasingly focused on Sprint's worsening financial condition and question the company's very ability to build out a 5G network. As one analyst put it, "Although we all like a 5G story, and all of the carriers have a narrative, we find a standalone Sprint in the unenviable position of being unable to spend to compete with the larger carriers. Rolling out 5G on 2.5 GHz spectrum is a costly endeavor that Sprint is unlikely find affordable given the company's significant debt load, and large cash burn (\$2.1bn in FY18)." McCormack, M. (June 14, 2019). *The Buzz—Sprint in a World Without T-Mobile*. *Guggenheim*, at 4-5. Other analysts are focusing on Sprint's weak subscriber metrics, which would not bode well for a standalone turnaround, even with a 5G network. *See, e.g.*, Equity Research: Quarterly Update (May 8, 2019). *Sprint F4Q18: Stronger than Expected Margins, Though Weak Subscribers and Guidance*. *Oppenheimer*, at 1.

⁸⁵⁸ *See, e.g.*, Free Press Aug. 27, 2018 Petition at 57-59 (asserting that the Applicants' cited need for more spectrum than each standalone company holds hinges on "hypothetical use cases" and arguing that "it is clear that the standalone firms would have ample excess capacity in both 5G and 4G LTE"); DISH Mar. 28, 2019 Comments,

(continued....)

Consumer demand and traffic volumes continue to climb—as the Commission recently observed, “America’s appetite for wireless broadband service is surging”⁸⁵⁹ We fully anticipate that the highly robust nationwide 5G network that New T-Mobile will deploy will see ample demand. We see no reasonable basis to anticipate that the New T-Mobile network improvements relative to the standalone companies would somehow go to waste and therefore should not be counted as public interest benefits. For similar reasons, we also reject the claim that even if the proposed merger accelerates 5G deployment, there will be little benefit to consumers from that accelerated deployment because the proposed transaction is unlikely to significantly accelerate 5G adoption.⁸⁶⁰ We anticipate that consumers (whether of 5G services or other services like 4G LTE) to fully take advantage of the benefits arising from the New T-Mobile network improvements.

252. We are also not persuaded by DISH’s various arguments about the relative modeling of the standalone Sprint and New T-Mobile networks. As a threshold matter, we observe that expected differences in network performance and marginal cost associated with 5G deployment by New T-Mobile relative to the standalone companies that are reflected in the Network Build Model are substantially associated with **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]⁸⁶¹ In any event, we see little merit to those arguments. Although DISH claims that the Network Build Model understates the network performance Sprint could achieve by widespread use of massive MIMO technology,⁸⁶² we agree with the Applicants that this would be an inferior way of addressing Sprint’s coverage needs compared to meeting those coverage needs by using New T-Mobile’s low-band spectrum. Moreover, it could require significant incremental network capital and device investments without providing a means of overcoming the associated financial difficulties of building out a nationwide coverage network using 2.5 GHz spectrum alone.⁸⁶³ DISH also anticipates that refarming Sprint spectrum from 4G LTE to 5G would be easier and, compared to New T-Mobile, less costly than the Applicants predict.⁸⁶⁴ They assert that Sprint will experience higher spectral efficiency than the Applicants have modeled.⁸⁶⁵ But all those claims appear premised on DISH’s unrealistic average spectral efficiencies expectation and broad deployment of massive MIMO by Sprint⁸⁶⁶—a premise that we reject for the reasons discussed above.

(Continued from previous page) _____

Brattle Reply Declaration at 24 (arguing that “a merger is not needed to reach 5G throughput”). We further reject Free Press’s arguments about excess capacity on the part of the standalone companies because, as the Applicants explain, that neglects the fact that available capacity will always be greater than carried traffic due to how wireless networks are engineered, and thus does not demonstrate that spare capacity is free to actually provide service. Joint Opposition at 39-40.

⁸⁵⁹ 3.7-4.2 GHz Order and NPRM, 33 FCC Rcd at 6917, para. 3.

⁸⁶⁰ Free Press Aug. 27, 2018 Petition at 55-56. In addition to the reasons for rejecting the merits of this claim, we also reject it because the analysis firm report upon which it is based is not in the record, nor is there any description of the underlying data, assumptions, qualifications or other factors that would enable us to weigh the report and ensure it is being understood in proper context.

⁸⁶¹ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 9, 20-21, 33-35.

⁸⁶² DISH Reply at 101-02; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7.

⁸⁶³ Joint Opposition at 59-60; Joint Opposition, Saw Reply Declaration at para. 11.

⁸⁶⁴ DISH Reply at 96-100; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 16; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7.

⁸⁶⁵ DISH Reply at 101-02; DISH Reply, Brattle Reply Declaration at 34.

⁸⁶⁶ DISH Reply at 96; DISH Reply, Brattle Reply Declaration at 31, 34.

253. In addition, although we find overstated commenters' concern about the extent to which the Network Build Model understates the likely 5G network performance of standalone T-Mobile,⁸⁶⁷ many of those concerns center on the assumption in the Network Build Model that the standalone companies will not obtain any additional spectrum during the six-year modeling period. Although these commenters initially identified several alternative ways that the standalone companies theoretically might obtain access to additional spectrum,⁸⁶⁸ after the Applicants criticized those options in the Joint Opposition,⁸⁶⁹ commenters focused particularly on potential acquisition of spectrum at auction.⁸⁷⁰

254. We agree with commenters that it is unrealistic to assume that the standalone companies would obtain no additional spectrum whatsoever during the six-year modeling period. We are not persuaded, however, that the record demonstrates an open question whether a reasonable adjustment to the benefits claimed as merger-specific would—whether alone or in conjunction with other merger-specificity concerns—alter our public interest balancing. For one, we generally agree with the Applicants that commenters have not identified forthcoming spectrum auctions or other sources that could enable the standalone companies to acquire the equivalent to what they each would gain through the proposed transaction, or on a similar timeframe.⁸⁷¹ Indeed, we see no reasonable alternative under which we would expect the standalone companies to acquire sufficient amounts of the appropriate types of spectrum on a sufficiently rapid timeframe to significantly offset any relative benefit from the proposed transaction. We thus conclude that the proposed transaction yields benefits relative to the acquisition of spectrum at auction by the standalone companies.

255. Although it is possible that the standalone companies could perform at least somewhat better than predicted by the Applicants' Network Build Model under some reasonable alternative assumptions regarding the acquisition of additional spectrum at auction, we are not persuaded that the range of reasonable alternatives would change our public interest evaluation.⁸⁷² For example, we agree with the Applicants that whatever goals or objectives the standalone companies might set in terms of spectrum acquisition at auction, there are likely to be other motivated bidders making it uncertain whether particular amounts of spectrum would, in fact, be acquired, however.⁸⁷³ Further, even DISH's alternative modeling predicts, for example, that capacity would increase as a result of the proposed transaction.⁸⁷⁴

⁸⁶⁷ Under Commission precedent, a benefit must be transaction-specific in order to be creditable as a public interest benefit of a proposed transaction. *See, e.g., CenturyLink-Level 3 Order*, 32 FCC Rcd at 9604, para. 50; *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

⁸⁶⁸ DISH Aug. 27, 2018 Petition at 30; Public Knowledge Aug. 27, 2018 Petition at 36-38; Free Press Aug. 27, 2018 Petition at 57-59; Union Telephone Aug. 27, 2018 Petition at 20-21.

⁸⁶⁹ Joint Opposition at 53-63 (discussing shortcomings of relying on spectrum auctions, roaming, and spectrum sharing).

⁸⁷⁰ DISH Reply at 86; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 16, 28; DISH Feb. 4, 2019 *Ex Parte* Letter at 1-5, Attach. A; DISH Mar. 28, 2019 Comments at 17; DISH Apr. 16, 2019 *Ex Parte* Letter, Attach. B at 7-11. Although some commenters continue to cite other possible options for acquiring access to additional spectrum, insofar as they do not address (or even acknowledge) the effect of the shortcomings of those options identified by the Applications, we do not find those arguments to materially alter our analysis. Senator Blumenthal et al. Feb. 12, 2019 *Ex Parte* Letter at 11-12.

⁸⁷¹ Joint Opposition at 53-58; Joint Opposition, Saw Reply Declaration at paras. 9-10; T-Mobile Apr. 2, 2019 *Ex Parte* Letter, Attach. B at 1.

⁸⁷² mmW spectrum is not an equivalent substitute for mid-band spectrum due to its significant propagation limitations.

⁸⁷³ Joint Opposition at 55; T-Mobile Apr. 2, 2019 *Ex Parte* Letter, Attach. B at 1.

⁸⁷⁴ DISH Reply at 86 (predicting capacity increases from the proposed merger of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% in 2024).

Moreover, our marginal cost assessments include downward variations on the Applicants' modelling to account for the potential impacts of this and other network performance tools.⁸⁷⁵

256. Finally, we reject as speculative commenters' concerns that the proposed transaction could hinder the 5G transition. We reject, for example, Altice's concern that 5G spectrum development and technological innovation will decline as a result of the transaction because New T-Mobile's spectrum portfolio and tower and other network infrastructure will not require it to engage in the level of investment and innovation that the standalone companies would have required.⁸⁷⁶ Although New T-Mobile undoubtedly will have the identified advantages in spectrum and infrastructure relative to the standalone companies, we are persuaded that New T-Mobile nonetheless will be required to invest and innovate to make full use of those resources to effectively compete with other wireless service providers. Our confidence in that regard is bolstered by the nationwide 5G network commitments, adopted as conditions to our approval, which will hold New T-Mobile to its plan to deploy a highly robust nationwide 5G network with substantial gains in consumer service performance. Furthermore, these concerns neglect the fact that many providers are transitioning to 5G and we fully expect that 5G innovation and investment in the marketplace as a whole will proceed undiminished.

B. Rural 5G Coverage

257. We are persuaded that the proposed transaction will result in significant coverage improvements in rural areas relative to the standalone companies. We believe that improved coverage in rural areas would be an important public interest benefit. We have analyzed the Applicants' rural coverage claims and find them sound.⁸⁷⁷ We find that those claims are reinforced and augmented by the Applicants' rural coverage commitments, which we adopt as conditions of our approval of the proposed transaction. As a result, we find that the Applicants' rural coverage claims are verifiable and creditable and constitute a significant public interest benefit.

258. *Record.* According to the Applicants, New T-Mobile will combine the low-band and mid-band spectrum of the standalone companies to deliver improved, broader services in rural areas than either standalone provider.⁸⁷⁸ The Applicants state, "[t]oday, T-Mobile's and Sprint's networks do not cover many small towns and rural areas of the country and Sprint, in particular, depends on roaming agreements to cover non-urban geographies."⁸⁷⁹ The Applicants claim that New T-Mobile's deployment of low-band and mid-band spectrum would represent a significant improvement over the current quality of Sprint's coverage, because its extensive reliance on roaming agreements often result in an inferior network experience for Sprint customers, especially those living in rural areas.⁸⁸⁰ In addition, the Applicants explain that although T-Mobile has been deploying its 600 MHz spectrum in rural areas, New T-Mobile's access to complementary 2.5 GHz spectrum would enable improved speeds and more consistent signal levels.⁸⁸¹ The Applicants cite plans "to expand outdoor coverage to 59.4 million rural residents, and indoor coverage to 31 million rural residents," with the ability to offer at least 10 Mbps mobile broadband Internet access service to 45.9 million rural consumers—*i.e.*, 74% of rural residents.⁸⁸²

⁸⁷⁵ See *infra* Appx. F: Technical Appendix.

⁸⁷⁶ Altice Apr. 12, 2019 *Ex Parte* Letter at 1, Attach. B at 6.

⁸⁷⁷ See *infra* Appx. F: Technical Appendix.

⁸⁷⁸ Public Interest Statement at 64-66; Joint Opposition at 94-97.

⁸⁷⁹ Joint Opposition at 94.

⁸⁸⁰ Public Interest Statement at 66-67; Joint Opposition at 94.

⁸⁸¹ Public Interest Statement at 67-68; Joint Opposition at 95.

⁸⁸² Joint Opposition at 94-95.

259. **Verifiability of Claims.** While a number of commenters support the Applicants' prediction of benefits to rural consumers,⁸⁸³ others argue that the Applicants' rural coverage predictions are vague,⁸⁸⁴ and others question whether they are consistent with other claims by the Applicants, such as those involving in-home broadband.⁸⁸⁵ In addition, DISH evaluates the potential for improved rural coverage by focusing on new nodes added to the New T-Mobile model relative to the standalone T-Mobile model and by evaluating the population coverage of all sites in the Applicants' model that the Applicants characterize as rural based on Census data.⁸⁸⁶ DISH concludes that the likely coverage gains in rural areas would be much less than the Applicants predict.⁸⁸⁷ Commenters also question whether the Applicants would have the incentive to offer expanded coverage and service in rural areas, particularly given what these commenters see as the standalone companies' historical reluctance to serve rural areas coupled with the financial and technical challenges of rural deployment.⁸⁸⁸ Further, some commenters express concern about the Applicants' ability to obtain sufficient backhaul in rural areas to meet the capacity and throughput demands of providing 5G services.⁸⁸⁹ RWA cites standalone T-Mobile's historical reliance on satellite for backhaul in many rural areas, observing that satellite backhaul

⁸⁸³ Andrea Rice Comments, Attach. at 1; Christian Sorgi Comments at 1; Tillman Infrastructure Comments at 2; CASE Comments, Attach. at 1-2; Letter from Hon. Jeff Colyer, Governor, Nebraska, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Aug. 30, 2018) (Governor Colyer Aug. 30, 2018 *Ex Parte* Letter); Commissioner Francis Sept. 17, 2018 *Ex Parte* Letter at 1; NPRCC Comments at 4; Letter from Allen Pratt, Executive Director, National Rural Education Association, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Sept. 11, 2018) (NREA Sept. 11, 2018 *Ex Parte* Letter); Comments of Hispanic Heritage Foundation at 2 (Sept. 17, 2018) (Hispanic Heritage Foundation Comments); Shentel Comments at 2; HITN Comments at 4-5. In addition, the Attorneys General of Utah and New Mexico state that they "will do everything within [their] power to make sure the New T-Mobile lives up to [the Applicants'] laudable commitments" regarding rural service and jobs. Letter from Sean D. Reyes, Attorney General, Utah, and Hector Balderas, Attorney General, New Mexico, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Aug. 24, 2018) (Utah and New Mexico State Attorneys General Aug. 24, 2018 *Ex Parte* Letter).

⁸⁸⁴ NTCA Aug. 27, 2018 Petition at 8.

⁸⁸⁵ DISH Aug. 27, 2018 Petition at 40; CWA Aug. 27, 2018 Comments at 51.

⁸⁸⁶ DISH Reply at 105-09; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 27.

⁸⁸⁷ DISH Reply at 105-09; DISH Nov. 19, 2018 *Ex Parte* Letter, Attach. B at 27. Commenters further argue that even accepting the Applicants' own predictions regarding the nature of rural deployment, it is clear that many rural consumers will see little to no benefit from the transaction. NTCA Reply at 6; OTI Reply at 10-11; RWA Reply at 5, 14-15.

⁸⁸⁸ NTCA Aug. 27, 2018 Petition at 4-5, 8, 12; Public Knowledge Aug. 27, 2018 Petition at 42-45; RWA Aug. 27, 2018 Petition at 8, 15-16, 22-23; CWA Aug. 27, 2018 Comments at 37-38; Kingsley Ross Comments at 1; OTI Reply at 11-12; Public Knowledge Reply at 11-13; Union Telephone Reply at 13; CWA Reply at 31-32, Appx. A; DISH Reply at 104-110; NTCA Reply at 6; RWA Reply at 14-15; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 11-23; Competition Advocates Dec. 20, 2018 *Ex Parte* Letter at 4.

⁸⁸⁹ Public Knowledge Aug. 27, 2018 Petition at 43-44 (arguing that there is an unresolved question regarding how New T-Mobile would be able to meet its backhaul needs given that neither T-Mobile nor Sprint have extensive wireline networks); CWA Aug. 27, 2018 Comments, Afflerbach Declaration at para. 33 (stating that latency at the level in the design specification for 5G might not be achievable with "a rural deployment, with long backhaul distances, limited or no use of mmWave spectrum, and less likelihood of data being cached close to the user"); Letter from Carl W. Northrop, Counsel to C Spire, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 4 (filed Nov. 8, 2018) (contending that "[t]he real challenge in offering 5G service in less populated markets is securing reliable, affordable backhaul and there is nothing about the Proposed Transaction that solves or addresses this problem"). While not conceding the inadequacy of available backhaul, Sprint does note that "[l]atency on wireless backhaul generally is slightly higher than fiber backhaul and, for microwave-based solutions, is directly related to the number of hops required to reach the site location." Sprint Information Request Response at 57 (Sept. 5, 2018).

substantially limits the resulting performance of service to consumers.⁸⁹⁰ DISH also contends that increased scale is unlikely to make rural deployment more likely, arguing that “deployment and its costs are necessarily site-specific.”⁸⁹¹ Finally, some commenters argue that the claimed benefits to rural networks and services would only be marginal relative to the *status quo* and still would leave much of rural America without mid-band spectrum coverage.⁸⁹² NTCA, for example, is concerned that the proposed transaction might yield much greater benefits in urban areas than rural areas, effectively exacerbating the urban-rural digital divide.⁸⁹³

260. The Applicants and other commenters contend, however, that the combined spectrum and other assets and larger scale resulting from the proposed transaction will make it more viable for New T-Mobile to serve rural areas.⁸⁹⁴ The Applicants also explain that as a business matter New T-Mobile will have incentives to ensure its expanded network is utilized. They assert that rural areas have particular room for growth given the standalone companies’ limited historical shares of consumers in such areas.⁸⁹⁵ In addition, commenters cite the potential for rural usage to increase as applications that are beneficial to rural customers are developed, offsetting to some degree the historical lack of sufficient demand in rural areas.⁸⁹⁶

261. The Applicants also dispute concerns about whether New T-Mobile will have sufficient backhaul in rural areas. Regarding T-Mobile’s existing backhaul capabilities as of January 2019, it claims that **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% of T-Mobile’s rural sites currently have high speed backhaul.⁸⁹⁷ Of the remainder, T-Mobile contends that satellite backhaul or temporary circuits are being used only until contracted-for fiber build-out occurs.⁸⁹⁸ T-Mobile also asserts that it “has future-proofed its backhaul to handle the performance requirements of New T-Mobile with scalable/upgradable solutions and contractual arrangements already in place.”⁸⁹⁹ In addition, the Applicants state that New T-Mobile will have reduced backhaul costs relative to the standalone companies because it can eliminate duplicative backhaul and because the increased demand per cell site served will enable New T-Mobile to obtain more favorable pricing on backhaul due to discounts based on

⁸⁹⁰ Letter from Caressa Bennett, General Counsel to RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach., Informal Request, at 7-12 (filed Jan. 10, 2019) (RWA Jan. 10, 2019 *Ex Parte* Letter); Letter from Caressa Bennett, General Counsel to RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Dec. 10, 2018) (RWA Dec. 10, 2018 *Ex Parte* Letter); *see also* Senator Blumenthal et al. Feb. 12, 2019 *Ex Parte* Letter at 16 (“While both companies have made standalone investments in improving their backhaul in preparation for 5G, the Rural Wireless Association has documented T-Mobile’s continued reliance on slower satellite connections for many of its rural cell sites.”); *but see* RWA Jan. 10, 2019 *Ex Parte* Letter at 15 (noting that in some areas where RWA identified T-Mobile’s apparent use of satellite backhaul, wireline backhaul circuits subsequently were installed).

⁸⁹¹ DISH Reply at 109.

⁸⁹² CWA Aug. 27, 2018 Comments at 47-48; CWA Aug. 27, 2018 Comments, Afflerbach Declaration at paras. 7-14; Rural Operators Petition at 6.

⁸⁹³ NTCA Reply at 6-7.

⁸⁹⁴ Joint Opposition at 95-97; TechFreedom Opposition at 16-17; T-Mobile Information Request Response at 49-50 (Sept. 5, 2018); ICLE Opposition at 39-40.

⁸⁹⁵ Joint Opposition at 95-96.

⁸⁹⁶ ICLE Opposition at 40.

⁸⁹⁷ T-Mobile Mar. 11, 2019 RWA and C Spire Response *Ex Parte* Letter at 1.

⁸⁹⁸ T-Mobile Mar. 11, 2019 RWA and C Spire Response *Ex Parte* Letter at 1. Even as to those sites with high speed backhaul relying on microwave service, **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** will be replaced with contracted fiber build-out. *Id.* at 1-2.

⁸⁹⁹ T-Mobile Mar. 11, 2019 RWA and C Spire Response *Ex Parte* Letter at 2.

the volume of traffic served.⁹⁰⁰ The Applicants also anticipate that 5G networks will better enable wireless backhaul, which can be used when providing fixed wireless service in rural areas.⁹⁰¹

262. Some commenters continue to question the adequacy of rural backhaul for New T-Mobile. Some contend that the Applicants' arguments are poorly defined and provide an inadequate basis for comfort about the sufficiency of New T-Mobile's rural backhaul.⁹⁰² C Spire criticizes the claims about T-Mobile's existing backhaul capabilities as beside the point, arguing that they demonstrate, at most, that T-Mobile has sufficient backhaul to support its current service coverage in rural areas, which commenters contend has been limited and inadequate.⁹⁰³ In response, the Applicants continue to maintain that New T-Mobile's existing backhaul capacity can handle demand "for the foreseeable future."⁹⁰⁴ In addition, the Applicants contend that criticisms of T-Mobile's existing backhaul overlook contracted-for backhaul capacity that is being deployed.⁹⁰⁵

263. **Applicants' Commitment to Rural 5G Network Deployment.** Although the Applicants maintain that improved rural coverage and service quality improvements will flow naturally from the proposed transaction, the Applicants have committed to ensure "that even more rural Americans receive the same world-class speed and service from New T-Mobile's mid-band coverage as the rest of the country."⁹⁰⁶ To this end, the Applicants commit that within three years of the merger's closing, New T-Mobile will deploy low-band and mid-band 5G coverage areas covering at least 85% and 55% of the rural population, respectively.⁹⁰⁷ These commitments, which we adopt as conditions herein, also call for **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** 5G sites to be deployed in rural areas and the deployment of **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band spectrum averaged over those sites.⁹⁰⁸ Further, the Applicants commit that within three years of the merger's closing, 66.7% of the rural population will have access to download speeds of at least 50 Mbps and 55% will have access to download speeds of at least 100 Mbps.⁹⁰⁹

264. The Applicants further commit that within six years of the merger's closing New T-Mobile will deploy low-band and mid-band 5G coverage areas covering at least 90% and 66.7% of the rural population, respectively.⁹¹⁰ Within six years after the merger's close, the Applicants also commit to deploying **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** 5G sites in rural areas and **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** megahertz of low-

⁹⁰⁰ Public Interest Statement, Ray Declaration at para. 28; Public Interest Statement, Sievert Declaration at para. 14; Public Interest Statement, Ewens Declaration at para. 7.

⁹⁰¹ Public Interest Statement, Evans Declaration at para. 108; *see also* ICLE Opposition at 36 (arguing that "5G use-cases include . . . wireless backhaul").

⁹⁰² Letter from Caressa Bennett, General Counsel to RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 1-3 (filed Mar. 28, 2019) (RWA Mar. 28, 2019 *Ex Parte* Letter); Letter from Carl W. Northrop, Counsel to C Spire, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Mar. 27, 2019) (C Spire Mar. 27, 2019 *Ex Parte* Letter).

⁹⁰³ C Spire Mar. 27, 2019 *Ex Parte* Letter at 1.

⁹⁰⁴ Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Apr. 17, 2019) (T-Mobile Apr. 17, 2019 *Ex Parte* Letter).

⁹⁰⁵ T-Mobile Apr. 17, 2019 *Ex Parte* Letter at 2 & nn.5-6.

⁹⁰⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3.

⁹⁰⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹⁰⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹⁰⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹¹⁰ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

band and mid-band spectrum averaged over those sites.⁹¹¹ In addition, the Applicants state that within six years of the merger's closing, 90% of the rural population will have access to download speeds of at least 50 Mbps and 66.7% will have access to download speeds of at least 100 Mbps.⁹¹²

265. Some commenters claim these commitments are inadequate because the Applicants will be unable or unwilling to satisfy them.⁹¹³ Commenters also criticize the commitments for doing too little to improve wireless coverage and services in rural areas.⁹¹⁴ CWA also contends that the rural commitments related to low-band coverage in particular represent little improvement over what the standalone companies would achieve.⁹¹⁵ In addition, certain commenters express concern that the Applicants have not identified particular states or similar geographic areas where the 5G deployment will occur under these commitments.⁹¹⁶

266. *Discussion.* We conclude that the proposed transaction will bring together spectrum and other resources that will give New T-Mobile the ability and incentive to deploy improved 5G networks in rural areas, making possible better coverage and better performing services than otherwise would be the case. We agree that rural communities will see especially large benefits from 5G connectivity: For example, high-speed wireless connections are more valuable for those who lack quality fixed service, telehealth services are more highly demanded the further one lives from a doctor, and distance learning is more important for those far from schools.⁹¹⁷ We find that the Applicants' commitments, adopted as conditions to our approval herein, to provide service at 50 Mbps and 100 Mbps to most rural communities are compelling. We find that, in light of the rural 5G network conditions, the potential for rural 5G gains as a result of the proposed transaction are creditable as public interest benefits.⁹¹⁸

267. The rural 5G coverage benefits resulting from the transaction are particularly notable because of the higher capacity resulting from the deployment of New T-Mobile's low-band and mid-band spectrum. Commission precedent and the record here uniformly recognizes the importance of mid-band spectrum for providing advanced wireless services.⁹¹⁹ While T-Mobile has been building out in rural areas with its 600 MHz low-band spectrum, its standalone network would have relatively low capacity.⁹²⁰

⁹¹¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹¹² T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹¹³ RWA May 30, 2019 *Ex Parte* Letter at 2-5; CWA May 31, 2019 *Ex Parte* Letter at 6-8, 9-10.

⁹¹⁴ RWA May 30, 2019 *Ex Parte* Letter at 3; CWA May 31, 2019 *Ex Parte* Letter at 6-7.

⁹¹⁵ CWA May 31, 2019 *Ex Parte* Letter at 6-7.

⁹¹⁶ RWA May 30, 2019 *Ex Parte* Letter at 3; CWA May 31, 2019 *Ex Parte* Letter at 6.

⁹¹⁷ Letter from Betsy E. Huber, President, National Grange, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Sept. 12, 2018) (National Grange Sept. 12, 2018 *Ex Parte* Letter) ([t]he merger would help usher in an enormous change in how wireless providers serve rural areas and would materially benefit rural communities. The new services could help link schools and health care providers to resources that are hard to use today because of a lack of broadband access.).

⁹¹⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2. For convenience, we refer to the rural 5G commitments—adopted here as enforceable conditions of our approval of the proposed transaction—as the “rural 5G network conditions.”

⁹¹⁹ *3.7-4.2 GHz Order and NPRM*, 33 FCC Rcd at 6917-18, para. 5; Public Interest Statement at 22; Nokia Aug. 30, 2018 *Ex Parte* Letter at 2; Center for Individual Freedom Comments at 4-5; Charter Mar. 14, 2019 *Ex Parte* Letter at 1-2.

⁹²⁰ T-Mobile's spectrum holdings in the 600 MHz band are much lower than New T-Mobile's mid-band spectrum holdings and the spectral efficiency of the 600 MHz band is also much lower at 2.5 bps/Hz versus 3.8 bps/Hz. Joint Opposition, Ray Reply Declaration at para. 19, Table 1; Public Interest Statement, Ray Declaration at para. 49, Table 3.

Moreover, the Applicants persuasively explain that “moving forward on its own, Sprint”—with its 2.5 GHz mid-band spectrum—“would not become a major competitor in small towns and rural communities.”⁹²¹ In addition, the ability to combine T-Mobile’s low-band spectrum and high-band spectrum with Sprint’s 2.5 GHz mid-band spectrum “and deploy more spectrum on more sites will improve signal strength and provide a much more consistent data experience than subscribers would experience on Sprint’s standalone network. Simply put, more subscribers will experience high data speeds with greater frequency because the combined network will be much denser than Sprint’s standalone network and more 5G spectrum will be available.”⁹²²

268. We find that the expanded 5G connectivity arising from the proposed transaction, as conditioned, is likely to yield especially large benefits for rural communities where competition is often so limited, and gaps or shortcomings in local infrastructure often are so great. As to competition, many rural communities receive high-quality wireless services from only one or two providers, such that the addition of the New T-Mobile will substantially increase competition in those areas. Moreover, by becoming a more significant option for rural communities, New T-Mobile will increase its competitiveness nationwide by virtue of the improved network coverage it can offer subscribers.

269. As to infrastructure, increased rural wireless deployment will create many benefits. For example, there tend to be fewer wired broadband options in rural areas relative to urban areas, and the distances from health care providers and educational opportunities in rural areas can make telehealth services and distance learning more important.⁹²³ The Commission recently recognized the need to “continue to take affirmative steps toward . . . closing the ‘digital divide’ that separates rural and other typically unserved or underserved areas from areas with substantially greater connectivity service and service options.”⁹²⁴ By bringing new connectivity and expanded competition to underserved rural areas, the proposed transaction will ensure that 5G helps to close, rather than widen, the digital divide.⁹²⁵

270. As explained in the context of the nationwide 5G network conditions, we concur, for the most part, with the Applicants’ claims regarding the network engineering complementarities and increases in network capacity and coverage likely to result from the proposed transaction.⁹²⁶ We find that these complementarities both increase the ability, and the incentive, to serve rural America. The rural 5G network conditions establish enforceable obligations on New T-Mobile that address its rural 5G network deployment across multiple dimensions. To address near-term spectrum coverage, the nationwide 5G network conditions require that, within three years of the merger’s closing, New T-Mobile will deploy low-band and mid-band 5G coverage areas covering at least 85% and 55% of the rural population,

⁹²¹ Public Interest Statement at 67.

⁹²² Public Interest Statement, Saw Declaration at para. 32.

⁹²³ *Communications Marketplace Report*, 33 FCC Rcd at 12667-68, para. 202; *Promoting Telehealth For Low-Income Consumers*, Notice of Inquiry, 33 FCC Rcd 7825, 7825-26, 7827-28, paras. 1, 5 (2018); *2018 Broadband Deployment Report*, 33 FCC Rcd at 1681-91, paras. 50-61; *FCC Seeks Comment and Data On Actions To Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies*, Public Notice, 32 FCC Rcd 3660, 3665-67 (2017); Public Interest Statement at 57-58, 64; Joint Opposition at 66, 93-96; Comments of National Hispanic Council on Aging at 2-4 (Sept. 6, 2018) (NHCA Comments); NPRCC Comments at 5-6; NREA Sept. 11, 2018 *Ex Parte* Letter at 1-2; National Grange Sept. 12, 2018 *Ex Parte* Letter at 1-2.

⁹²⁴ *2019 Broadband Deployment Report*, 34 FCC Rcd at 3860, para. 9.

⁹²⁵ We thus reject commenters’ concerns insofar as they suggest that the proposed transaction would widen the digital divide or claim that we should not credit the rural 5G coverage and service improvements as benefits because they do not go even further in reducing or eliminating the digital divide. CWA Aug. 27, 2018 Comments at 47-48; CWA Aug. 27, 2018 Comment, Afflerbach Declaration at paras. 7-14; Rural Operators Petition at 6; NTCA Reply at 6-7; RWA May 30, 2019 *Ex Parte* Letter at 3; CWA May 31, 2019 *Ex Parte* Letter at 6-7.

⁹²⁶ See *supra* section VI.A: Nationwide 5G Network; see also *infra* Appx. F: Technical Appendix.

respectively.⁹²⁷ The rural 5G network conditions further require that within six years of the merger's closing, New T-Mobile will deploy low-band and mid-band 5G coverage areas covering at least 90% and 66.7% of the rural population, respectively.⁹²⁸ This disaggregation of the spectrum coverage conditions helps ensure that New T-Mobile cannot provide coverage using low-band spectrum alone, but also must ensure significant mid-band coverage, given the substantial improvements in use of that spectrum for advanced services that is made possible by the proposed transaction.

271. The 5G network conditions also include additional obligations to address the scope and depth of the 5G network that New T-Mobile must put into place. Within three years after the merger's closing, the rural 5G network conditions require **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** 5G sites to be deployed in rural areas and the deployment of **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band spectrum averaged over those sites.⁹²⁹ Within six years after the merger's close, the rural 5G network conditions require New T-Mobile to deploy **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** 5G sites in rural areas and **[BEGIN HIGHLY CONF. INFO]** **[END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band spectrum averaged over those sites.⁹³⁰ These additional metrics add robustness to the Commission's ability to confirm that New T-Mobile has deployed the sort of 5G network that justifies the significant public interest benefits we credit in our review of the proposed transaction.

272. Further, the rural 5G network conditions establish enforceable measures for the performance consumers will experience on the New T-Mobile network. Specifically, within three years of the merger's closing, the rural 5G network conditions require that 66.7% of the rural population will have access to download speeds of at least 50 Mbps and 55% will have access to download speeds of at least 100 Mbps.⁹³¹ In addition, the conditions require that within six years of the merger's closing, 90% of the rural population will have access to download speeds of at least 50 Mbps and 66.7% will have access to download speeds of at least 100 Mbps.⁹³²

273. The Applicants' commitments are accompanied by a robust verification and enforcement mechanism.⁹³³ Rural coverage and throughput obligations at three and six years, respectively, will be verified by drive tests that will meet specifications agreed to by the Commission and will be designed with Commission oversight.⁹³⁴ If New T-Mobile fails to meet the rural coverage and other commitments, it would be required to make significant monetary contributions to the U.S. Treasury. New T-Mobile's six-year coverage commitments will continue until they are met, and the related contributions will continue to accrue and increase during their pendency. We find that the enforceable conditions, including the contribution requirements, provide us confidence that rural consumers will in fact receive the performance improvements the Applicants promise and therefore credit the rural coverage claims as public interest benefits of the proposed transaction.⁹³⁵

⁹²⁷ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹²⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2

⁹²⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹³⁰ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹³¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹³² T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹³³ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3-5.

⁹³⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹³⁵ We credit the 5G coverage, deployment, and service improvements as rural 5G benefits to the extent that they represent improvements specifically in rural areas relative to the likely outcome for the standalone companies and to the extent that such improvements are particularly significant given the needs and characteristics of rural areas. We

(continued....)

274. Although commenters question the verifiability of the Applicants' predicted rural 5G benefits, we are persuaded that our analysis of the Applicants' claims, bolstered by the rural 5G network conditions, adequately address those verifiability concerns and enable us to credit substantial public interest benefits from New T-Mobile's deployment of a highly robust 5G network in rural America. To that end, we also reject questions about the verifiability of the requirements of the conditions themselves.⁹³⁶ RWA identifies a number of hurdles that will have to be overcome to satisfy the conditions, but they identify no new types of issues not already raised earlier in the proceeding.⁹³⁷ The Applicants submitted extensive details and information regarding the predicted network deployment plans, and we have verified their claims to the extent possible.⁹³⁸ Furthermore, because the types of hurdles raised by RWA were identified in the record even before the Applicants offered the rural 5G network commitments, we see no reason to believe that the Applicants would have made the commitments—recognizing that we might adopt them as enforceable conditions of our approval of the transaction—unless they reasonably could be expected to be satisfied. Our confidence in the efficacy of the rural 5G network conditions is further supported by the fact that those conditions are subject to strong verification and enforcement mechanisms.⁹³⁹

275. We also reject commenters' various other criticisms of the rural 5G network conditions. CWA claims that given the portion of the population for which the conditions only require low-band coverage, "it would be extremely surprising if 50 Mbps service were more than aspirational for the many T-Mobile users in those low-band served areas, which again are mostly rural areas."⁹⁴⁰ The speed metrics in the rural 5G network conditions require, at a minimum, access to the specified 50 Mbps or 100 Mbps download speeds for the specified percentage of the population in rural areas meaning that "users of T-Mobile-Certified 5G devices" in those areas "will experience the specified download speeds on average (mean) across actual utilization."⁹⁴¹ That does not leave room for the speed metrics to be "largely aspirational," and given variations in the characteristics and circumstances of providing service in different geographic areas we are not persuaded that CWA's broad-brush claims call into question the public interest benefits we attribute to the proposed transaction associated with rural 5G coverage.⁹⁴²

276. We also find that the rural 5G network conditions appropriately target verifiable benefits of the transaction to rural areas, contrary to some commenters' concerns. Although the geographic areas where the rural 5G networks conditions ultimately will be met are not identified with the specificity that some commenters might prefer,⁹⁴³ the conditions do make clear that they will apply to rural areas as defined in the 2010 U.S. Census.⁹⁴⁴ The Commission previously has relied on the U.S. Census definition

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thus do not double-count benefits in this context that we already have accounted for as part of the benefits from the deployment of a world-leading, nationwide 5G network.

⁹³⁶ RWA May 30, 2019 *Ex Parte* Letter at 2-3.

⁹³⁷ RWA May 30, 2019 *Ex Parte* Letter at 2-3.

⁹³⁸ See *infra* Appx. F: Technical Appendix.

⁹³⁹ To the extent that commenters raise concerns about the verification and/or enforcement of these conditions, we reject them for the reasons already explained above.

⁹⁴⁰ CWA May 31, 2019 *Ex Parte* Letter at 7.

⁹⁴¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6.

⁹⁴² CWA also states that the broadband benefits in rural areas should be "carefully scrutinized" (CWA May 31, 2019 *Ex Parte* Letter at 7), and we believe that the rural 5G network conditions' verification process—backed up by enforcement consequences—enables us to properly scrutinize whether the conditions have been satisfied.

⁹⁴³ RWA May 30, 2019 *Ex Parte* Letter at 3; CWA May 31, 2019 *Ex Parte* Letter at 6.

⁹⁴⁴ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6. "Rural Population"—the other key term relevant to identifying the beneficiaries of the rural 5G network conditions—likewise is defined by reference to "Rural Areas." *Id.* at 6-7.

of rural at times, and we find it a reasonable, administrable approach to identifying rural areas for purposes of the rural 5G network conditions, as well.⁹⁴⁵ Nor are we persuaded that the data on Rural Population—based on 2010 U.S. Census data updated by Pitney Bowes—is unreliable.⁹⁴⁶ Given the use of the 2010 U.S. Census definition of rural areas, we find it reasonable to rely on updated 2010 Census data to determine the population in those areas. Although RWA cites a different number for the rural population based on a publication by the U.S. Department of Agriculture,⁹⁴⁷ that number is not tied to Census geographic definitions, and RWA does not justify—nor are we otherwise persuaded—that the framework being applied by the Department of Agriculture would somehow represent a conceptually superior approach to defining rural areas and rural population for our purposes.

C. In-Home Broadband Service

277. The Applicants contend that the increased data rates enabled by New T-Mobile’s 5G network will be competitive with wired broadband speeds, and aggressively pricing its new in-home broadband service offering will lead to increased price competition with incumbent fixed broadband providers and result in consumer benefits.⁹⁴⁸ In the Joint Opposition, the Applicants assert that their business analyses confirm substantial marketplace interest in in-home broadband service offerings at the rates and with the capabilities they expect to offer.⁹⁴⁹ In particular, the Applicants estimate that New T-Mobile will offer competitive in-home broadband services in 52% of zip codes by 2024.⁹⁵⁰ The Applicants contend that they expect to acquire 1.9 million customers for their in-home broadband service offering by 2019 and 9.5 million by 2024, approximately 20% to 25% of which will be located in rural

⁹⁴⁵ See, e.g., *2018 Broadband Deployment Report*, 33 FCC Rcd at 1716, para. 11 (for purposes of the broadband progress report “Census blocks are designated as rural based upon the designation used in the 2010 Census”); *International Comparison Requirements Pursuant To the Broadband Data Improvement Act; International Broadband Data Report*, Sixth Report, 33 FCC Rcd 978, 1075, para. 8 (IB 2018) (for purposes of international broadband comparisons reporting “[w]e rely on the U.S. Census Bureau’s method for identifying a U.S. census block as rural or non-rural” (footnote omitted)).

⁹⁴⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6-7.

⁹⁴⁷ RWA May 30, 2019 *Ex Parte* Letter at 3 (citing U.S. Dept. of Agriculture, John Cromartie and Dennis Vilorio, *Rural Population Trends* (Feb. 15, 2019), <https://www.ers.usda.gov/amber-waves/2019/february/rural-population-trends/>) (explaining that the article is drawn from “*Rural America at a Glance, 2018 Edition*, by John Cromartie, ERS, November 2018”); U.S. Dept. of Agriculture, John Cromartie, *Rural America at a Glance, 2018 Edition*, at 1 & n.1 (Nov. 2018), <https://www.ers.usda.gov/webdocs/publications/90556/eib-200.pdf?v=5899.2> (“Rural areas are defined here using nonmetropolitan (nonmetro) counties. . . . For more on these definitions, visit the ERS ‘What Is Rural?’ topic page.”); U.S. Dept. of Agriculture, *What is Rural?* <https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/what-is-rural/> (last visited Oct. 14, 2019) (explaining that “the existence of multiple rural definitions reflects the reality that rural and urban are multidimensional concepts” and explaining that the USDA uses an Office of Management and Budget definition); see also U.S. Dept. of Agriculture, John Cromartie and Shawn Bucholtz, *Defining the “Rural” in Rural America* (June 1, 2008), <https://www.ers.usda.gov/amber-waves/2008/june/defining-the-rural-in-rural-america/> (stating about different “rural” definitions that “[t]he administrative concept, used by many USDA rural development programs, defines urban along municipal or other jurisdictional boundaries,” while “[t]he land-use concept, used by the Census Bureau, identifies urban areas based on how densely settled the area is,” and “[t]he economic concept, used in most rural research applications, recognizes the influence of cities on labor, trade, and media markets that extend well beyond densely settled cores to include broader ‘commuting areas’”).

⁹⁴⁸ Public Interest Statement at 45, 58-64; T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 24; see also Joint Opposition, Appx. J, Declaration of Harold Furchtgott-Roth, at 2 (Sept. 17, 2018) (Joint Opposition, Furchtgott-Roth Declaration) (discussing pricing of New T-Mobile’s in-home broadband service relative to other providers’ offerings).

⁹⁴⁹ Joint Opposition at 65-67.

⁹⁵⁰ Joint Opposition at 66.

areas with limited broadband availability today.⁹⁵¹ The Applicants estimate that 5.8 million households will use New T-Mobile's mobile service for all their broadband needs (in-home or mobile) by 2021, and that 6.3 million households will do so by 2024.⁹⁵² The Applicants contend that there will be consumer welfare benefits from offering in-home broadband service by 2024 of up to \$11 billion annually.⁹⁵³ Further, the Applicants submitted a study estimating consumer benefits from the establishment of an in-home broadband service.⁹⁵⁴ Finally, the Applicants provided a technical explanation of their in-home broadband service in a series of submissions to the Commission.⁹⁵⁵

278. Some commenters agree that New T-Mobile will increase competition for in-home broadband service.⁹⁵⁶ Others argue that the Applicants' claims are speculative and premature given the uncertainty about whether the precise service characteristics, prices, and terms of the new service will be competitive with wired broadband service, particularly given prior Commission findings that mobile broadband service is not a substitute for fixed broadband service.⁹⁵⁷ For example, OTI criticizes the Applicants' subscribership claims as "dubious" and insufficiently supported,⁹⁵⁸ and argues that mobile service is not a viable alternative to fixed service because "[m]obile broadband is subject to higher costs

⁹⁵¹ Joint Opposition at 66.

⁹⁵² Joint Opposition at 68.

⁹⁵³ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 4. The Applicants identify three categories as the source of these benefits: "(1) customers purchasing New T-Mobile's in-home wireless broadband offering; (2) new broadband customers taking service; and (3) competitive responses of incumbent fixed broadband providers."

⁹⁵⁴ Joint Opposition, Furchtgott-Roth Declaration at 2-3. Furchtgott-Roth assumes that the new service would be cheaper than its rivals and attract a significant number of customers while also lowering prices industry-wide. Furchtgott-Roth examines only benefits from price declines and ignores any quality benefits, which he asserts makes his estimates lower bounds. Joint Opposition, Furchtgott-Roth Declaration at 2-3. Furchtgott-Roth separates benefits into four categories based on which consumers would benefit: 1) consumers who switch to New T-Mobile fixed wireless broadband from another in-home broadband provider; 2) consumers who choose New T-Mobile fixed wireless broadband as their first in-home broadband service provider; 3) consumers who replace their fixed wireless service altogether with New T-Mobile mobile service; and 4) fixed broadband consumers who do not switch to New T-Mobile, but enjoy lower prices from increased competition. Furchtgott-Roth chooses a wide range of potential price changes and subscribers uptake numbers, so his estimates of 2024 total consumer benefits vary greatly, from \$3.4 billion to \$29.5 billion. Joint Opposition, Furchtgott-Roth Declaration at 9-12. In his study, Furchtgott-Roth prefers a smaller range of benefits of \$7.2 billion to \$13.7 billion based on a narrower range of assumptions. Joint Opposition, Furchtgott-Roth Declaration at 4-8, 13.

⁹⁵⁵ T-Mobile Information Request Response, Specs. 29, 30 (Sept. 5, 2019); T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter; *see also* Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 3-15 (filed May 1, 2019) (T-Mobile May 1, 2019 *Ex Parte* Letter). Essentially, the Applicants use the in-home broadband RF Link Budget to determine the eligible coverage area and then use the core Network Build Model to identify the areas where sufficient network capacity will exist to allow the offering of an in-home broadband product, and how many households that capacity could support. T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Appx. B, Mark McDiarmid Declaration, at paras. 2-7.

⁹⁵⁶ Ultra Mobile/Mint Mobile Comments at 3; Maine Public Advocate Sept. 7, 2018 *Ex Parte* Letter, Attach. at 1; NPRCC Comments at 4; NREA Sept. 11, 2018 *Ex Parte* Letter at 2; Hispanic Heritage Foundation Comments at 2; ACLP Comments at 32; Rep. Christopher Rosario Oct. 9, 2018 *Ex Parte* Letter at 1; Letter from Kyle Davis, Government Relations and Public Policy Specialist, Greater Binghamton Chamber of Commerce, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Oct. 31, 2018); Letter from Brian Brady, Founder and Chief Executive, Northwest Broadcasting, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Mar. 13, 2019).

⁹⁵⁷ Console Enterprises Aug. 27, 2018 Petition at 4; DISH Aug. 27, 2018 Petition at 39-40; Public Knowledge Aug. 27, 2018 Petition at 39-41; CWA Aug. 27, 2018 Comments at 47-51.

⁹⁵⁸ OTI Reply at 12; *see also* DISH Reply at 91.

due to restrictive data caps, less reliable service, and is generally harder to use for educational, employment, and other applications than fixed broadband services.”⁹⁵⁹ In addition, DISH contends that the Applicants’ attempts to quantify the in-home broadband service benefits are not credible.⁹⁶⁰ DISH argues that internal documents submitted in the record demonstrate that “the merger is neither necessary nor adequate to allow the provision of a true competitive fixed broadband service.”⁹⁶¹

279. T-Mobile responds that the transaction “will result in massive increases in capacity, in excess of planned wireless traffic in some areas, and that unused capacity can be used to offer In-Home Broadband Service in those areas without meaningfully degrading mobile wireless service.”⁹⁶² It indicates that it plans to compete aggressively for subscribers by pricing its service below the level other fixed broadband providers typically charge and that the low prices will come with high speed.”⁹⁶³ CWA counters that the Applicants’ proposed in-home broadband service offering will be “technically inferior” and “less flexible” than the broadband services with which it might compete, would be available to only a small fraction of U.S. households, and is focused on areas where competitive broadband services already exist.⁹⁶⁴ DISH contends that the Applicants overstate the number of households that this offering may serve and that they have failed to provide evidentiary support for their projection of how many consumers would sign up for the service.⁹⁶⁵ DISH also contests whether the in-home broadband benefits are transaction-specific and questions whether the Applicants have adequately defended their specific estimates of benefits.⁹⁶⁶ Union Telephone expresses concern about a provider obtaining so much spectrum as to enable not only mobile wireless services but also in-home broadband service offerings as it contends that the spectrum could be better used by other mobile wireless service providers.⁹⁶⁷

280. The Applicants respond that in-home broadband benefits are transaction-specific because “Sprint has no current plans to provide in-home fixed wireless broadband service as contemplated for the New T-Mobile,” while “T-Mobile, as a standalone, has limited plans at best.”⁹⁶⁸ The Applicants also claim that New T-Mobile will be “bringing service where none exists today,” and that the benefits in that regard “are priceless for those who live or work on the other side of the Digital Divide.”⁹⁶⁹ The Applicants explain that their in-home broadband service “has a low cost structure and good economics” because New T-Mobile will be “monetizing available spectrum and leveraging off of other deployed network assets”—making “the in-home service . . . profitable on its own,” in addition to the “financial benefits for mobile wireless by reducing churn and attracting new customers” and “complement[ing] and creat[ing] increased revenue opportunities for New T-Mobile’s video distribution service.”⁹⁷⁰

281. **Applicants’ Commitments to In-Home Broadband.** The Applicants submitted commitments with respect to New T-Mobile’s in-home broadband service, which they state is “a

⁹⁵⁹ OTI Reply at 13.

⁹⁶⁰ DISH Reply at 94-95.

⁹⁶¹ DISH Reply at 89; *see also Id.* at 89-91.

⁹⁶² T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 2.

⁹⁶³ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 2-3.

⁹⁶⁴ CWA Mar. 28, 2019 Comments at 10-11; *see also* RWA Mar. 28, 2019 Comments at 3.

⁹⁶⁵ DISH Mar. 28, 2019 Comments at 18-20.

⁹⁶⁶ DISH Reply at 91-95.

⁹⁶⁷ Union Telephone Reply at 29-30.

⁹⁶⁸ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 24.

⁹⁶⁹ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 25.

⁹⁷⁰ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. at 3; *see also Id.*, Attach. at 14-22 (discussing these considerations in greater detail).

residential broadband service with minimum speeds of 25 Mbps downlink and 3 Mbps uplink.”⁹⁷¹ The Applicants commit that within three years following consummation of the transaction, New T-Mobile will “[m]arket its In-Home Broadband Service product to at least 9.6 million Eligible Households, of which at least 2.6 million are Rural Households” and will “have at least **[BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO.]** million Supported Households, of which at least **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** million are Rural Households.”⁹⁷² In addition, within six years following consummation of the transaction, New T-Mobile will “[m]arket its In-Home Broadband Service product to at least 28.0 million Eligible Households, of which at least 5.6 million are Rural Households” and “have at least **[BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO.]** million Supported Households, of which at least **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** million are Rural Households.”⁹⁷³

282. *Discussion.* We are confident that New T-Mobile’s network will have sufficient excess capacity to offer a new in-home broadband service to millions of homes, including underserved homes in rural areas on the terms and conditions that the Applicants have proposed.⁹⁷⁴ Moreover, the Commission has previously and consistently recognized the value to consumers of fixed services with the capabilities of the broadband service promised by the Applicants’ in-home broadband commitments.⁹⁷⁵ We find that the Applicants’ commitment to the 25 Mbps/3 Mbps speed for the New T-Mobile in-home broadband service “reflects current consumer demand for high-speed broadband service.”⁹⁷⁶

283. We find verifiable and creditable benefits from the proposed transaction as a result of the Applicants’ in-home broadband commitments that we adopt as conditions herein. Although we cannot verify the Applicants’ quantification of benefits, allegedly ranging from \$3.4 billion to \$13.7 billion,⁹⁷⁷ we can conclude that the benefits of the new service, as conditioned, would likely be significant. New T-Mobile’s provision of wireless in-home broadband service could enable millions of homes to receive lower-cost or higher-quality service than they would otherwise enjoy. These benefits are likely to be particularly important for consumers who today have limited choice for broadband access—or no broadband access at all.

284. As with their other 5G deployment commitments, our acceptance of the Applicants’ in-home broadband commitments as conditions to our approval of the proposed transaction is accompanied by a robust enforcement mechanism.⁹⁷⁸ New T-Mobile would be required to make significant monetary contributions to the U.S. Treasury if it fails to meet the commitments at the three- and six-year marks. New T-Mobile’s six-year in-home broadband commitments will continue until they are met, and the related contributions will continue to accrue and increase until they are satisfied.⁹⁷⁹ Taken together, these

⁹⁷¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6.

⁹⁷² T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁹⁷³ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2. These commitments end once New T-Mobile has 9.5 million simultaneous in-home broadband service subscribers. T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 3.

⁹⁷⁴ See *infra* Appx. F: Technical Appendix.

⁹⁷⁵ 2019 Broadband Deployment Report, 34 FCC Rcd at 3862-63, paras. 12-15; 2018 Broadband Deployment Report, 33 FCC Rcd at 1667-70, paras. 21-26.

⁹⁷⁶ 2019 Broadband Deployment Report, 34 FCC Rcd at 3862, para. 13. We find the in-home broadband service offering deserving of some creditable public interest benefits even without making broader determinations or assumptions regarding its substitutability with particular competitors’ fixed broadband offerings.

⁹⁷⁷ Joint Opposition, Furchtgott-Roth Declaration at 8, 13.

⁹⁷⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 4-5.

⁹⁷⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 5. The Applicants and Commission staff will determine the methodology to verify the in-home broadband services deployment within 60 days of the closing of

(continued....)

enforceable conditions give us sufficient confidence regarding the performance improvements that consumers, especially rural consumers, can expect, to be able to credit them as public interest benefits of the proposed transaction.⁹⁸⁰ Thus, in light of the Applicants' in-home broadband service commitments, adopted as conditions of our approval of the proposed transaction, we conclude that the associated in-home broadband service benefits are verifiable and creditable public interest benefits arising from the proposed transaction.

VII. OTHER POTENTIAL HARMS AND BENEFITS

A. Wholesale Services

285. A diverse range of MVNOs purchase wholesale capacity from facilities-based providers for use as inputs to their own retail wireless services. Facilities-based providers' wholesale services—offered through unregulated, negotiated contracts⁹⁸¹—take a variety of forms, both in terms of price levels and the structure of the arrangements; and “[d]ifferent types of resellers . . . often increase the range of services offered to consumers” by means including, but not limited to, “targeting certain market segments, including segments not previously served by the hosting facilities-based provider.”⁹⁸² The Applicants and other parties disagreed about whether or not the proposed transaction, as originally structured, would have detrimental effects on competition for the provision of wholesale services, as discussed below. Subsequently, the Applicants proposed commitments to, among other things, expand and accelerate their deployment of 5G network facilities across the nation and, in particular, in rural areas.⁹⁸³ We find that the substantial benefits of New T-Mobile's intensified deployment will yield benefits to MVNOs and consumers alike that will likely outweigh any putative harms to wholesale competition.

286. *Record.* The Applicants assert that the proposed transaction will enable New T-Mobile to offer higher quality wholesale services at lower prices to MVNOs—including both traditional resellers and iMVNOs⁹⁸⁴—due to New T-Mobile's increased network capacity, lower operational costs, and broader geographic coverage than either of the two standalone companies.⁹⁸⁵ By contrast, they contend that the elimination of Sprint as a standalone provider would have little, if any, competitive impact on the supply of wholesale services to MVNOs, due to Sprint's currently “limited share of the wholesale segment” and the “network shortcomings” that constrain its ability to attract and retain MVNO

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the T-Mobile-Sprint transaction. T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 7.

⁹⁸⁰ To the extent that commenters raise concerns about the verification and/or enforcement of these conditions, we reject them for the reasons already explained above.

⁹⁸¹ Commission rules do not require facilities-based providers to offer wholesale services to other service providers for resale. 47 C.F.R. § 20.12(b).

⁹⁸² *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16241, para. 106.

⁹⁸³ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-4, Attach. 1. The Applicants also pledged to provide a broad range of wholesale services to the newly divested Boost Mobile business and to extend Sprint's existing wholesale arrangement with Altice. *Id.* at 5-7, Attach. 2.

⁹⁸⁴ Altice describes the “full infrastructure-based MVNO model” as one in which the iMVNO “rel[ies] critically, but minimally, on mobile network operator (‘MNO’) partners, utilizing only the radio access network (‘RAN’) of the MNO . . . [while] supply[ing] all other aspects of the mobile offering, including the SIM, roaming and network partners, data and Internet access, voice messaging, rate charging, customer care, and billing.” Altice Reply at 2. On Nov. 5, 2017, Altice and Sprint entered an iMVNO wholesale agreement under which “Altice gained access to Sprint's network with full core control at a competitive price and agreed in exchange to support the deployment of Sprint's small cells on its cable backhaul infrastructure.” Altice Information Request Response, Cragg/Garcés Declaration at 37 (Jan. 28, 2019).

⁹⁸⁵ Public Interest Statement at 123-24; Joint Opposition at 4, 86-92; Joint Opposition, Woroch Declaration at 19-20, 26-27.

customers.⁹⁸⁶ The Applicants also assert that, following the merger, New T-Mobile would not be able to raise its wholesale prices in the short term, due to Sprint’s and T-Mobile’s existing multi-year contracts with MVNOs, which will continue to bind New T-Mobile post-transaction.⁹⁸⁷ In the longer term, they submit that New T-Mobile’s ability to raise prices would be constrained because if it were to raise its wholesale rates, most MVNOs could rapidly shift their traffic to other providers with which they have (or could easily establish) wholesale service agreements.⁹⁸⁸ Furthermore, they contend that the proposed transaction would give “New T-Mobile[] additional network capacity and lower per unit costs [that] will create an incentive for the combined company to lower wholesale prices to MVNOs in order to ensure that the new network capacity is not wasted by sitting idle.”⁹⁸⁹ Factoring in the Applicants’ commitments to accelerate and broaden their deployment of 5G network facilities, they argue that the proposed transaction would lead to New T-Mobile’s obtaining broader and deeper network capacity and coverage than under the transaction as originally proposed.⁹⁹⁰

287. TracFone—the nation’s largest MVNO⁹⁹¹—supports the proposed transaction and states that it “expects that the strong 5G network to be built by the New T-Mobile, with the additional coverage, speed and capacity[,] can only improve the wholesale market for MVNOs and thus TracFone’s customers going forward.”⁹⁹² TracFone asserts that, in the past, T-Mobile and Sprint have not offered sufficient coverage or throughput speed in rural areas and submits that New T-Mobile’s deployment of a nationwide 5G network following the proposed transaction would make “the wholesale marketplace . . . more competitive[,] with three full service competitors, rather than two” in rural areas.⁹⁹³ TracFone also argues the transaction would likely yield lower wholesale prices.⁹⁹⁴

288. Opposing parties assert that Sprint and T-Mobile collectively supply a relatively large portion of the wholesale services used by MVNOs across the country⁹⁹⁵ and contend that eliminating

⁹⁸⁶ Sprint Apr. 15, 2019 *Ex Parte* Letter at 6; *see also Id.* at 4 (Sprint is “a relatively insignificant supplier of wholesale services” and “currently serves only [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of the retail customers who subscribe to MVNOs.”).

⁹⁸⁷ Joint Opposition, Woroch Declaration at 24.

⁹⁸⁸ Joint Opposition, Woroch Declaration at 24-26; *see also* Joint Opposition, Salop/Sarafidis Reply Declaration at 16 (“MVNOs are powerful buyers with the ability to move significant purchases among the facilities-based [providers] with long term contracts.”).

⁹⁸⁹ Joint Opposition at 88; *see also* Joint Opposition, Woroch Declaration at 28. The Applicants also point out that AT&T and Verizon Wireless are also planning to increase their deployment of 5G networks and will have incentives similar to those of T-Mobile to “use the capacity on [their] network[s] and [their] airwaves to increase the number of prepaid and wholesale customers they serve.” Joint Opposition, Woroch Declaration at 28.

⁹⁹⁰ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-4.

⁹⁹¹ *Communications Marketplace Report*, 33 FCC Rcd at 12562, para. 7. According to DISH, TracFone provides service to approximately 23 million MVNO consumer connections—over half of the nation’s total, and more than all other MVNOs combined—and sells more prepaid service than any other MVNO or facilities-based provider. DISH Aug. 27, 2018 Petition, Brattle Declaration at 35-37, 51, Tables 13, 22.

⁹⁹² TracFone Comments at 2.

⁹⁹³ *Id.* at 4.

⁹⁹⁴ *Id.* Other MVNOs offer similar support for the proposed transaction. *See, e.g.*, PWG Comments at 2-3; Ultra Mobile/Mint Mobile Comments at 1-3; Comments by Republic Wireless at 3-5 (Sept. 7, 2018).

⁹⁹⁵ *See, e.g.*, DISH Aug. 27, 2018 Petition, Brattle Declaration at 38, 54. Altice asserts that Sprint’s own data, adjusted to exclude [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] show that Sprint and T-Mobile provide [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], respectively—a total of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%—of the wholesale service used to serve consumers of MVNOs other than TracFone. Letter from Jennifer L. Richter, Counsel to Altice, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 4-5 (filed Apr. 29,

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wholesale competition between the two firms would enable New T-Mobile to raise wholesale prices and degrade the quality of wholesale services.⁹⁹⁶ Some parties argue that a combined New T-Mobile would have stronger incentives to raise prices driven by the combined firm's larger share of the retail market, its greater profits per retail consumer due to realizing lower overall costs per connection, and the greater benefit it would realize by impeding the ability of MVNOs (which rely on upstream wholesale inputs) to compete effectively to provide downstream retail services.⁹⁹⁷ DISH estimated, based on a Vertical Gross Upward Pricing Pressure Index (vGUPPI) analysis, that as a result of the proposed transaction, New T-Mobile would have an incentive to raise the wholesale rates it charges TracFone by a substantial amount.⁹⁹⁸ By contrast, the Applicants calculate that the merged entity's incentives to raise wholesale rates charged to TracFone would be 5.5% over T-Mobile's pre-transaction levels.⁹⁹⁹

289. Some parties contend that the loss of Sprint as an independent competitor would be particularly harmful because Sprint typically charges the lowest wholesale rates and has been more willing to negotiate MVNO agreements at reasonable terms.¹⁰⁰⁰ Others contend that the elimination of Sprint as a standalone provider would threaten the continuing viability of the iMVNO business model since Sprint is the only facilities-based provider that has negotiated wholesale arrangements tailored to support that model.¹⁰⁰¹ Sprint responds that these parties exaggerate the significance of iMVNO-oriented

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2019) (Altice Apr. 29, 2019 *Ex Parte* Letter). Altice argues that “[t]his figure underscores the importance of Sprint and T-Mobile to new entrants and smaller providers without the large volume of traffic that TracFone is able to use to attract interest from AT&T and Verizon and for whom the only option is Sprint or T-Mobile.” *Id.* at 5.

⁹⁹⁶ See, e.g., Altice Petition at ii, 3, 9, 11, 16; Altice Reply at 12-13; AAI Petition at 10, 15; DISH Aug. 27, 2018 Petition at 57; DISH Aug. 27, 2018 Petition, Brattle Declaration at 38-39, 54-56; Free Press Petition at 3; Public Knowledge Petition at 26-29.

⁹⁹⁷ See, e.g., DISH Aug. 27, 2018 Petition at 57; DISH Aug. 27, 2018 Petition, Brattle Declaration at 54-56; Altice Information Request Response, Cragg/Garcés Declaration at 41 (Jan. 28, 2019).

⁹⁹⁸ Specifically, DISH estimates that the rates would increase by **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**%. DISH Reply, Brattle Reply Declaration at 18-20; see also DISH Aug. 27, 2018 Petition, Brattle Declaration at 54-56. As a result, DISH claims that retail consumers would pay nearly **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** higher rates for TracFone's prepaid service. DISH Reply, Brattle Reply Declaration at 20.

⁹⁹⁹ In turn, the Applicants assert that TracFone's retail prepaid service rates would increase by just 4 cents per month (0.18%) over pre-transaction levels. Joint Opposition, Salop/Sarafidis Declaration at 17-19, paras. 46-49. The Applicants claim that DISH's initial calculations failed to account for the fact that TracFone serves just **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**% of its retail consumers using wholesale services purchased from T-Mobile and uses **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** of Sprint's wholesale services to do so. *Id.* at 18, paras. 47-48.

¹⁰⁰⁰ See, e.g., RWA Petition at 7; Union Telephone Petition at 39; Altice Information Request Response, Cragg/Garcés Declaration at 36-39 (Jan. 28, 2019); Comcast Information Request Response at 1-2 (Nov. 19, 2018); Charter Information Request Response at 3 (Oct. 19, 2018); Letter from Michael D. Hurwitz, Counsel to Comcast, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1-2 (filed Apr. 25, 2019) (Comcast/Charter Apr. 25, 2019 Joint *Ex Parte* Letter).

¹⁰⁰¹ Altice Reply at i-ii, 2, 4-8; Altice Information Request Response, Cragg/Garcés Declaration at 17-24, 31-44 (Jan. 28, 2019); Altice Apr. 12, 2019 *Ex Parte* Letter at 1; Altice Apr. 29, 2019 *Ex Parte* Letter at 7-14; Comcast Information Request Response at 1-2 (Oct. 22, 2018); Charter Information Request Response at 1-2, 4 (Oct. 19, 2018); Comcast/Charter Apr. 25, 2019 Joint *Ex Parte* Letter at 3-5; DISH Aug. 27, 2018 Petition at 48-51. Altice attempts to quantify the harm that it claims consumers would suffer if New T-Mobile were to withhold or raise prices for wholesale services by modifying the Applicants' merger simulation model to compare scenarios in which cable companies are, or are not, able to obtain the wholesale services necessary to function as iMVNOs. Altice Information Request Response, Cragg/Garcés Declaration at 53-57, Appx. 1 (Jan. 28, 2019). Altice's calculations predict consumer harms of **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** billion per year. *Id.* at 57.

wholesale arrangements and submits that numerous MVNOs are already competing effectively without such arrangements.¹⁰⁰² The Applicants' proposed commitments submitted on May 20, 2019, provide that New T-Mobile will continue to comply with Sprint's agreements with Altice and will negotiate in good faith an amendment of the Altice MVNO Agreement to include all networks, including the 5G network, operated by New T-Mobile.¹⁰⁰³

290. *Discussion.* We share TracFone's view that "the strong 5G network to be built by the New T-Mobile, with the additional coverage, speed and capacity[,] can only improve the wholesale market for MVNOs."¹⁰⁰⁴ We find that New T-Mobile's massive expansion of its planned 5G network, as augmented by the Applicants' deployment commitments, will yield substantial benefits for MVNO purchasers of wholesale services as well as retail consumers.¹⁰⁰⁵ New T-Mobile's increased network capacity and expanded coverage will generate particularly significant value to purchasers of wholesale services due to MVNOs' reliance on high-quality wholesale services as the most critical inputs to their retail services and to their ability to compete effectively in serving existing consumers and attracting new ones. Those MVNOs that used Sprint services in the past will enjoy particularly significant benefits due to New T-Mobile's vastly improved network performance and coverage. In addition, we cannot conclude that the proposed transaction is likely to have negative effects on competition in the provision of wholesale services. Although the proposed transaction would reduce the number of nationwide suppliers of wholesale wireless service from four to three, we find that predictions of net competitive harm generated by opposing parties' quantitative economic models are premised on too many unsupported and/or unexplained assumptions to be reliable, and we decline to accord significant weight to these models' speculative results.

291. Moreover, the record shows that some MVNOs purchasers view Sprint as an insufficiently reliable provider of wholesale service.¹⁰⁰⁶ The proposed transaction and, in particular the Applicants' commitments regarding network deployment, would remedy these shortcomings by enabling New T-Mobile to offer higher-quality wholesale services across a broader geographic footprint, especially in rural areas. Thus, even though the number of providers would be fewer, the market for wholesale services could become more competitive. Indeed, New T-Mobile's vastly increased network capacity will likely give it incentives to offer appealing terms and reasonable prices to wholesale service customers so as to put that capacity to productive use by carrying as much revenue-generating traffic as it can.¹⁰⁰⁷ In

¹⁰⁰² Sprint Apr. 15, 2019 *Ex Parte* Letter at 17-23; Joint Opposition, Woroch Declaration at 17-19. The Applicants also argue that cable companies' financial clout, diversified service portfolios, and other infrastructure assets provide a strong basis for them to launch wireless services. Joint Opposition, Salop/Sarafidis Reply Declaration at 16-17, paras. 42-44, 46; Joint Opposition, Woroch Declaration at 18; Sprint Apr. 15, 2019 *Ex Parte* Letter at 23.

¹⁰⁰³ T-Mobile/Sprint May 20, 2019 Commitments Letter at 7, Attach. 4; *see also* Letter from Jennifer L. Richter, Counsel to Altice, to Marlene H. Dortch, FCC, WT Docket No. 18-197 (filed June 6, 2019) (responding to proposed commitment).

¹⁰⁰⁴ TracFone Comments at 2.

¹⁰⁰⁵ *See supra* section VI: Potential Public Interest Benefits of Increased Network Deployment.

¹⁰⁰⁶ TracFone, for example, has "substantially reduced its use of Sprint's wholesale services" since 2013, which Sprint's executives believe is due to Sprint's "quality and performance challenges[,] particularly in rural areas." Joint Opposition, Draper Declaration at 6; *see, e.g.*, Public Interest Statement, Saw Declaration at 4-10, paras. 9-16 (discussing shortcomings of the existing Sprint network's geographic coverage and data throughput performance); *Id.* at 14-15, paras. 23-24 (limitations on standalone Sprint's ability to deploy 5G technology expeditiously throughout its network footprint). *See also* 2010 DOJ/FTC *Horizontal Merger Guidelines* at § 5.2 ("If a new technology that is important to long-term competitive viability is available to other firms in the market, but is not available to a particular firm, . . . that firm's historical market share [may] overstate[] its future competitive significance.").

¹⁰⁰⁷ Joint Opposition, Woroch Declaration at 24-28; *see also* *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9597, para. 32 ("when service providers invest in network facilities, they have an incentive to put those facilities to use" to

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sum, we conclude that it is likely that wholesale service customers will benefit from New T-Mobile's accelerated and expanded build-out of 5G network facilities with greater capacity and broader coverage, especially in rural areas, due to the proposed transaction as conditioned by the Applicants' 5G deployment commitments. We also note that under one of the Applicants' Commitments, on which we condition our approval, contemplates New T-Mobile's expansion onto its network the scope of Sprint's unique iMVNO-oriented agreement with Altice.¹⁰⁰⁸

292. In addition, the divestiture and wholesale-related provisions in the Applicants' commitments to the Commission, and in the *DOJ Proposed Final Judgment*, give us further confidence that the transaction is unlikely to cause competitive harm due to impacts on wholesale providers. New T-Mobile's asset and spectrum divestitures and its provision of wholesale and support services to DISH, as required in the Applicants' commitments to the Commission and in the proposed settlement with the DOJ will enable DISH to offer a broad range of mobile wireless services to retail consumers across the country.¹⁰⁰⁹ We believe that New T-Mobile's compliance with those commitments and with the *DOJ Proposed Final Judgment*, as well as DISH's compliance with its network build-out requirements, would enable DISH to emerge as a nationwide facilities-based provider¹⁰¹⁰ that would be capable of supplying, among other things, robust wholesale wireless services to MVNOs. Moreover, during the time prior to DISH's buildout, any transitional competitive impacts would be mitigated by New T-Mobile's continuing provision of wholesale services under the terms of T-Mobile's and Sprint's current agreements with MVNOs, as obligated, until the expiration of the *DOJ Proposed Final Judgment* seven years after consummation.¹⁰¹¹

B. Roaming

293. Roaming service is an offering that one mobile wireless provider must purchase to enable its subscribers, when traveling outside its service area, to use the facilities of another mobile wireless provider to place and receive calls, continue in-progress calls, and transmit and receive data.¹⁰¹² The

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 “generate revenue and provide service to customers . . .”).

¹⁰⁰⁸ T-Mobile/Sprint May 20, 2019 Commitments Letter at 7, Attach. 4 (commitment to amend existing agreement, subject to good-faith negotiations, to expand Altice's access to New T-Mobile's 5G and other network facilities). Preserving and expanding this arrangement will provide a useful real-world test of the hypothesis that “[t]he full infrastructure-based MVNO model likely represents the best opportunity for new, robust wireless competition” because it “enables the [iMVNO] to provide facilities-based competition to [facilities-based providers], including meaningful competition on price and product innovation for customers.” Altice Reply at 2.

¹⁰⁰⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 2, at 1-2 (terms of New T-Mobile's wholesale and transition services agreements will “permit [DISH] to compete effectively on a long-term basis” against New T-Mobile and others, “allow it to benefit from the long-term network cost efficiencies of New T-Mobile's 5G network deployment,” and enable it to “deploy and utilize its own spectrum, systems, network infrastructure, and other facilities”); *DOJ Competitive Impact Statement* at 9-11 (DISH's purchase of divested spectrum, cell sites, retail stores, and prepaid business—as well as New T-Mobile's provision of transition and wholesale services under a “full MVNO agreement”—will “enable DISH to begin operating as an MVNO as quickly as possible after entry of the Final Judgment, . . . provide DISH the support it needs to offer retail mobile wireless service to consumers while building out its own mobile wireless network,” and “enhance DISH's incentives to invest in a robust facilities-based network”).

¹⁰¹⁰ *DOJ Competitive Impact Statement* at 2.

¹⁰¹¹ *DOJ Proposed Final Judgment* at 20; see also Joint Opposition at 88 (contending that “New T-Mobile's additional network capacity and lower per unit costs will create an incentive for the combined company to lower wholesale prices to MVNOs”).

¹⁰¹² See, e.g., *AT&T-Leap Order*, 29 FCC Rcd at 2782, para. 103; see also *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, Second Report and Order, 26 FCC Rcd 5411 (2011), *aff'd sub nom. Cellco Partnership v. FCC*, 700 F.3d 534 (D.C. Cir. 2012) (*Data Roaming Order*).

Commission has previously determined that the availability of both voice and data roaming arrangements is critical to promoting seamless consumer access to mobile services nationwide, to promoting innovation and investment, and to promoting facilities-based competition among providers.¹⁰¹³ The Commission also has established a special dispute-resolution framework to ensure that providers negotiate in good faith to develop commercially reasonable terms for roaming agreements and to confirm that host providers are properly implementing such agreements when supplying roaming services.¹⁰¹⁴

294. *Record.* The Applicants argue that the proposed transaction would yield substantial network improvements, including expanded capacity and broader coverage, that will improve New T-Mobile's ability to offer appealing terms to roaming partners by comparison to either T-Mobile or Sprint, standing alone, and that the proposed transaction would not cause price increases or reduce competition for roaming services.¹⁰¹⁵ The Applicants also state that New T-Mobile will commit to allowing "carriers with existing roaming rates with either T-Mobile or Sprint to determine which rates will govern their relationship with New T-Mobile after the transaction closes" and that it "will offer to become the Preferred Roaming Partner for rural carriers, providing long-term roaming access to the robust New T-Mobile network at industry-leading terms."¹⁰¹⁶

295. Opposing parties argue that the proposed transaction will harm competition for the provision of roaming services by reducing the number of nationwide roaming service providers from four to three, and reducing the merged firm's incentives to offer reasonable roaming arrangements.¹⁰¹⁷ In particular, a number of commenters express concern about the elimination of Sprint as a separate provider of roaming services, alleging that T-Mobile's roaming charges are higher and its terms are less favorable than Sprint's.¹⁰¹⁸ Several parties criticize the Applicants' proposed commitments regarding roaming services as vague and unenforceable and point out that their commitment to abide by existing roaming agreements would not apply after those agreements expire and would not assure access to roaming for 5G and other advanced capabilities not covered by existing agreements.¹⁰¹⁹ Some parties argue that New T-Mobile should be required to allow service providers with existing roaming agreements with T-Mobile or Sprint to keep the same rates and terms for at least 10 years.¹⁰²⁰ A number of commenters criticize T-Mobile's refusal to enter "reciprocal" roaming arrangements, in which T-Mobile and rural providers

¹⁰¹³ *Data Roaming Order*, 26 FCC Rcd at 5418-23, paras. 13-21; *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, Order on Reconsideration and Second Further Notice of Proposed Rulemaking, 25 FCC Rcd 4181, 4182, para. 2 (2010).

¹⁰¹⁴ *See, e.g., Data Roaming Order*, 26 FCC Rcd at 5448-53, paras. 74-87; 47 CFR § 20.12(e)(1); *see also Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, 29 FCC Rcd 15483, Declaratory Ruling (WTB 2014) (granting T-Mobile petition regarding Commission review of data roaming disputes).

¹⁰¹⁵ Joint Opposition at 99-100. Two rural service providers agree and express support for the parties' current and future roaming services. Viaero Comments at 2; Letter from Ronald Duncan, CEO and Co-founder, GCI, to Sen. Mike Lee and Sen. Amy Klobuchar, WT Docket No. 18-197, at 1 (filed Aug. 1, 2018) (GCI Aug. 1, 2018 *Ex Parte* Letter).

¹⁰¹⁶ Public Interest Statement at 69; Joint Opposition at 98-99; Letter from R. Michael Senkowski, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Nov. 19, 2018) (T-Mobile Nov. 19, 2018 *Ex Parte* Letter).

¹⁰¹⁷ *See, e.g., Altice Petition* at 11; DISH Aug. 27, 2018 Petition at 57; DISH Reply at 28-29, 110; NTCA Reply at 3-4; Union Telephone Petition at 24.

¹⁰¹⁸ Greenlining Petition at 8; NTCA Petition at 8-9; RWA Petition at 6-9, 11-16; Union Telephone Petition at 39-41; RWA Petition to Deny at 12-14; RWA Reply at 3; Union Telephone Reply at 14-16; NTCH/Wise June 12, 2019 *Ex Parte* Letter at 2.

¹⁰¹⁹ *See, e.g., C Spire Reply* at 9-12; Blue Wireless Reply at 15-17.

¹⁰²⁰ *See, e.g., Union Telephone Petition* at 25, 41-43; C Spire Petition at i, 19.

purchase roaming service from one another, and they seek conditions requiring New T-Mobile to do so.¹⁰²¹

296. Some commenters criticize the Applicants' plan to rapidly shut down Sprint's legacy CDMA network because it would make it more difficult for rural providers that rely on CDMA roaming arrangements with Sprint to gradually transition their customers from CDMA to VoLTE or other newer technologies.¹⁰²² One party contends that small providers that use CDMA technology and rely on roaming on Sprint's legacy CDMA network will be "imperiled" by New T-Mobile's plan to decommission that network and seeks a condition requiring New T-Mobile to offer them preferential roaming terms once it does so.¹⁰²³ The Applicants respond that such a condition would pose a disincentive to New T-Mobile's "upgrading the network to support newer technologies, which would be inconsistent with Commission policies and [would] harm consumers."¹⁰²⁴

297. *Discussion.* We find that concerns about the availability of roaming service post-transaction will be addressed adequately by the Commission's general roaming policies and rules, which are designed to ensure that entities can obtain roaming agreements on reasonable terms and conditions.¹⁰²⁵ Accordingly, no special roaming-related conditions are necessary. In the event that a service provider encounters difficulties in obtaining reasonable roaming services or roaming rates, it can file complaints with the Commission pursuant to our established roaming rules.¹⁰²⁶ Moreover, while we do not condition our approval of the transaction on New T-Mobile's roaming-related commitments—which we find are unnecessary given the Commission's existing roaming rules—we note that the Applicants have stated that providers that currently have roaming purchase contracts with both Sprint and T-Mobile may determine which of those contractual rates will govern their relationship with New T-Mobile post-transaction and have promised to offer "preferred roaming partner" arrangements.¹⁰²⁷ We conclude that conditions relating to roaming rates, reciprocal agreements, and other terms proposed by commenters are not narrowly tailored to remedy any purported harms arising out of this transaction.¹⁰²⁸

¹⁰²¹ RWA Petition at 7-9, 12-15; RWA Reply at 4-5; RWA Dec. 10, 2018 *Ex Parte* Letter at 4-5; NTCA Petition at 1-2, 7-11; Union Telephone Petition at 26, 40-42.

¹⁰²² Blue Wireless Reply at 12-14; NTCA Reply at 2-3; RWA Reply at 3-4; Union Telephone Reply at 23; *see also* NTCH/Wise June 12, 2019 *Ex Parte* Letter at 2 ("if T-Mobile phases out Sprint's CDMA service as it did with MetroPCS's service, there will be no national carrier which offers CDMA-based service besides Verizon," an "option which is so expensive as to be unavailable at all").

¹⁰²³ Union Telephone Petition at 41, 44; *see also* NTCH/Wise June 12, 2019 *Ex Parte* Letter at 2 (urging the Commission to impose conditions that, *inter alia*, require New T-Mobile to charge independent service providers roaming rates no greater than the retail rates it charges its own customers or MVNOs for the same services, prohibit it from phasing out Sprint's CDMA service for at least five years).

¹⁰²⁴ Joint Opposition at 98.

¹⁰²⁵ NTCH argues that the *DOJ Proposed Final Judgment* fails to consider the impact of the transaction on the data roaming market such that it does not require DISH to offer reasonable roaming rates, and NTCH asserts, that in order to mitigate this impact and prevent further increases in data roaming rates, there should be amendments to the *DOJ Proposed Final Judgment*. NTCH Tunney Act Comments at 15-20.

¹⁰²⁶ *Data Roaming Order*, 26 FCC Rcd at 5448-53, paras. 74-87; *see also AT&T-DIRECTV Order*, 30 FCC Rcd at 9234-35, para. 267 (finding roaming conditions unnecessary because general roaming policies, rules, and dispute resolution process provide adequate protection).

¹⁰²⁷ Public Interest Statement at 69; Joint Opposition at 98-99; T-Mobile Nov. 19, 2018 *Ex Parte* Letter at 2.

¹⁰²⁸ In particular, the proposal to require New T-Mobile to continue Sprint's purchases of roaming services from other providers—through "reciprocal" agreements or otherwise—does not address any transaction-related competition concerns. A service provider's decision to produce a service itself, rather than buying it from others, does not raise any competitive concerns. Indeed, as discussed above, New T-Mobile's commitment to build out its 5G network to rural areas (reducing its need to buy roaming services from other providers) is one of the most

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298. We also see no need for conditions relating to the Applicants' maintenance of a CDMA network to be able to offer CDMA roaming. We note first that the Applicants have stated that they do not plan to commence the termination of the CDMA network prior to January 1, 2021, and intend to work with rural service providers to accommodate Sprint's CDMA roaming customers as part of the transition.¹⁰²⁹ Moreover, the phase-out of CDMA networks is already underway and is not a transaction-related issue.¹⁰³⁰ We agree with the Applicants that imposing a roaming condition to maintain an outdated technology would not be in the public interest, and accordingly, we do not require New T-Mobile to maintain the legacy CDMA network for a specific period of time.

C. Non-Network Efficiencies

299. The Applicants contend that the combination of the two companies will generate cost-savings in the form of approximately \$43.6 billion total net present value cost synergies by 2024, allowing New T-Mobile to invest in new network technology, innovation, and operations to rapidly construct and deploy the first true, nationwide 5G network.¹⁰³¹ The Applicants set forth their claimed non-network savings estimates in the following areas: retail distribution,¹⁰³² advertising,¹⁰³³ equipment costs,¹⁰³⁴ repair and logistics,¹⁰³⁵ IT and billing,¹⁰³⁶ as well as other fixed general and administrative costs.¹⁰³⁷ For justification of the claimed cost savings, the Applicants cited to the Build 9 spreadsheet,¹⁰³⁸

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significant benefits of the transaction.

¹⁰²⁹ Joint Opposition at 98.

¹⁰³⁰ For example, before the announcement of the transaction, Sprint had announced that it would no longer activate 3G CDMA devices starting April 30, 2019, in preparation for the network shutdown. Mobile Internet Resource Center, *Sprint: No More 3G Device Activations Starting April 30, 2019*, <https://www.rvmobileinternet.com/sprint-no-more-3g-device-activations-starting-april-30-2019/> (last visited Oct. 14, 2019). Verizon Wireless also has publicly announced that its CDMA network will be retired by year-end 2019, and since July 2018, it has no longer allowed activation of CDMA-only devices. Verizon Wireless, *CDMA Network Activation Retirement*, <https://www.verizonwireless.com/support/knowledge-base-218813/> (last visited Oct. 14, 2019).

¹⁰³¹ Public Interest Statement at 15; *see also* T-Mobile Information Request Response at 16-19, 20-22 (Sept. 5, 2018) (discussing categories of anticipated cost savings as well as categories of customer-facing improvements and how the anticipated benefits were quantified); Public Interest Statement, Sievert Declaration at para. 13.

¹⁰³² The Applicants assert that New T-Mobile will combine the retail distribution for the postpaid products of T-Mobile and Sprint through retail store consolidation, the opening of new stores, and modifying existing stores including rebranding legacy Sprint stores. T-Mobile Information Request Response at 17-19 (Sept. 5, 2018).

¹⁰³³ The Applicants claim that New T-Mobile will achieve yearly run rate savings from forgoing advertising expenses that Sprint and T-Mobile would have incurred as standalone companies. T-Mobile Information Request Response at 17-18 (Sept. 5, 2018).

¹⁰³⁴ The Applicants claim that New T-Mobile's significantly larger scale will provide it with more bargaining leverage with handset suppliers; thus, New T-Mobile will achieve significant variable cost savings in handset costs. T-Mobile Information Request Response at 18-19 (Sept. 5, 2018).

¹⁰³⁵ The Applicants state that New T-Mobile expects to achieve yearly run rate savings on repair and logistics costs as compared to what T-Mobile and Sprint would spend as standalone companies. T-Mobile Information Request Response at 18 (Sept. 5, 2018).

¹⁰³⁶ The Applicants estimate that the combined entity would achieve a yearly run rate savings through the integration of Sprint's and T-Mobile's IT and billing systems. T-Mobile Information Request Response at 18 (Sept. 5, 2018).

¹⁰³⁷ The Applicants assert that New T-Mobile will actually increase its spending on customer care, which will require an additional \$[**BEGIN HIGHLY CONF. INFO.**] [END HIGHLY CONF. INFO.] per year in spending which reduces the net present value synergies created by the transaction by \$[**BEGIN HIGHLY CONF. INFO.**] [END HIGHLY CONF. INFO.]. T-Mobile Information Request Response at 19 (Sept. 5, 2018); Joint Opposition, Compass Lexecon Declaration at para. 103 & n.122.

¹⁰³⁸ TMUS-FCC-02505996 (Build 9). The Applicants state that the claimed benefits were quantified and analyzed (continued....)

and generally referred the Commission to the document production.¹⁰³⁹ CWA argues that the Applicants have failed to provide the detail necessary to quantify the non-network efficiencies.¹⁰⁴⁰ DISH asserts that except for some non-network marginal costs, almost none of the approximately \$43.6 billion in claimed synergies can be recognized under the public interest standard because they represent fixed cost savings achieved by eliminating one of the existing networks.¹⁰⁴¹ DISH further argues that projected cost savings based on the T-Mobile/MetroPCS transaction should not be persuasive because Metro's coverage was strictly regional and the integration was minor in comparison to this transaction.¹⁰⁴²

300. In their Joint Opposition, the Applicants assert that New T-Mobile will be able to achieve certain reductions in non-network marginal costs only through the instant transaction, and that the non-network synergies could not be achieved absent the transaction through a network sharing agreement as argued by DISH and other petitioners.¹⁰⁴³ The Applicants argue that expected non-network efficiencies will reduce New T-Mobile's marginal costs by generating cost savings that could not be realized absent the transaction.¹⁰⁴⁴ In particular, the Compass Lexecon Declaration identifies non-network marginal cost savings that comprise "approximately one third of the estimated non-network savings."¹⁰⁴⁵ The Applicants enumerate approximately \$17.3 billion of claimed non-network cost savings.¹⁰⁴⁶

301. Specifically, the Applicants argue that the savings in dealer commissions, device purchases, and device repair insurance vary with the number of subscribers, and thus are marginal cost savings that may be passed on to consumers.¹⁰⁴⁷ According to the Applicants, these marginal cost efficiencies per postpaid customer per month range over the 2021 to 2024 period from \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] and from \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] for prepaid customers.¹⁰⁴⁸

302. **Dealer Efficiencies.** The Applicants claim that the consolidation of Sprint and T-Mobile dealer locations will result in 2021-2024 efficiencies between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] annually, or savings between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month.¹⁰⁴⁹ They

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by the T-Mobile Corporate Strategy & Analysis (CS&A) team and culminated in the production of Build 9. The Applicants assert that the CS&A team built the financial models for the purpose of providing an estimate of the potential benefits and financing capability of the transaction necessary for board approvals and presentation to the rating agencies. T-Mobile Information Request Response at 20 (Sept. 5, 2018).

¹⁰³⁹ T-Mobile Information Request Response at 20-22 (Sept. 5, 2018).

¹⁰⁴⁰ CWA Comments at 37.

¹⁰⁴¹ DISH Reply at 58-60; DISH Reply, Brattle Reply Declaration at 31-37.

¹⁰⁴² DISH Aug. 27, 2018 Petition at 33-34.

¹⁰⁴³ Joint Opposition at 15, 62 (citing DISH Aug. 27, 2018 Petition at 33; Free Press Petition at 59; Public Knowledge Petition at 37).

¹⁰⁴⁴ Joint Opposition at 83.

¹⁰⁴⁵ Joint Opposition, Compass Lexecon Declaration at para. 102.

¹⁰⁴⁶ Public Interest Statement, Sievert Declaration at para. 13 (\$11.2 billion + \$6.1 billion); T-Mobile Information Request Response at 17-19 (Sept. 5, 2018).

¹⁰⁴⁷ Joint Opposition, Compass Lexecon Declaration at para. 102.

¹⁰⁴⁸ Joint Opposition, Compass Lexecon Declaration at para. 103.

¹⁰⁴⁹ Joint Opposition, Compass Lexecon Declaration at para. 104.

argue that these efficiencies result from economies of scale at the store level: higher volume stores are associated with greater labor productivity.¹⁰⁵⁰

303. **Device Purchases.** The Applicants state they “expect greater scale will allow them to obtain a [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% discount on \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] of annual purchases of Android devices resulting in savings of approximately \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per year.”¹⁰⁵¹ This results in per subscriber per month savings between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] for 2020-2024, and \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month for the half-year period post-transaction in 2019.¹⁰⁵²

304. **Insurance (Repair and Replacement).** The Applicants project efficiencies due to economies of scale in device insurance, asserting that costs will be reduced by [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]%, resulting in 2020-2024 marginal cost savings between \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month, and \$[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month for the half-year period post-transaction in 2019.¹⁰⁵³

305. *Discussion.* As noted above, the Commission is more likely to credit benefits that will flow through to consumers. In this regard, the Commission is more likely to find reductions in marginal costs cognizable, as compared to reductions in fixed costs, because reductions in marginal or variable costs are more likely to result in lower prices for consumers.¹⁰⁵⁴ The Applicants themselves also focus on the marginal cost savings for this precise reason,¹⁰⁵⁵ while noting that the majority of the estimated non-network cost savings constitute fixed cost savings.¹⁰⁵⁶ We will not credit fixed cost savings as a public

¹⁰⁵⁰ Joint Opposition, Compass Lexecon Declaration at para. 104. Claimed efficiencies are between [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month and between [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per subscriber per month in 2019 and 2020, respectively. T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, enclosed USB drive containing backup materials to T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. B, Mark Israel, Michael Katz, and Bryan Keating, “Extension of the Israel, Katz, and Keating Analysis to 2019-2020,” Feb. 20, 2019 (“Non-Network Savings–2019-2020” spreadsheet).

¹⁰⁵¹ Joint Opposition, Compass Lexecon Declaration at para. 105.

¹⁰⁵² Joint Opposition, Compass Lexecon Declaration at para. 105; T-Mobile/Sprint Apr. 12, 2019 *Ex Parte* Letter, enclosed USB drive containing backup materials to T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. B, Mark Israel, Michael Katz, and Bryan Keating, “Extension of the Israel, Katz, and Keating Analysis to 2019-2020,” Feb. 20, 2019 (“Non-Network Savings–2019-2020” spreadsheet).

¹⁰⁵³ Joint Opposition, Compass Lexecon Declaration at para. 106; T-Mobile, Apr. 12, 2019 *Ex Parte*, enclosed USB drive containing backup materials to T-Mobile, Feb. 21, 2019 *Ex Parte*, Attach. B, Mark Israel, Michael Katz, and Bryan Keating, “Extension of the Israel, Katz, and Keating Analysis to 2019-2020,” Feb. 20, 2019 (“Non-Network Savings–2019-2020” spreadsheet).

¹⁰⁵⁴ See, e.g., 2010 DOJ/FTC *Horizontal Merger Guidelines* at § 10 (“Efficiencies relating to costs that are fixed in the short term are unlikely to benefit customers in the short term, but can benefit customers in the longer run, e.g., if they make new product introduction less expensive.”); see also *AT&T-Leap Order*, 29 FCC Rcd at 2793-94, para. 132; *Alaska Wireless-GCI Order*, 28 FCC Rcd at 10468, para. 87; *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2342, para. 58.

¹⁰⁵⁵ Joint Opposition, Compass Lexecon Declaration at para. 84 & n.99 (“Intuitively, a firm has incentives to pass on portions of marginal cost reductions to consumers in the form of lower prices because doing so generates additional sales that would have been unprofitable at the previous cost level but are now profitable at the new, lower-cost level.”); see also Bulow, J. I., & Pfleiderer, P. (1983). A note on the effect of cost changes on prices. *Journal of Political Economy*, 91(1), 182-85.

¹⁰⁵⁶ Joint Opposition, Compass Lexecon Declaration at para. 102.

interest benefit as we believe that these are unlikely to be passed on to the consumer in the form of lower prices in the foreseeable future, but we recognize nonetheless that there are certain cost savings and efficiencies that arise from this transaction that are likely to be passed on to consumers. Thus, in our evaluation of the potential marginal cost savings arising from dealer efficiencies, device purchases, and repair insurance, we are able to credit some, but not all, of the marginal cost savings.

306. In considering dealer efficiencies first, we find that the combined entity is likely to achieve reduced commission rates due to greater store level productivity at increased average volumes per store.¹⁰⁵⁷ However, we note that the Applicants also expect to achieve savings through shifting customers to sales channels with lower commission rates that are not due to economies of scale.¹⁰⁵⁸ T-Mobile's internal modeling does not demonstrate how this is a transaction-specific benefit. Accordingly, we credit the majority, but not all, of the efficiencies due to reduced dealer commissions.

307. Next, with respect to device purchases, although we are unable to precisely quantify the claimed device purchase efficiencies based upon the Applicants' submission, we agree with the general premise that there are economies of scale that can be leveraged in device purchases. Review of the record provides support for the Applicants' claims that the combined entity may achieve cost-savings in the purchase of devices from some suppliers.¹⁰⁵⁹ We therefore credit a significant proportion of the claimed cost-savings arising from device purchases as a public interest benefit. Finally, we have examined the Applicants' claims with respect to variable cost savings for the repair and replacement of mobile devices. We find that the claimed device repair efficiencies are not verifiable because documentation in the record indicates that these claimed savings are based on general and unsupported assumptions.¹⁰⁶⁰ As such, we are unable to credit these claimed savings as a public interest benefit.

D. Innovative Service Offerings

308. The Applicants state that the improved 5G network resulting from the proposed transaction would better encourage and enable innovative service offerings.¹⁰⁶¹ According to the Applicants, the predicted improvements in capacity would facilitate new in-home and mobile video

¹⁰⁵⁷ Staff used information on the size of store labor forces and "kit sales" per employee in the Applicant's financial model to determine the change in aggregate labor productivity with the increase in average store size. On average labor was **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% more productive at the targeted post-merger store sizes, compared to the **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% commission reduction ultimately expected by Applicants. Build 9 Model, Module Stores for information on Applicant store, labor and kit productivity.

¹⁰⁵⁸ Build 9, Module—Dealer Synergies. Some claimed savings due to dealer commissions arise from the fact that New T-Mobile is expected to **[BEGIN HIGHLY CONF. INFO.]**

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¹⁰⁵⁹ Review of the record indicates that the equipment expense estimates in this proceeding are based on assumptions that increased scale leads to purchasing power and efficiency savings and assumes a **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% savings in Android device portfolio. TMUS-FCC-07878534 at 26 (NewCo Discussion, April 22, 2018 Tahoe Board of Directors 5G NewCo Plan); TMUS-FCC-08134334 at 20 (setting forth the underlying calculations for the Applicants estimated savings); TMUS-FCC-08147050 at 6 (The New T-Mobile Synergy Discussion June 20, 2018); TMUS-FCC-07856380.

¹⁰⁶⁰ See, e.g., TMUS-FCC-07878534 at 26; TMUS-FCC-08147050 at 6.

¹⁰⁶¹ Public Interest Statement at 55-57.

service offerings.¹⁰⁶² In addition, the Applicants claim that reduced congestion would better enable streaming 4K video,¹⁰⁶³ and sharing and downloading content even in environments where congestion currently is experienced, such as sporting events and concerts.¹⁰⁶⁴ The Applicants assert that New T-Mobile would leverage the benefits of scale in network, costs, and financial resources to offer TV packages that would allow customers to forego traditional multi-channel video programming distributors (MVPDs) in favor of broadband-delivered video offerings.¹⁰⁶⁵ Further, the Applicants claim that New T-Mobile would deliver video service offerings with lower prices than traditional options which, in turn, would force legacy cable providers and other MVPDs to lower their prices and invest and innovate in order to compete with New T-Mobile.¹⁰⁶⁶ The Applicants assert that T-Mobile's current spectrum assets and relatively thin 5G deployment also restrict its ability to expand Layer3's services to include mobile video services over 5G networks.¹⁰⁶⁷

309. The Applicants also contend that the coverage provided by low-band and mid-band spectrum would better support the full range of IoT products and services than would have been possible by the standalone companies.¹⁰⁶⁸ This, in turn, would enable New T-Mobile to play a more significant role in the IoT marketplace than the limited presence of either Sprint or T-Mobile today.¹⁰⁶⁹ According to the Applicants, neither T-Mobile nor Sprint on its own has the spectrum assets, scale, or other resources necessary to deploy networks with the capabilities required to support massive IoT connectivity.¹⁰⁷⁰

310. Some commenters agree with the Applicants. For example, Cell Nation asserts that the new 5G networks would power advancements in streaming video,¹⁰⁷¹ while Prepaid Wireless Group contends that it would unleash new and unknown technologies and applications in areas such as interconnected infrastructure for smart cities.¹⁰⁷² Commenters also predict that the proposed transaction would facilitate other innovative products and services within the fields of agriculture, education, health care, manufacturing, and emergency response/management.¹⁰⁷³

¹⁰⁶² Public Interest Statement at 79 (“New T-Mobile's 5G network will allow the company to offer the nation's first 5G-delivered in-home and mobile video services. This will include high-quality video content-including HD and 4K-to in-home and mobile locations across the country.”).

¹⁰⁶³ Public Interest Statement at 59; Public Interest Statement, Legere Declaration at 10 (“We'll deliver unmatched 4K-quality video to all markets via our nationwide 5G network.”).

¹⁰⁶⁴ Public Interest Statement at 55-56; Public Interest Statement, Ray Declaration at para. 13 (stating that “congested environments, such as sporting events, concerts, and large enterprises, will no longer be constrained. Commuters will have high-speed data available—allowing video streaming of state-of-the-art 4K content and the ability to download any file nearly instantaneously while traveling on public transit”).

¹⁰⁶⁵ Public Interest Statement at 76.

¹⁰⁶⁶ Public Interest Statement at 76.

¹⁰⁶⁷ Public Interest Statement at 78.

¹⁰⁶⁸ Public Interest Statement at 56-57; Joint Opposition at 53-56.

¹⁰⁶⁹ Public Interest Statement at 56-57.

¹⁰⁷⁰ Public Interest Statement at 60.

¹⁰⁷¹ Cell Nation Comments at 2.

¹⁰⁷² PWG Comments at 1-2.

¹⁰⁷³ See, e.g., Andrea Rice Comments, Attach. at 1 (discussing IoT, “smart farming,” and applications for “emergency responses and patient care”); EWA Reply at 1 (discussing IoT, and, in particular, industrial IoT); Cell Nation Comments at 1-2 (discussing “artificial intelligence and streaming video,” and “other connected devices” including for agriculture); ICC Aug. 30, 2018 *Ex Parte* Letter at 2 (stating that “the prospects for improvements in business, robotics, education, medicine, energy, and other services stand to increase the health, welfare, and safety of Illinois citizens and citizens everywhere”); Comments of Assila at 1-2 (Aug. 31, 2018) (Assila Comments)

(continued....)

311. Other commenters argue, however, that the potential benefits claimed by the Applicants are not transaction-specific. For example, DISH argues that T-Mobile already has plans to enter the video market independently of the proposed transaction, as evidenced by its recent acquisition of Layer3.¹⁰⁷⁴ DISH also points out that the Applicants do not explain how they intend to overcome certain barriers to entry, which would be necessary for the Applicants to become credible competitors in the multichannel video programming distribution market.¹⁰⁷⁵ Other commenters argue that the benefits associated with IoT innovations do not require large amounts of bandwidth or spectrum, and likely could be offered by the standalone companies absent the proposed transaction.¹⁰⁷⁶

312. The Applicants respond that the acquisition of Layer3 provided T-Mobile with a foothold in the video distribution marketplace, but the expansion of the business would be limited for T-Mobile on a standalone basis.¹⁰⁷⁷ Specifically, the Applicants claim that Layer3 faces higher costs, especially for licensing content, than its major MVPD rivals because its smaller customer base does not provide the scale needed to leverage volume discounts.¹⁰⁷⁸ The Applicants also argue that given the rapid increase in consumers' daily use of mobile video services, T-Mobile's standalone network would not have the capacity to handle future consumer demand for mobile video or IoT applications absent the proposed transaction.¹⁰⁷⁹ The Applicants respond to the commenters' IoT argument by claiming that the combined coverage and capacity of the New T-Mobile 5G network is necessary for the development of IoT applications.¹⁰⁸⁰

313. *Discussion.* The Commission has previously recognized that the deployment of improved video services and increased competition within the video marketplace are creditable public interest benefits.¹⁰⁸¹ We find that the proposed transaction would likely enable innovation in traditional video services greater than what either Applicant could achieve independently. We agree that the benefits of scale in network, costs, and financial resources could lead to less costly video service offerings and the expansion of Layer3. However, they are difficult to measure because the Applicants have not quantified the predicted benefits or offered support on how they could be achieved. Our review of the record indicates that T-Mobile executives view Layer3 as a strategic asset that will enable standalone T-Mobile to successfully compete in the pay TV market **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**,¹⁰⁸² but that **[BEGIN HIGHLY CONF. INFO.]**

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(discussing IoT); Letter from Michele N. Siekerka, President, CEO, New Jersey Business and Industry Association at 1 (filed Aug. 31, 2018) (NJBIA Aug. 31, 2018 *Ex Parte* Letter) (discussing examples such as IoT as well as “opportunities for new, unforeseen products and services”); NHCA Comments at 2-4 (discussing telehealth); NPRCC Comments at 5-6 (discussing telehealth); Center for Individual Freedom Comments at 3 (discussing smart devices and IoT).

¹⁰⁷⁴ DISH Aug. 27, 2018 Petition at 41-42.

¹⁰⁷⁵ DISH Reply at 94.

¹⁰⁷⁶ DISH Aug. 27, 2018 Petition at 41; *see also* Free Press Petition at 48 (arguing that many use cases for 5G already can be done with 4G networks, so any incremental benefits “would be virtually non-existent”).

¹⁰⁷⁷ Public Interested Statement at 78.

¹⁰⁷⁸ Public Interest Statement at 78 (stating T-Mobile estimates that Layer3's content acquisition costs are 20%-30% higher than its larger rivals for accessing the same programming).

¹⁰⁷⁹ Public Interest Statement at 78.

¹⁰⁸⁰ Joint Opposition at 106-07 (stating that the combined capacity and ubiquity of New T-Mobile's 5G network will enable new IoT solutions that neither or only one of T-Mobile or Sprint can offer on a standalone basis).

¹⁰⁸¹ *AT&T-DIRECTV Order*, 30 FCC Rcd at 9246, 9279, paras. 301 & n.895, 399.

¹⁰⁸² *See, e.g.*, TMUS-FCC-00879304 at 2 (T-Mobile, “Video Industry Opportunity,” Sept. 15, 2017) (stating that the Layer3 acquisition would provide T-Mobile with **[BEGIN HIGHLY CONF. INFO.]**)

(continued....)

[END HIGHLY CONF. INFO.]¹⁰⁸³ and the indication that existing T-Mobile customers appear to stream more content on mobile devices than non-customers.¹⁰⁸⁴

314. With respect to innovative IoT service offerings, we agree that 5G has the potential to facilitate the development of new IoT technologies and applications that could produce significant consumer benefits.¹⁰⁸⁵ The Applicants assert that New T-Mobile's 5G network would enable it to turbocharge existing IoT product lines, attract more customers, and facilitate innovation in terms of new consumer IoT products.¹⁰⁸⁶ We find that the Applicants' combined IoT efforts could lead to substantial consumer benefits although we cannot determine their precise magnitude. The record indicates that T-Mobile has recently entered the IoT market and currently offers a range of basic consumer IoT products,¹⁰⁸⁷ and that Sprint has developed plans to enter the IoT market.¹⁰⁸⁸

315. Overall, and given the Applicants' commitments regarding New T-Mobile's 5G network buildout, we find that the proposed transaction would likely facilitate the development of innovative service offerings in both 4K video and IoT, which could produce significant consumer benefits. We expect that the combined entity potentially will be able to recognize the economies of scale that likely will enable the provision of innovative service offerings, and result in some public interest benefits to American consumers.

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[END HIGHLY CONF. INFO.]); TMUS-FCC-00879304 at 7 (T-Mobile, "Video Industry Opportunity," Sept. 15, 2017) (stating that the Layer3 acquisition would [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

¹⁰⁸³ TMUS-FCC-02476479 at 3 (T-Mobile, "Update: Delivering Video Content Over-the-Air," April 3, 2018) (stating that [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

¹⁰⁸⁴ TMUS-FCC-05547130 at 5, 7, 11-12 (T-Mobile, "TMO Customer Video/TV Viewing Behaviors," March 2018) (finding that [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

¹⁰⁸⁵ See, e.g., *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment, Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Declaratory Ruling and Third Report and Order, 33 FCC Rcd 9088, 9089, para. 1 (2018).

¹⁰⁸⁶ Public Interest Statement, Sievert Declaration at para. 29.

¹⁰⁸⁷ T-Mobile, *T-Mobile Launches Nation's First Plan for Narrowband IoT* (Jan. 8, 2018), <https://www.t-mobile.com/news/narrowband-iot> (stating that T-Mobile launched the first plan for IoT on Jan. 9, 2018—nearly four months before the company announced the proposed transaction with Sprint). Public Interest Statement, Sievert Declaration at para. 29 (stating that T-Mobile currently offers a range of basic consumer IoT products such as smart and connected home devices, wearable devices, and mobile hotspots).

¹⁰⁸⁸ See, e.g., SPR-FCC-12769077 at 2 (Sprint, "Sprint Finance Committee, IoT Investment Plan," Aug. 6, 2018); SPR-FCC-06446138 at 7 (demonstrating that Sprint had a plan in place to [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]); SPR-FCC-06446185 at 10 ("IoT Business Unit Strategy Update," Sept. 21, 2017).

E. Enterprise Market

316. T-Mobile argues that the enterprise segment is characterized by low customer churn, high transactions costs of switching providers, and institutional inertia,¹⁰⁸⁹ and that both T-Mobile and Sprint are perceived by many enterprise customers as offering lower network quality than AT&T and Verizon Wireless.¹⁰⁹⁰ The Applicants claim that as a result of the proposed transaction, New T-Mobile will be a significant competitor for enterprise customers, in contrast to the relatively small role currently played by T-Mobile and Sprint.¹⁰⁹¹ This is due to: (1) the improved New T-Mobile 5G network;¹⁰⁹² (2) the continuation and expansion of T-Mobile's "Un-carrier" marketplace approach to enterprise offerings;¹⁰⁹³ (3) the improved scale and resources to justify greatly expanded enterprise sales, support, and marketing forces;¹⁰⁹⁴ (4) a larger product portfolio, particularly given the integration of Sprint's wireline assets;¹⁰⁹⁵ and (5) a network that better facilitates IoT offerings.¹⁰⁹⁶ Some commenters support the Applicants' claim, and also expect that business users will particularly benefit from the deployment of 5G network capabilities.¹⁰⁹⁷ A coalition of enterprise customers also reinforces that Verizon Wireless and AT&T have been the most significant enterprise competitors, and argues that "competitive conditions in the facilities-based enterprise wireless market would be improved by the creation of a strong 'third' leg to the competitive stool, instead of the two weaker legs provided by Sprint and T-Mobile at their current scale."¹⁰⁹⁸

317. On the other hand, some commenters contend that because the companies could improve their success with business customers on a standalone basis, enterprise competition is not a transaction-specific benefit.¹⁰⁹⁹ They also argue that the standalone companies are already making strides to increase their competitiveness in this market.¹¹⁰⁰ Further, DISH argues that the increased scale arising from the transaction is beside the point because "scale does not address the likely reasons AT&T and Verizon Wireless have dominated the enterprise markets (i.e., their legacy wireline systems)."¹¹⁰¹

318. *Discussion.* Based on our detailed evaluation of the record, we find that T-Mobile and Sprint are currently value leaders in the enterprise space, and sometimes compete against Verizon Wireless and AT&T for business lines and RFPs.¹¹⁰² We note that the Applicants appear to have tried

¹⁰⁸⁹ Public Interest Statement at 72.

¹⁰⁹⁰ Public Interest Statement at 71; Public Interest Statement, Sievert Declaration at para. 43; Public Interest Statement, Appx. F, Declaration of Brandon "Dow" Draper, at para. 31 (June 18, 2018).

¹⁰⁹¹ Public Interest Statement at 71. Specifically, the Applicants claim that the proposed transaction will result in a doubling of their enterprise market share by 2024. Joint Opposition at 103.

¹⁰⁹² Public Interest Statement at 71-72; Joint Opposition at 104-07, 109.

¹⁰⁹³ Public Interest Statement at 72.

¹⁰⁹⁴ Public Interest Statement at 72; Joint Opposition at 104, 109.

¹⁰⁹⁵ Public Interest Statement at 73-74; Joint Opposition at 104-09.

¹⁰⁹⁶ Public Interest Statement at 74; Joint Opposition at 104-07, 109.

¹⁰⁹⁷ Free State Comments at 11, 17; Ad Hoc Opposition at 2; EWA Reply at 2; Latino Coalition Comments at 4-5; National EBS Association and Catholic Technology Network Joint Reply Comments at 3.

¹⁰⁹⁸ Ad Hoc Opposition at 2.

¹⁰⁹⁹ DISH Aug. 27, 2018 Petition at 40-41; CWA Reply at 5-7.

¹¹⁰⁰ Public Knowledge et al. Reply Comments at 17 (arguing that Sprint has had seven consecutive quarters of net postpaid phone additions in the business segment).

¹¹⁰¹ DISH Aug. 27, 2018 Petition at 41.

¹¹⁰² See, e.g., TMUS-FCC-01029715 at 4 (T-Mobile, "T-Mobile for Business Enterprise Growth Discussion Document," June 5, 2018).

various strategies to gain a more significant market share in the enterprise market. T-Mobile, for example, recently introduced its “Sell-With” program, a cooperative selling program with direct and indirect channel partners to compete for enterprise customers.¹¹⁰³ Sprint has similarly launched a number of initiatives targeting enterprise customers, such as its “As a Service” offerings in 2015 and more recently its multiline virtual number solutions and IoT Factory.¹¹⁰⁴ Furthermore, both companies have been aggressively competing on price to lure enterprise customers away from Verizon Wireless and AT&T and have set ambitious growth targets for the near and long-term.¹¹⁰⁵

319. Nevertheless, in spite of their attempts to gain significant market share in the enterprise market, the Applicants have independently had limited success. Nationwide data for the enterprise segment indicates negligible or no growth in the shares of both T-Mobile and Sprint.¹¹⁰⁶ Moreover, even as various documents in the production indicate modest growth, others show the companies as lagging in the enterprise market.¹¹⁰⁷ In particular, executives have recognized that prospective customers view the Applicants as having **[BEGIN HIGHLY CONF. INFO.]**
[END HIGHLY CONF. INFO.] AT&T and Verizon Wireless in the enterprise market.¹¹⁰⁸

320. In contrast, we find that by means of the proposed transaction, the Applicants have the potential to challenge AT&T and Verizon Wireless in a more significant way in the enterprise market, and in doing so, enhance competition. Specifically, because the Applicants have committed to increase the New T-Mobile network’s geographic reach and quality beyond what would have been likely on a standalone basis, we anticipate that the proposed transaction will better allow the Applicants to compete for business lines and RFPs.¹¹⁰⁹ Moreover, internal documents discussing the proposed transaction

¹¹⁰³ Synnex Corp., *T-Mobile, Team Up With T-Mobile for Business*, <https://www.synnexcorp.com/us/cloudsolv/partners/t-mobile/> (last visited Oct. 14, 2019).

¹¹⁰⁴ Sprint, *Anything as a Service: Unwrapping the Future of IT* (July 11, 2017), <https://business.sprint.com/blog/anything-service-unwrapping-future/>; see also Sprint, *Sprint IoT Factory*, <https://business.sprint.com/iot-factory/> (last visited Oct. 14, 2019); Sprint, *Sprint MultiLine*, <https://business.sprint.com/solutions/sprint-multiline/> (last visited Oct. 14, 2019).

¹¹⁰⁵ TMUS-FCC-01029715 at 3 (T-Mobile, “T-Mobile for Business Enterprise Growth Discussion Document,” June 5, 2018) (indicating that **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]); *Id* at 5 (discussing key enterprise imperatives); SPR-FCC-01424004, Slide 2 (discussing Sprint’s enterprise investment targets, progress, and recommendations, including **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]). SPR-FCC-01661281 at 3-5 (Sprint, **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** Mar. 1, 2018).

¹¹⁰⁶ AT&T Data Request, Attach. B (Sept. 10, 2018); Sprint Data Request, Attach. B (Sept. 10, 2018); T-Mobile Data Request, Attach. B (Sept. 10, 2018); Verizon Wireless Data Request, Attach. B (Sept. 10, 2018). Specifically, T-Mobile’s and Sprint’s respective average enterprise market share across the four nationwide providers have gone from **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** in the first half of 2018.

¹¹⁰⁷ TMUS-FCC-00457719 (T-Mobile, “TFB Enterprise Sales: 2018 Annual operating Plan,” December 2017) at 13 (stating that T-Mobile is **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]); SPR-FCC-06261515 (Sprint executive e-mail, June 25, 2018); SPR-FCC-07358238 (Sprint, “Q3 2017 Earnings Call,” Feb. 2, 2018) at 3 (indicating that **[BEGIN HIGHLY CONF. INFO.]**

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¹¹⁰⁸ TMUS-FCC-01029715 at 4 (T-Mobile, “T-Mobile for Business Enterprise Growth Discussion Document,” June 5, 2018).

¹¹⁰⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter at 2-4, Attach. 1 at 1-2.

indicate an intent to challenge AT&T and Verizon Wireless in this segment, by, for instance, **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]¹¹¹⁰ Overall, we find that as a result of the proposed transaction, we are able to credit certain public interest benefits in the enterprise market.

F. Employment

321. The Commission has previously considered employment-related issues, such as job creation, workforce diversity, commitments to honor union bargaining contracts, and production efficiencies resulting in workforce reduction in its transaction review.¹¹¹¹ The Commission has often found that employment-related claims are too speculative or unsubstantiated to be credited,¹¹¹² are not transaction-specific,¹¹¹³ or are best addressed by state agencies, the NLRB, and the EEOC.¹¹¹⁴ As with all claimed benefits, when Applicants assert that a number of U.S. jobs will be created as a result of a proposed transaction and ask the Commission to consider this as a creditable benefit, the Applicants have the burden of proof regarding transaction-specificity, quantification, and verification.¹¹¹⁵

322. *Record.* The Applicants assert that there would be a net increase in jobs resulting from the proposed transaction. This increase would flow from the infrastructure investment needed to deploy a 5G network, the expanded customer care necessary to serve a wider subscriber base, and additional support for growing services like in-home broadband Internet access service and IoT.¹¹¹⁶ Specifically, the Applicants estimated that a total of 168,600 job-years would be added to the economy during the 2019-

¹¹¹⁰ TMUS-FCC-08186839 at 11 (T-Mobile, “NewCo Discussion,” Sept. 27, 2017) (discussing an **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]); TMUS-FCC-00411488 (T-Mobile, “Synergies Cheat Sheet,” undated) (noting that **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]**).

¹¹¹¹ See, e.g., *Applications of Comcast Corp., General Electric Co., and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licenses*, 26 FCC Rcd 4238, 4330, para. 224 (2011) (*Comcast-NBCU Order*); *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16293, para. 259; *Sprint-Nextel Order*, 20 FCC Rcd at 14029-30, paras. 168-69; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21610-11, para. 235.

¹¹¹² See, e.g., *Charter-Time Warner Order*, 31 FCC Rcd at 6525-26, para. 443 (Applicants’ labor-related claims were vague and contradictory); *Applications Filed by Altice N.V. and Cablevision Systems Corp. to Transfer Control*, Memorandum Opinion and Order, 31 FCC Rcd 4365, 4377-78, para. 27 (WCB 2016) (opposing parties’ job loss claims were too speculative); *T-Mobile-MetroPCS Order*, 28 FCC Rcd at 2351-52, para. 80 (opposing parties’ job loss claims were not supported by evidence in the record).

¹¹¹³ See, e.g., *AT&T-DIRECTV Order*, 30 FCC Rcd at 9276-77, paras. 389-91 (Applicants’ claimed employment-diversity and collective-bargaining benefits were not transaction-specific); *SoftBank-Sprint Order*, 28 FCC Rcd at 9670, para. 70 (Applicants’ claimed job-related benefits were too speculative); *Comcast-NBCU Order*, 26 FCC Rcd at 4329-30, paras. 223, 225 (opposing parties’ concerns about employment diversity and labor relations were unrelated to the transaction); *Applications for Consent to Assignment and/or Transfer of Control of Licenses, Adelphi Communications Corp., to Time Warner Cable, Inc. and Comcast Corp.*, Memorandum Opinion and Order, 21 FCC Rcd 8203, 8305-06, paras. 238-40 (2006) (unions’ claims regarding labor relations were not transaction-specific).

¹¹¹⁴ *Comcast-NBCU Order*, 26 FCC Rcd at 4329-30, para. 223.

¹¹¹⁵ See, e.g., *AT&T-T-Mobile Staff Report*, 26 FCC Rcd at 16293-98, paras. 259-65; *Sprint-Nextel Order*, 20 FCC Rcd at 14029-30, paras. 168-69.

¹¹¹⁶ Public Interest Statement at 80; Public Interest Statement, Appx. I, Declaration of Jeffrey Eisenach, at 5, 8 (June 18, 2018) (Public Interest Statement, Eisenach Declaration). Eisenach uses an Input-Output (I/O) model to predict the effects of the transaction on employment. Specifically, Eisenach applies employment multipliers from the IMPLAN (Impacts for PLANning) model developed by the US Forest Service and the University of Minnesota. Public Interest Statement, Eisenach Declaration at 7.

2023 period.¹¹¹⁷ A number of commenters support the Applicants' predictions regarding new jobs that could result from the proposed transaction.¹¹¹⁸ Another commenter contends that while claimed job impacts of a transaction are hard to predict, the impacts that 4G has had on the economy lend credence to the job benefits expected from the 5G transition.¹¹¹⁹ For their part, the Attorneys General of Utah and New Mexico state that they "will do everything within our power to make sure the New T-Mobile lives up to [the Applicants'] laudable commitments" regarding rural service and jobs.¹¹²⁰

323. Other commenters, however, contend that the Applicants' predictions are uncertain and unverifiable, contrary to the history of layoffs following other transactions, and unsupported by specific, binding commitments.¹¹²¹ Although the Applicants point to retail expansion following T-Mobile's MetroPCS acquisition, commenters argue that Metro had relatively few retail stores pre-transaction, while such growth opportunities are not present here given the more extensive retail footprint of the standalone companies.¹¹²² Indeed, some commenters contend the transaction would result in substantial job losses in the United States,¹¹²³ which would constitute a public interest harm.¹¹²⁴ In this regard, CWA claims that Sprint and T-Mobile "have a history of outsourcing key functions and sending U.S. jobs to overseas contractors."¹¹²⁵ Additionally, insofar as the standalone companies could deploy 5G on their own and already had announced certain store openings or other expansions, these commenters argue that any resulting jobs are not transaction-specific.¹¹²⁶ Further, DISH claims that it is unrealistic to predict that the

¹¹¹⁷ Joint Opposition at 110.

¹¹¹⁸ Ultra Mobile/Mint Mobile Comments at 2; Crown Castle Comments at 2; Tillman Infrastructure Comments at 2; CASE Comments, Attach. at 1-2; Assila Comments at 2; Digital Bridge/Vertical Bridge Aug. 31, 2018 *Ex Parte* Letter at 3-4; NJBIA Aug. 31, 2018 *Ex Parte* Letter at 1; Maine Public Advocate Sept. 7, 2018 *Ex Parte* Letter, Attach. at 1; Letter from Carlo A. Scissura, President, CEO, New York Building Congress, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Sept. 7, 2018); NPRCC Comments at 6; Center for Individual Freedom Comments at 4, 6; OMF Cares Comments, Attach. at 1; Letter from Michelle Merriweather, President, CEO, Urban League of Metropolitan Seattle, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Oct. 29, 2018); *see also e.g.*, Governor Colyer Aug. 30, 2018 *Ex Parte* Letter at 1 (discussing anticipated job creation in Kansas); Letter from Hon. Carl Gurlach, Mayor, Overland Park, Kansas, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Sept. 10, 2018) (similar).

¹¹¹⁹ ACLP Comments at 29-30. TechFreedom asserts that the debate over whether the proposed transaction would lead to net job gains or net job losses is beside the point because even in the case of job losses the increased efficiency is likely to be passed on to consumers and thus constitutes a public interest benefit. TechFreedom Opposition at 18-19.

¹¹²⁰ Utah and New Mexico State Attorneys General Aug. 24, 2018 *Ex Parte* Letter at 2.

¹¹²¹ DISH Aug. 27, 2018 Petition at 42; Greenlining Petition at 9; Public Knowledge Petition at 30-32; CWA Comments at 55-70; AFL-CIO Reply at 2.

¹¹²² CWA Comments at 57-58; CWA Reply at 8-9; *see also* Letter from 4Competition Coalition, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. at 3 (filed Dec. 13, 2018) (discussing store closures following T-Mobile's iWireless acquisition).

¹¹²³ Public Knowledge Petition at 30-31; *see also e.g.*, CWA Comments at 63-65, Appx. D (discussing the results of modeling that predicted store closures and job losses); *Id.* at 65 (discussing 2017 analysts' estimates of potential job reductions from a T-Mobile/Sprint transaction); DISH Aug. 27, 2018 Petition at 42-34 (arguing that even assuming *arguendo* that the Applicants' predicted estimate of new jobs were correct, CWA's analysis suggests that, on net, there would be a loss of jobs); AFL-CIO Reply at 2-3 (discussing anticipating job losses from the transaction); Adderton Aug. 29, 2018 *Ex Parte* Letter at 2 ("the proposed merger threatens the continued viability of thousands of independent wireless dealers and, with them, tens of thousands of jobs").

¹¹²⁴ CWA Comments at 4, 54, 61, 63-64; CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 25.

¹¹²⁵ CWA Comments at 60; *see also Id.* at 60-61 (discussing examples of outsourcing).

¹¹²⁶ Free Press Petition at 70-71; Greenlining Petition at 9; Public Knowledge Petition at 30-32; CWA Comments at (continued....)

transaction would create jobs since if T-Mobile and Sprint are merging to create efficiencies, job losses are more likely.¹¹²⁷

324. In CWA's regression analysis,¹¹²⁸ CWA predicts that a total of 30,000 jobs would be lost nationwide through the elimination of duplicated headquarters jobs and the closure of various retail stores as a result of the transaction.¹¹²⁹ Further, CWA contends that enterprise sales and support job growth is not transaction-specific because the standalone companies already were improving their competitiveness for enterprise customers.¹¹³⁰ The Applicants criticize CWA's predictions of job losses as neglecting New T-Mobile's incremental capital investments and expansion of services.¹¹³¹ In reply, OTI cites the job loss estimates predicted by CWA and argues that the Applicants' response relies on unverified claims that jobs will be created as a result of the transaction.¹¹³² OTI also criticizes the theory that efficiency gains resulting from any job losses necessarily would be passed through to consumers, and argues that such speculative claims cannot offset the harm of job losses.¹¹³³

325. Some commenters claim the transaction will lead to harm by "substantially increas[ing] concentration in numerous local wireless industry retail labor markets, increasing the monopsony¹¹³⁴ power of employers in purchasing the labor of retail wireless workers, thereby depressing workers' wages and benefits through reduced competition for labor."¹¹³⁵ CWA argues that oligopsony power is an issue in this transaction because there is evidence that labor markets in the U.S. are highly concentrated, otherwise similar workers are paid lower wages in more concentrated labor markets, and that collective bargaining substantially reduces the negative effect of labor market concentration on wages.¹¹³⁶ CWA requests that the Commission requires, as a condition, that no employee of T-Mobile or Sprint would lose their job, T-Mobile would commit to return all overseas customer call center jobs to the U.S., and that T-Mobile commit to complete neutrality in allowing their employees to form a union, free from

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55-57; AFL-CIO Reply at 2; *see also* DISH Aug. 27, 2018 Petition at 42 (arguing that the Applicants' predicted job gains are overstated because they "assume that no 5G deployments would occur without the merger").

¹¹²⁷ DISH Aug. 27, 2018 Petition at 42.

¹¹²⁸ CWA Comments, Appx. D at 1-8. When estimating retail store closures, CWA conducts an econometric analysis in which they run separate regressions for postpaid and prepaid stores with the goal of predicting how the Applicants' retail footprint would change if they operated a single postpaid and single prepaid brand post-transaction. CWA Comments, Appx. D at 2.

¹¹²⁹ Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Mar. 8, 2019) (CWA Mar. 8, 2019 *Ex Parte* Letter).

¹¹³⁰ CWA Reply at 5-7.

¹¹³¹ Joint Opposition at 111, 115-16.

¹¹³² OTI Reply at 3-4.

¹¹³³ OTI Reply at 4-5.

¹¹³⁴ We note that the correct terminology is oligopsony (not monopsony) because there would be more than a single employer in most markets.

¹¹³⁵ CWA Comments at 67; *see also e.g.*, AFL-CIO Reply at 3 ("with fewer employers to compete against for employees and absent collective bargaining, there would be no incentive nor mechanism for workers to improve their compensation and working conditions at the New T-Mobile"); CWA Nov. 30, 2018 *Ex Parte* Letter, Attach. at 32-33 (discussing concerns about labor market concentration).

¹¹³⁶ CWA Comments at 66.

interference.¹¹³⁷ CWA also notes that the commitments outlined in T-Mobile's letter of May 20, 2019 do not address employment-related issues.¹¹³⁸

326. In response to CWA's claims that the transaction may reduce annual earnings of retail wireless workers,¹¹³⁹ T-Mobile argues that CWA relies on research that is flawed for several reasons, and therefore should be discounted.¹¹⁴⁰ T-Mobile argues that CWA's predictions of the effect of the proposed transaction on labor markets uses an incorrect market definition (wireless electronics labor market), and therefore greatly overestimates the effect of the transaction on employment and wages.¹¹⁴¹ T-Mobile argues that the correct labor market definition should be much broader and include other retail jobs.¹¹⁴² In response, CWA claims that their analysis relies on conservative assumptions which actually underpredict the negative impact of the transaction on jobs.¹¹⁴³

327. In addition, CWA claims that T-Mobile's purchase of iWireless in January of 2018 led to the closure of 86% of iWireless' 129 retail locations, including 75 out of 78 locations in rural areas, as well as many call centers.¹¹⁴⁴ CWA further maintains that one year after the acquisition, there were zero T-Mobile-branded stores outside of Iowa's urban areas, and eight Metro-branded prepaid stores in rural areas.¹¹⁴⁵ In response, T-Mobile claims that the iWireless acquisition added jobs in Iowa and provided wider and better coverage at the same or lower rates than iWireless had prior to the transaction.¹¹⁴⁶

328. *Discussion.* In our evaluation of the Applicants' employment model, we note first that the outcome of the employment model depends heavily on the Pro Forma model for New T-Mobile. We find that the Applicants have not provided enough information for us to fully quantify the inputs, and thus we cannot rely heavily on the model to draw conclusions about the likely effect of the transaction on jobs. We are therefore unable to quantitatively verify the Applicants' claims with respect to the creation of 168,600 transaction-specific "job-years" in the 5 years post-transaction, although we note that some job gains are possible, particularly in the light of New T-Mobile's network-related commitments.

329. Further, while we agree with CWA that the transaction has the potential to lead to store closings, and thus could decrease retail employment to some extent, we also find that the CWA model likely overestimates the number of store closures and job losses.¹¹⁴⁷ We also find that CWA has not

¹¹³⁷ CWA Comments at 71; *see also* CWA and Public Knowledge May 23, 2019 *Ex Parte* Letter at 1-2; CWA May 31, 2019 *Ex Parte* Letter at 10-11.

¹¹³⁸ CWA May 31, 2019 *Ex Parte* Letter at 10-11.

¹¹³⁹ CWA Mar. 8, 2019 *Ex Parte* Letter, Attach., Adil Abdela and Marshall Steinbaum, Labor Market Impact of the Proposed Sprint/T-Mobile Merger, Economic Policy Institute of the Roosevelt Institute (Dec. 17, 2018).

¹¹⁴⁰ Letter from Trey Hanbury, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 4 (filed Mar. 11, 2019) (T-Mobile Mar. 11, 2019 CWA Response *Ex Parte* Letter).

¹¹⁴¹ T-Mobile Mar. 11, 2019 CWA Response *Ex Parte* Letter at 4-5.

¹¹⁴² T-Mobile Mar. 11, 2019 CWA Response *Ex Parte* Letter at 5.

¹¹⁴³ Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Mar. 22, 2019).

¹¹⁴⁴ Letter from Debbie Goldman, Director, Telecommunications Policy and Research, CWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Appx. D at 5 (CWA Feb. 27, 2019 *Ex Parte* Letter).

¹¹⁴⁵ CWA Feb. 27, 2019 *Ex Parte* Letter, Appx. D at 5.

¹¹⁴⁶ T-Mobile Mar. 11, 2019 CWA Response *Ex Parte* Letter at 1.

¹¹⁴⁷ Staff has various concerns with CWA's analysis: a) the model includes one explanatory variable only and ignores many other variables (e.g., household income) that may be important; b) the model does not estimate store numbers outside of census-defined urban areas even though almost 20% of the U.S. population resides outside of urban areas, and those more sparsely populated areas likely have different store density in terms of population served per store. U.S. Census, 2010 Census Urban Area FAQs, Urban Area Definition Results,

(continued....)

offered sufficient evidence to show that the four nationwide wireless service providers have oligopsony power, given the multiple retail job opportunities in urban areas.¹¹⁴⁸ We agree with T-Mobile that CWA uses a very narrow local labor market definition that only includes estimated wireless retail employees from the top four nationwide wireless service providers and their prepaid affiliates in each commuting zone.¹¹⁴⁹ We question why the magnitude of the barriers for employees to move to other retail sectors in the advent of job losses would be so large, especially given the current low unemployment rate.¹¹⁵⁰ We believe this question is especially important for the large metropolitan areas that were the focus of research relied upon by CWA. In addition, we disagree with CWA that we should consider T-Mobile's acquisition of iWireless (a very small rural provider) as a barometer for what T-Mobile will do in this case. Finally, as a result of the Boost Mobile divestiture condition, Boost's operations will no longer be consolidated into New T-Mobile. This requirement will likely result in fewer retail job losses than reasonably could have been predicted absent this condition.

330. In sum, we decline to impose jobs-related conditions on approval of the instant transaction. Although we acknowledge that some job losses are possible, we find that the potential resulting efficiencies and overall consumer welfare benefits would be likely to outweigh harm to specific employees from the elimination of some jobs. We do not have sufficient evidence of welfare losses related to employment—specifically we do not have evidence that ties the loss of jobs to a potential output reduction—to intervene in the market by stipulating the number of jobs that New T-Mobile must retain. Thus, we find that it is not in the public interest to impose job-related conditions in the current instance.

VIII. OTHER ISSUES

A. Customer Migration and Transition

331. Describing the transition to New T-Mobile, the Applicants state that they plan to use the existing T-Mobile network as an “anchor,” while retaining selected Sprint sites for network density and coverage purposes.¹¹⁵¹ Further, the Applicants state that beginning in 2019, Sprint's 2.5 GHz spectrum will be deployed on the T-Mobile “anchor” sites, and the T-Mobile spectrum will be used on virtually all the Sprint retained sites, as needed.¹¹⁵² Additionally, T-Mobile contends it will refarm **[BEGIN HIGHLY CONF. INFO.]**

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<https://www.census.gov/programs-surveys/geography/about/faq/2010-urban-area-faq.html> (last visited Oct. 14, 2019); c) the analysis will likely provide a biased number of total retail stores in non-urban areas post-transaction if the ratio of stores to population is higher in rural areas. CWA, *Disrupting Rural Wireless*, at 4, Fig. 2 <https://www.tmobilesprinfacts.org/system/files/disrupting-rural-wireless-201902.pdf> (last visited Oct. 14, 2019) (showing T-Mobile stores in Metropolitan Statistical Areas and many Metro stores in Rural Service Areas); and d) the analysis primarily focuses on the impact of the transaction on T-Mobile's and Sprint's retail employment and does not consider the potential industry-wide or economy-wide employment impact.

¹¹⁴⁸ CWA Comments, Appx. C (list of Top 50 urban areas with highest job loss).

¹¹⁴⁹ CWA Mar. 8, 2019 *Ex Parte* Letter at 2, Attach., Adil Abdela and Marshall Steinbaum, Labor Market Impact of the Proposed Sprint/T-Mobile merger, Economic Policy Institute of the Roosevelt Institute, at 9-10, 18 (Dec. 17, 2018) (Local labor concentration data are constructed based on the number of corporate-owned or authorized-dealer stores, and the average number of retail employees per corporate-owned or authorized-dealer store in each commuting zone for the top four wireless service providers and their prepaid affiliates, but not including Sprint's Virgin Mobile).

¹¹⁵⁰ U.S. Bureau of Labor Statistics, *Payroll employment increases by 196,000 in March; Unemployment remains at 3.8%* (Apr. 5, 2019), <https://www.bls.gov/news.release/empsit.nr0.htm>.

¹¹⁵¹ Public Interest Statement at 38; T-Mobile Information Request Response at 64-65 (Sept. 5, 2018).

¹¹⁵² Public Interest Statement at 38; T-Mobile Information Request Response at 65 (Sept. 5, 2018).

[END HIGHLY CONF. INFO.]¹¹⁵³ The Applicants anticipate transitioning Sprint customers to the existing T-Mobile network over three years post-transaction.¹¹⁵⁴ During the three-year transition period, the Applicants maintain that they plan to migrate Sprint customers using a market-by-market approach to integration that builds on the expeditious and successful prior example of integration of Metro with T-Mobile.¹¹⁵⁵

332. The Applicants state that about half of Sprint's customer base have devices compatible with T-Mobile's network and can be integrated with an over-the-air software update shortly after the transaction.¹¹⁵⁶ T-Mobile states that they will first migrate **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] in order to move them to the New T-Mobile network.¹¹⁵⁷ The Applicants contend that overlapping spectrum holdings in the 1900 MHz PCS band will facilitate the integration of Sprint's existing customers onto T-Mobile's network.¹¹⁵⁸ With respect to Sprint's CDMA voice users, New T-Mobile will migrate them to VoLTE either through a software upgrade or handset replacement promotions.¹¹⁵⁹ The Applicants state that the T-Mobile LTE radio access network (RAN) resources will be accessible to Sprint compatible devices in the same manner Sprint RAN is accessible to these customers through an LTE core network Multi-Operator Core Network (MOCN) capability.¹¹⁶⁰ T-Mobile notes that it plans to maintain Sprint's CDMA network until the migration of Sprint customers is completed.¹¹⁶¹ Cell Nation agrees with the Applicants that the Metro integration process was well executed and argues that this provides reason for confidence in a successful integration process here.¹¹⁶² Specifically, Cell Nation emphasizes that T-Mobile was able to transition every customer from Metro to T-Mobile within 15 months, in spite of the fact that "the integration of MetroPCS with T-Mobile was complex and involved nine million MetroPCS customers requiring handset changes."¹¹⁶³

333. Other commenters are skeptical that the integration process will go as smoothly as described because "[t]he integration of operations in any larger merger is typically a major undertaking."¹¹⁶⁴ Another commenter expresses specific concern that the Applicants have provided "no assurances that existing Sprint and T-Mobile customers will be able to keep their existing plans at

¹¹⁵³ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. B at 20, 23-24 (filed Mar. 8, 2019) (T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview).

¹¹⁵⁴ Public Interest Statement at 38; T-Mobile Information Request Response at 63-65 (Sept. 5, 2018).

¹¹⁵⁵ Public Interest Statement at 40-41; *see also* T-Mobile Information Request Response at 12-16 (Sept. 5, 2018) (describing the Metro transition).

¹¹⁵⁶ Public Interest Statement at 39; T-Mobile Information Request Response at 64 (Sept. 5, 2018).

¹¹⁵⁷ T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview at 3.

¹¹⁵⁸ Public Interest Statement at 39.

¹¹⁵⁹ Public Interest Statement at 39. We note that the record does not indicate the specific details of how Sprint customers with incompatible headsets will be incentivized to convert to handsets compatible with the T-Mobile network.

¹¹⁶⁰ Public Interest Statement, Ray Declaration at paras. 66-67, 69, 71 (explaining that MOCN will allow Sprint subscribers with compatible devices to access either network, whichever one is available, and that MOCN was used in the MetroPCS consolidation where MOCN achieved or exceeded their assumed synergies).

¹¹⁶¹ T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview at 7.

¹¹⁶² Cell Nation Comments at 3.

¹¹⁶³ Cell Nation Comments at 3.

¹¹⁶⁴ AAI Petition at 18.

existing prices,” creating the potential for increased rates or onerous terms post-transaction.¹¹⁶⁵ In addition, commenters state that the Applicants have not adequately addressed what will be required to transition MVNO customers off Sprint’s network, expressing concern that the migration will depend on high-tier devices not targeted toward prepaid or MVNO customers.¹¹⁶⁶ Likewise, other commenters express concern about rural areas where “Sprint’s 3G CDMA voice network and extended agreements with other carriers are used regularly,” and advocate “a sunset plan for understanding how they will be rebanded to LTE, and potentially a coordination plan for rural customers in those markets during rebanding, as 1900 MHz CDMA is refarmed for LTE or NR use.”¹¹⁶⁷

334. Commenters echo similar concerns in regard to T-Mobile’s plan to decommission Sprint sites. DISH, for example, argues that the fact that “only Sprint’s sites would be decommissioned ought to worry Sprint customers who receive only CDMA voice service—a service that will not be available from T-Mobile sites. This suggests that Sprint assets would not be optimally used, to the potential detriment of current Sprint customers.”¹¹⁶⁸ Another commenter expresses more fundamental concerns about the sunset of Sprint’s CDMA network, arguing that Sprint’s CDMA voice service performs better at the fringes of cell site than VoLTE would, and that Sprint’s network should not be shut down until comparable performance can be assured and enough time has passed for customers to naturally replace their CDMA devices.¹¹⁶⁹

335. In the Joint Opposition, the Applicants reiterate their integration plans, which they describe as “virtually identical” to those implemented in T-Mobile’s acquisition of Metro.¹¹⁷⁰ The Applicants elaborate in their market-by-market integration approach that the magnitude of the migration in many markets here would be similar to markets successfully migrated in the case of Metro.¹¹⁷¹ In addition, as with the Metro transition, the Applicants maintain that Sprint’s network will not be decommissioned until the T-Mobile network can fully accommodate the associated subscribers, meaning there will be no decline in performance for Sprint customers during the transition.¹¹⁷² The Applicants state that they expect the Sprint transition to be easier in some respects since it aligns with the transition to 5G.¹¹⁷³ The Applicants argue that the 5G transition means that T-Mobile already has been deploying radios more capable of managing a broader range of spectrum bands, and that where new antennas and radio equipment are needed they can be replaced without increasing the physical space or mass required, facilitating that deployment.¹¹⁷⁴ Commenters also suggest that transitions are becoming increasingly easy with more interoperability by equipment vendors.¹¹⁷⁵ With respect to the CDMA transition, which is not expected to commence before January 1, 2021, the Applicants explain that New T-Mobile will “implement a seamless transition plan,” likely involving migration of customers to VoLTE, and will work

¹¹⁶⁵ Greenlining Petition at 9-10.

¹¹⁶⁶ DISH Aug. 27, 2018 Petition at 48, 55-56; *see also* Senator Blumenthal et al. Feb. 12, 2019 *Ex Parte* Letter at 17-18 (arguing that turning off CDMA without transitioning those CDMA-exclusive phones and MVNO partners could disproportionately cut off rural communities, fixed-income customers, and elderly consumers).

¹¹⁶⁷ Console Enterprises Petition at 3; *see also* C Spire Petition at i (expressing concern about the shutdown of the CDMA network).

¹¹⁶⁸ DISH Aug. 27, 2018 Petition at 6.

¹¹⁶⁹ Comments of Alex C. Ingram at 1 (July 20, 2018).

¹¹⁷⁰ Joint Opposition at 47-50.

¹¹⁷¹ Joint Opposition at 50-51.

¹¹⁷² Joint Opposition at 52.

¹¹⁷³ Joint Opposition at 51-52.

¹¹⁷⁴ Joint Opposition at 51-52.

¹¹⁷⁵ ITIF Opposition at 5.

with rural service providers to ensure that CDMA roaming customers can be accommodated.¹¹⁷⁶ T-Mobile further argues that the transaction will not accelerate Sprint's CDMA transition, and provides for a longer CDMA transition than Verizon Wireless has planned.¹¹⁷⁷

336. T-Mobile states that it plans to migrate Sprint customers **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.]¹¹⁷⁸

337. In reply, DISH contends that the Sprint/Nextel transaction is the more apt comparison for the likely integration process, rather than T-Mobile-MetroPCS,¹¹⁷⁹ primarily because that transition involved a limited geographic footprint; limited spectrum—much of which was not being used, and the rest compatible with T-Mobile radios and equipment—and minimal need for cell site modifications.¹¹⁸⁰ By contrast, Sprint/Nextel involved two nationwide providers operating in different spectrum bands and involved combining incompatible devices.¹¹⁸¹ In terms of the CDMA transition, C Spire criticizes the Applicants' statements as "vague assertions that are supposed to be comforting,"¹¹⁸² but which are undercut by T-Mobile's statements to investors suggesting that there will be a rapid termination of Sprint's CDMA network—and certainly more rapid than would occur absent the transaction, given that Sprint had not yet implemented VoLTE.¹¹⁸³ While commenters recognize that broader technological transitions are occurring, they argue that the proposed transaction is accelerating the termination of Sprint's CDMA network in a way that will lead to disruption to roaming partners that need a more gradual transition, such as smaller providers with more limited ability to offer promotions or other measures to encourage their customers to move to compatible devices.¹¹⁸⁴

¹¹⁷⁶ Joint Opposition at 98.

¹¹⁷⁷ T-Mobile Nov. 19, 2018 *Ex Parte* Letter at 3; *see also* Verizon, *CDMA Network Activation Retirement*, <https://www.verizonwireless.com/support/knowledge-base-218813/> (last visited Oct. 14, 2019) (announcing that Verizon will no longer activate CDMA-only devices); FierceWireless, *Verizon to Shut Down 2G CDMA Network by the End of 2019* (July 13, 2016), <https://www.fiercewireless.com/wireless/verizon-to-shut-down-2g-cdma-1x-network-by-end-2019> (confirming that Verizon is planning to shut down its CDMA network by the end of 2019). *See supra* section VII.B: Roaming.

¹¹⁷⁸ T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview at 7, 18, 22-24.

¹¹⁷⁹ DISH Reply at 102-03.

¹¹⁸⁰ DISH Reply at 102.

¹¹⁸¹ DISH Reply at 103. DISH describes the Sprint/Nextel merger as a failure for both parties, with the integration basically abandoned after Sprint wrote off virtually the whole cost of the Nextel network, and with consumers losing the benefits of innovative Nextel services. DISH Reply at 103; *see also* AAI Petition at 18.

¹¹⁸² C Spire Reply at 13; *see also* Union Telephone Reply at 23 (arguing that the financial benefits cited by the Applicants from terminating Sprint's CDMA network are more likely to motivate New T-Mobile's actions in that regard "than the self-serving but unsupported promise to extend 'preferred roaming partner' arrangements").

¹¹⁸³ C Spire Reply at 12-15; *see also* Blue Wireless Reply at 12 (stating that from discussions with Sprint it is not aware of plans Sprint had to terminate its CDMA network absent the transaction).

¹¹⁸⁴ Blue Wireless Reply at 14-15; C Spire Reply 12-15; Union Telephone Reply at 23; Letter from Carl W. Northrop, Counsel to C Spire, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 3-4 (filed Dec. 3, 2018).

338. *Discussion.* While the Applicants have publicly announced very few details of their customer transition plans, they have stated that the transition would ensure that existing subscribers and services would not be displaced without a replacement service that is comparable in coverage and capacity.¹¹⁸⁵ Internal records indicate that the Applicants have contracted with two national consulting firms to help support the customer migration plans.¹¹⁸⁶ Review of the record indicates that the Applicants have developed transition plans to support the following areas: product offerings, postpaid migration, supply chain, business and enterprise offerings, brand and marketing, commercial strategy, IoT, wholesale, roaming, security, handset device engineering, network engineering, device financing, human resources, and customer care.¹¹⁸⁷ Further, the Applicants have established T-Mobile and Sprint functional team leaders for each of these areas as well as oversight and advisory team support plans.¹¹⁸⁸

339. The Commission recognizes that T-Mobile was able to successfully transition customers from Metro's network over to T-Mobile's network in an efficient and expedient manner. Although we agree that there are differences between the T-Mobile/MetroPCS transaction and the instant transaction before us, claims that New T-Mobile will not be able to achieve the same successful transition in this case are merely speculative. Moreover, there is no evidence in the record that T-Mobile will accelerate the shutdown of Sprint's CDMA network to the extent that it would leave CDMA-based customers without service. In contrast, the Applicants have submitted their migration plan that indicates that New T-Mobile migration plans include protecting the customer experience and keeping the CDMA network operational until the migration is complete.¹¹⁸⁹ In the T-Mobile/MetroPCS transaction, T-Mobile was able to migrate Metro's customers from the existing CDMA network onto T-Mobile's GSM network without suffering substantial customer loss. We find it likely that T-Mobile can replicate the success of the MetroPCS acquisition in the present case. Finally, we agree with the Applicants that CDMA is an older technology that will be likely phased out throughout the industry. We find that it is not in the public interest to require a company to devote their limited resources to maintaining an outdated technology when those resources could instead be directed to bringing to American consumers faster, higher-quality and more reliable services.

B. Rural Call Completion

340. RWA and NTCA assert that T-Mobile has a history of violating rural call completion rules and that the elimination of Sprint as a competitor would provide T-Mobile with more opportunities to engage in such practices that could harm rural consumers and rural carriers.¹¹⁹⁰ As these petitioners and the Applicants both acknowledge,¹¹⁹¹ the Commission already addressed this issue when it announced

¹¹⁸⁵ Joint Opposition at 66-67 (discussing the transition of M2M services and stating that no consumer would be transitioned from existing 2G or 3G technology without a replacement service that is comparable in coverage and service quality).

¹¹⁸⁶ See, e.g., TMUS-FCC-08179222. The two firms are [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.].

¹¹⁸⁷ See, e.g., TMUS-FCC-08179244; TMUS-FCC-08179257 (supply chain); TMUS-FCC-08179346 (business and enterprise); TMUS-FCC-08179358 (commercial operations); TMUS-FCC-08179363 (IoT); TMUS-FCC-08179373 (wholesale); TMUS-FCC-08179379 (roaming); TMUS-FCC-08179384 (security); TMUS-FCC-07991397 (device engineering); TMUS-FCC-07991825 (network migration); SPR-FCC-11845153 (New T-Mobile Executive Integration update).

¹¹⁸⁸ See, e.g., SPR-FCC-11845153 (New T-Mobile Executive Integration update).

¹¹⁸⁹ T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview at 3; see also Joint Opposition at 98.

¹¹⁹⁰ RWA Petition at 9-11; RWA Reply at 7-9; NTCA Petition at 10-12; NTCA Reply at 7-8. The Commission's rural call completion requirements help ensure that long distance calls to rural areas are completed and address issues with call delays, whether the called party's phone rings, false busy signals, and other problems. *Rural Call Completion*, Fourth Report and Order, 34 FCC Rcd 1781, 1781-84, paras. 1-10 (2019).

¹¹⁹¹ Joint Opposition at 121-23; RWA Petition at 9-10; RWA Reply at 7-9; NTCA Petition at 10; NTCA Reply at 7-

that it had “reached a settlement concluding its investigation into whether T-Mobile USA, Inc. violated the Communications Act when it failed to correct ongoing problems with delivery of calls to rural consumers and whether it violated the FCC rule that prohibits providers from inserting false ring tones with respect to hundreds of millions of calls.”¹¹⁹² Notably, in the Order resolving its investigation, the Commission stated that “in the absence of material new evidence relating to this matter, we do not set for hearing the question of T-Mobile’s basic qualifications to hold or obtain any Commission license or authorization.”¹¹⁹³ We find no new related rule violations by T-Mobile in this proceeding. Accordingly, we find that the petitioners’ concerns have already been addressed by the Commission and are not transaction-specific.¹¹⁹⁴ In addition, we deny as speculative, concerns relating to the possibility of T-Mobile expanding its past resolved rural calling violations to current Sprint customers.¹¹⁹⁵ Indeed, T-Mobile’s 2018 consent decree resolved the issues related to its compliance with the Commission’s Rural Call Completion rules, and the conditions therein should continue to protect T-Mobile’s customers, including the acquired Sprint customers.¹¹⁹⁶ The Commission will investigate any future violations of our rules.

C. Value-Conscious Consumers and Low-Income/Lifeline Customers

341. The Greenlining Institute criticizes the proposed transaction for numerous reasons.¹¹⁹⁷ While questioning generally whether the Applicants have sufficiently demonstrated that the proposed transaction is in the public interest and that consumers will not be harmed, Greenlining focuses a number of its concerns on the impact of the proposed transaction on “value-conscious” consumers and low-income/Lifeline customers. With regard to “value-conscious consumers,” Greenlining notes that a larger percentage of T-Mobile’s and Sprint’s customer bases is lower income as compared to AT&T and Verizon Wireless.¹¹⁹⁸ It claims that New T-Mobile will have “ample incentives” to neglect value-conscious consumers, including the need to repay debt incurred in connection with the proposed transaction.¹¹⁹⁹ Common Cause et al. asserts that the proposed transaction would eliminate competition in the prepaid and wholesale markets, which in turn would have a disproportionate impact on “low-income and marginalized communities” and would “further widen the digital divide.”¹²⁰⁰ The Media Alliance echoes this concern, claiming that the proposed transaction would lead to one service provider dominating the prepaid wireless market, which in turn would pose “an existential threat to low-income Internet

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¹¹⁹² FCC, *FCC Reaches \$40 Million Settlement With T-Mobile for Rural Call Completion Violations* (Apr. 16, 2018), <https://www.fcc.gov/document/fcc-reaches-40-million-settlement-t-mobile-rural-calling>; *T-Mobile USA, Inc.*, File No. EB-IHD-16-00023247, Order and Consent Decree, 33 FCC Rcd 3737 (EB 2018) (*T-Mobile Order and Consent Decree*).

¹¹⁹³ *T-Mobile Order and Consent Decree*, 33 FCC Rcd at 3738, para. 6.

¹¹⁹⁴ See, e.g., *CenturyLink-Level 3 Order*, 32 FCC Rcd at 9586, para. 9; *SoftBank-Sprint Order*, 28 FCC Rcd at 9676, para. 85; *AT&T-Centennial Order*, 24 FCC Rcd at 13929, para. 30.

¹¹⁹⁵ *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Telecommunications, Inc., Transferor to AT&T Corp., Transferee*, Memorandum Opinion and Order, 14 FCC Rcd 3160, 3176, para. 28 (1999).

¹¹⁹⁶ *T-Mobile Order and Consent Decree*, 33 FCC Rcd at 3744-46, 3748, paras. 19-21, 29 (“T-Mobile agrees that the provisions of this Consent Decree shall be binding on its successors, assigns, and transferees.”).

¹¹⁹⁷ See generally Greenlining Petition.

¹¹⁹⁸ Greenlining Petition at 4.

¹¹⁹⁹ Greenlining Petition at 5.

¹²⁰⁰ Common Cause et al. Petition at 26-27.

access.”¹²⁰¹ Greenlining speculates that, post-transaction, New T-Mobile could simply eliminate value-conscious service plans that are not available from other service providers or stop developing new products and service plans targeted to value-conscious consumers.¹²⁰² According to Greenlining, this possibility is particularly significant to low-income families that rely upon affordable wireless service for phone calls and access to the Internet.¹²⁰³

342. Several filers express concern about the effect of the proposed transaction specifically on the availability of Lifeline services to low-income consumers.¹²⁰⁴ Parties emphasize the active role that Sprint has taken, through its subsidiaries, Virgin Mobile and Boost Mobile, in Lifeline programs.¹²⁰⁵ In particular, some commenters assert that Sprint is the main facilities-based provider that participates in the Commission’s Lifeline universal service support program for low-income consumers, and they express concern about potential loss or reduction of participation in that program post-transaction.¹²⁰⁶ They contrast Sprint’s activities in this area with T-Mobile’s more limited participation in such programs.¹²⁰⁷ Beyond the potential loss of Lifeline participation by MVNOs if they are not able to obtain reasonable wholesale arrangements post-transaction, commenters question whether New T-Mobile itself will participate in the Lifeline program, given that T-Mobile has not done so as a facilities-based provider historically, and has stated that it “believes Lifeline is ‘non-sustainable’ and will look to phase out its current Lifeline customers.”¹²⁰⁸ Commenters point to T-Mobile’s elimination of Lifeline plans in seven states in 2017 and public statements by T-Mobile executives in the same year that it considered the Lifeline program to be uneconomical and intended to phase out any voluntary participation in state or federal Lifeline programs.¹²⁰⁹ Greenlining urges the Commission to examine the harms that would result from New T-Mobile failing to participate in the Lifeline program and instead require the new company to expand its participation in the program.¹²¹⁰ Some commenters acknowledge statements by the Applicants that Sprint’s and T-Mobile’s Lifeline participation will continue, but contend that such statements are ambiguous regarding the scope and duration of that participation, as well as difficult to reconcile with the prior statements by T-Mobile regarding its participation in state and federal Lifeline programs.¹²¹¹

343. As noted by several commenters, the Applicants represent in their applications that “New

¹²⁰¹ Media Alliance Comments at 3.

¹²⁰² Greenlining Petition at 6.

¹²⁰³ Greenlining Petition at 7; *see also* Free Press Petition at 2-3 (“This deal’s irreversible harms to competition would be most acutely felt by subscribers who rely on the availability of lower-priced wireless options, and in particular by those who have low incomes—with people of color disproportionately represented in that low-income demographic and on the wrong side of the digital divide.”).

¹²⁰⁴ Common Cause et al. Petition at 26, 29; Greenlining Petition at 10-11; AFL-CIO Reply at 4; Media Alliance Comments at 3; Letter from David LaFuria, Counsel to Union Telephone Company, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed May 16, 2019) (Union Telephone May 16, 2019 *Ex Parte* Letter).

¹²⁰⁵ Common Cause et al. Petition at 26, 29; Greenlining Petition at 10-11; Media Alliance Comments at 3.

¹²⁰⁶ Common Cause et al. Petition at ii-iii, 26; AFL-CIO Reply at 4; Media Alliance Comments at 3.

¹²⁰⁷ Common Cause et al. Petition at 29; Union Telephone May 16, 2019 *Ex Parte* Letter at 2-5.

¹²⁰⁸ Common Cause et al. Petition at 29; Media Alliance Comments at 4-5; Union Telephone May 16, 2019 *Ex Parte* Letter at 4-7.

¹²⁰⁹ Common Cause et al. Petition at 29; Greenlining Petition at 10-11 (citations omitted); Union Telephone May 16, 2019 *Ex Parte* Letter at 4.

¹²¹⁰ Greenlining Petition at 11.

¹²¹¹ Common Cause et al. Petition at 29; Greenlining Petition at 10-11; Union Telephone May 16, 2019 *Ex Parte* Letter at 1-2, 5-7.

T-Mobile will also continue the Lifeline services currently provided by T-Mobile and Sprint.”¹²¹² The Applicants respond to the filers raising concerns about potential adverse effects on value-conscious, low-income, and/or Lifeline customers that “[p]repaid customers of both T-Mobile and Sprint will enjoy lower costs, higher speeds, and expanded coverage from the combined company’s nationwide 5G network.”¹²¹³ The Applicants state further that “prepaid customers of other carriers will benefit from the increased competition facilitated by the transaction as Verizon Wireless, AT&T, TracFone, and others respond to New T-Mobile with lower prices, increased investment, and enhanced service offerings.”¹²¹⁴

344. We find that the concerns raised by the commenters regarding the effect of the proposed transaction on value-conscious, low-income, and/or Lifeline consumers are addressed in significant part through the various commitments that the Applicants have filed in connection with the Commission’s review of the transaction. In particular, the Applicants have committed to divest Boost Mobile. They have agreed that New Boost should have the capacity and incentive to continue to offer innovative service plans to value-conscious and other consumers. Moreover, New Boost will enjoy access to the significantly improved New T-Mobile network, so consumers should have an even better experience, including more innovative service offers, than are currently available today. Concerns about price effects are also mitigated by the Applicants’ commitment to maintain prices at current levels for three years following the closing of the transaction.¹²¹⁵

D. Communities of Color and Supplier Diversity

345. Greenlining also has concerns that the transaction will adversely affect communities of color, which it claims are significantly more “smartphone dependent” than other consumer groups.¹²¹⁶ Greenlining further claims that “[t]he elimination of Sprint in these communities [of color] could reduce competitive choice and cause unique harm to those communities through higher prices, poor customer service or service quality and fewer plan choices that meet their needs.”¹²¹⁷ Greenlining notes that T-Mobile has not been as committed to supplier diversity as Sprint, which raises concerns as the proposed transaction will eliminate Sprint.¹²¹⁸ Greenlining urges the Commission, as part of its review, to investigate the new company’s commitment to diversity.¹²¹⁹

346. We find that Greenlining’s concerns about the effect of the proposed transaction on communities of color are addressed in the same way as commenters’ concerns about the provision of service to value-conscious, low-income, and Lifeline consumers—that is, by the commitments that T-Mobile and Sprint have made to this Commission in connection with action on the pending applications. Regarding Greenlining’s request that this Commission investigate the new company’s commitment to diversity, there is nothing in the record other than Greenlining’s speculation that would warrant us taking action on this issue.

E. E911

347. Greenlining urges the Commission not to approve the proposed transaction until it

¹²¹² Public Interest Statement at 51.

¹²¹³ Joint Opposition at 77.

¹²¹⁴ Joint Opposition at 78; *see also* Joint Opposition at 82 (“all New T-Mobile customers—whether on prepaid or postpaid plans—will enjoy the increased capacity, higher speeds and service improvements of the combined company’s network.”).

¹²¹⁵ *See generally* T-Mobile Feb. 4, 2019 Commitment Letter.

¹²¹⁶ Greenlining Petition at 7.

¹²¹⁷ Greenlining Petition at 7.

¹²¹⁸ Greenlining Petition at 12.

¹²¹⁹ Greenlining Petition at 12.

assesses whether each of T-Mobile and Sprint are in compliance with applicable requirements regarding implementation of E911 and improved location accuracy.¹²²⁰ For its part, the National Emergency Number Association (NENA) cites “the demonstrated commitment T-Mobile continues to show to 9-1-1,”¹²²¹ and states that continuing that work for the combined company will benefit New T-Mobile customers.¹²²² Because compliance with emergency communications and location accuracy regulations is a fundamental requirement for any mobile communications provider, it is not an issue specific to the proposed transaction. While Greenlining may have vague concerns, it has provided nothing more than speculation to support those concerns. NENA’s comments suggest that T-Mobile fully understands its obligations, and we have no reason at this time to question New T-Mobile’s future compliance with these important requirements.

F. 800 MHz Rebanding

348. In 2004, the Commission adopted a plan for reconfiguring the 800 MHz band in order to resolve increasing interference problems that had been plaguing public safety and other licensees authorized to operating in that part of the spectrum.¹²²³ The 800 MHz rebanding plan, which incorporated essential elements of a proposal developed by Sprint (then Nextel Corporation) and a broad coalition of commercial and public safety organizations,¹²²⁴ assigned Sprint the responsibility for paying the costs of relocating licensees operating high-site, non-cellular systems in the 800 MHz band, where they were susceptible to interference from Sprint and other cellular-architecture, multi-site systems, to a position lower in the 800 MHz band where such interference would be less likely.¹²²⁵ In particular, Sprint agreed, among other things, to pay incumbents’ costs to relocate to other portions of the 800 MHz band,¹²²⁶ and to maintain a letter of credit in an amount sufficient to complete rebanding in the event of a default by Sprint.¹²²⁷ While the 800 MHz rebanding process is nearing completion, it is not yet finished. Accordingly, we make clear that the obligations imposed on Sprint by the *800 MHz Report and Order* and subsequent Commission orders in WT Docket No. 02-55, including, but not limited to, the obligation to maintain the letter of credit, remain the obligations of Sprint and any successor-in-interest as a result of the proposed, or any subsequent, transaction.

IX. NATIONAL SECURITY, LAW ENFORCEMENT, FOREIGN POLICY, AND TRADE CONCERNS

349. When analyzing a transfer of control or assignment application that involves foreign investment, we also consider public interest issues related to national security, law enforcement, foreign policy, or trade policy concerns.¹²²⁸ The Commission has recognized its public interest analysis would

¹²²⁰ Greenlining Petition at 13.

¹²²¹ Letter from Brian Fontes, CEO, NENA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Sept. 17, 2018) (NENA Sept. 17, 2018 *Ex Parte* Letter).

¹²²² NENA Sept. 17, 2018 *Ex Parte* Letter at 1-2.

¹²²³ *Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, 19 FCC Rcd 14969 (2004) (*800 MHz Report and Order*).

¹²²⁴ *Id.* at 14974, para. 4.

¹²²⁵ *Id.* at 14977, para. 11.

¹²²⁶ *Id.* at 14988-89, paras. 32-35.

¹²²⁷ *Id.* at 15067, para. 182.

¹²²⁸ *Rules and Policies on Foreign Participation in the U.S. Telecommunications Market; Market Entry and Regulation of Foreign-Affiliated Entities*, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23918-21, paras. 59-66 (1997) (*Foreign Participation Order*), *recon. denied*, 15 FCC Rcd 18158 (2000) (in opening the U.S. telecommunications market to foreign entry in 1997, the Commission affirmed that it would consider national security, law enforcement, foreign policy, and trade policy concerns related to reportable foreign ownership

(continued....)

benefit from input by the Executive Branch agencies that have expertise in these issues. In particular, the Commission accords deference to Executive Branch agencies' unique expertise in identifying and interpreting issues of concern related to national security and law enforcement.¹²²⁹ Accordingly, the Commission considers any concerns raised by Executive Branch agencies, but the Commission makes an independent decision on the applications based on the record in the proceeding.¹²³⁰

350. *Record.* On July 25, 2018, the DOJ, Federal Bureau of Investigation, Department of Homeland Security, and Department of Defense (collectively, the Executive Branch agencies or Team Telecom) requested that the Commission defer action on the transaction until their review was complete and stated that they were reviewing the transaction for any national security, law enforcement, and public safety concerns.¹²³¹ In addition, three commenters urged the Commission to consider the national security implications of the transaction.¹²³² They raise supply chain concerns based on SoftBank's and Deutsche Telekom's business relationships with Chinese 5G equipment manufacturers Huawei and ZTE.¹²³³ They also argue that the standalone companies have a poor history of compliance with past National Security Agreements¹²³⁴ and are affiliated with other companies that have flouted U.S. law,¹²³⁵ providing cause for concern about their conduct going forward.¹²³⁶ RWA advocates deferring "a final decision on the national security implications of the proposed transaction until both the Committee on Foreign Investment in U.S. Companies (CFIUS) and Team Telecom finish their reviews."¹²³⁷ CWA argues that the Commission also

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as part of its overall public interest review of applications for international section 214 authority, submarine cable landing licenses, and declaratory rulings to exceed the foreign ownership benchmarks of section 310(b) of the Act).

¹²²⁹ *Review of Foreign Ownership Policies for Broadcast, Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act of 1934, as Amended*, Report and Order, 31 FCC Rcd 11272, 11277, para. 6 (2016) (*2016 Foreign Ownership Order*), *pet. for recon. dismissed*, 32 FCC Rcd 4780 (2017); *Foreign Participation Order*, 12 FCC Rcd at 23919, para. 62.

¹²³⁰ *Foreign Participation Order*, 12 FCC Rcd at 23921, para. 66; *see also Review of Foreign Ownership Policies for Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act of 1934, as Amended*, Second Report and Order, 28 FCC Rcd 5741, 5762, para. 34 (2013) (*2013 Foreign Ownership Order*) ("While the Commission has exercised its discretion to rely substantially on the views of Executive Branch agencies for their expertise on matters of national security, law enforcement, foreign policy and trade policy in cases involving foreign investment in U.S. common carrier and aeronautical licensees, we do not believe it would be appropriate for us essentially to delegate this statutory responsibility to such agencies.").

¹²³¹ Letter from Debbie Wheeler, Senior Telecommunications Analyst, National Security Division, DOJ, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed July 25, 2018).

¹²³² RWA Petition at 23-29; AFL-CIO Reply at 4-5; CWA Comments at 71-73; CWA Reply at 34-39.

¹²³³ RWA Petition at 23-28 (asserting that "by allowing a Japanese-influenced company and German-influenced company to merge when both have significant 5G ties to Huawei appears to run contrary to U.S. national security concerns and could impact the U.S.'s ability to compete effectively on the global 5G stage"); CWA Comments at 71-73; AFL-CIO Reply at 5 (stating that the Applicants' majority owners have histories of using telecommunications equipment manufactured by Chinese firms Huawei and ZTE that may contain security risks and asserting that the merger may increase the likelihood that compromised equipment may be used in U.S. telecommunications networks); CWA Reply at 34-37 (noting collaboration of SoftBank and Deutsche Telekom with Huawei on 5G development).

¹²³⁴ CWA Reply at 37-39 (asserting that it remains unclear whether Sprint fully complied with its agreement to purge Huawei equipment from Clearwire's network); AFL-CIO Reply at 5 (similar).

¹²³⁵ CWA Reply at 37-39 (arguing that ZTE is a SoftBank supplier and noting that ZTE in 2017 pleaded guilty to conspiring to illegally ship U.S. goods and technology to Iran in violation of U.S. sanctions and in 2018 violated probation imposed in 2017 by issuing false statements).

¹²³⁶ AFL-CIO Reply at 5; CWA Reply at 37-39.

¹²³⁷ RWA Petition at 28-29; *see also* AFL-CIO Reply at 5 (similar).

must perform its own independent evaluation of these concerns and impose conditions in addition to any imposed by the Executive Branch.¹²³⁸

351. The Applicants assert that their foreign ownership is consistent with Commission precedent, including prior review and approval of such ownership of Sprint and T-Mobile in the past, and contend that both Softbank and Deutsche Telekom have been good stewards of Sprint and T-Mobile, respectively, and that there is no reason to expect that to change with the transaction.¹²³⁹ The Applicants claim that the transaction will strengthen national security through the improved U.S. position in 5G that they expect to result from the transaction.¹²⁴⁰ They state that they are working with the CFIUS and Team Telecom agencies to resolve any concerns they may have about the transaction, expect those reviews to result in a new security agreement, and urge the Commission to follow its long-standing policy of according deference to the expert advice of the Executive Branch agencies on national security concerns in the context of the Commission's public interest analysis.¹²⁴¹ For its part, Huawei disputes the notion that use of its products hinders U.S. security or innovation, and argues that it operates entirely independent of the Chinese government.¹²⁴²

352. On December 17, 2018, Team Telecom withdrew its request for the Commission to defer action on the transaction.¹²⁴³ The agencies state that they "reviewed the information provided by the applicants and analyzed the measures undertaken by the applicants to address potential national security, law enforcement, and public safety issues," and "[b]ased on this review . . . they have no objection to the grant of the applications."¹²⁴⁴ T-Mobile notified the Commission that CFIUS has also completed its review of the proposed transaction.¹²⁴⁵

353. *Discussion.* We find, based on the record before us, that we need not impose any special conditions on the proposed transaction based on the national security, law enforcement, foreign policy, or trade policy concerns raised by parties. In assessing the public interest, we take into account the record developed in each particular case and accord appropriate deference to the expertise of the Executive

¹²³⁸ CWA Reply at 38-39 (urging the Commission both to work with CFIUS "to ensure that Sprint fully complied with the 2013 SoftBank/Sprint/Clearwire National Security Agreement, and that the Applicants make binding and verifiable commitments to terminate any existing relationships with vendors that pose potential security threats, and that the Applicants remove all equipment of these vendors from their operations" and to "require the Applicants to participate in regular national security audits to ensure compliance with Commission standards in addition to any national security agreement required by CFIUS").

¹²³⁹ Joint Opposition at 119-20; *see also, e.g.*, Consumers' Research Comments at 2-3 (arguing that there will be no substantive increase in foreign control as a result of the transaction and waivers of the 25% foreign ownership limit should be extended).

¹²⁴⁰ Joint Opposition at 119-20.

¹²⁴¹ Joint Opposition at 120-21.

¹²⁴² Huawei Technologies Co., Ltd. and Huawei Technologies USA, Inc. Reply Comments at 1-4 (filed Sept. 18, 2018) (Huawei Reply).

¹²⁴³ Letter from Loyaan A. Egal, Deputy Chief, Foreign Investment Review Staff, and David D. Jividen, Attorney Advisor, National Security Division, DOJ, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1 (filed Dec. 17, 2018) (DOJ Dec. 17, 2018 *Ex Parte* Letter).

¹²⁴⁴ DOJ Dec. 17, 2018 *Ex Parte* Letter at 1.

¹²⁴⁵ Letter from Nancy Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 1, Attach. A (filed Dec. 19, 2018) (submitting a press release from T-Mobile and Sprint that "announces that the proposed transaction has received approval from the Committee on Foreign Investment in the U.S. and that the U.S. Department of Justice, Department of Homeland Security, and Department of Defense, collectively referred to as Team Telecom"); *see also* Letter from John Legere, CEO, T-Mobile, to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 1 (filed Feb. 4, 2019) (stating that "our merger has completed national security review and . . . Team Telecom has notified the Commission that it has no objection to grant of our transaction.").

Branch agencies on national security, law enforcement, and other concerns related to foreign ownership of Commission licensees.¹²⁴⁶ In this case, after review of the transaction, Team Telecom notified the Commission that it has no objection to grant of the applications and did not request that the Commission condition the grant of the applications.¹²⁴⁷ In addition, as noted above, T-Mobile has notified the Commission that CFIUS has completed its review.¹²⁴⁸

354. With regard to commenters' allegations that the Applicants have a poor compliance history with past national security agreements, the Commission is not a party to those agreements and has no specific information regarding issues with Applicants' compliance. The Applicants state they are working with the Executive Branch agencies to address any concerns.¹²⁴⁹ The Executive Branch agencies have not brought to the Commission's attention any issues with the Applicants' compliance with the agreements, and have not requested that the Commission condition our grant of the applications.¹²⁵⁰ Similarly, with regard to commenters' concerns regarding supply chain issues, Team Telecom has analyzed the measures taken by the Applicants to address potential national security, law enforcement, and public safety issues, and has advised us it does not object to grant of the applications.¹²⁵¹ We reject as unnecessary CWA's request that the Commission take independent action by requiring an audit separate from any specific requirements set out in any security agreements between the Applicants and the Executive Branch agencies or impose any special conditions on this transaction. Taking into consideration the recommendation of the Executive Branch agencies and based on review of the record before us, we find that the proposed transaction does not raise national security, law enforcement, foreign policy, or trade policy concerns that would require imposition of special conditions or that would require that we prohibit the proposed transaction.

X. SECTION 310(B) FOREIGN OWNERSHIP REVIEW AND DECLARATORY RULING

A. Review of Foreign Ownership in the Controlling U.S. Parents of Common Carrier Wireless and Satellite Radio Earth Station Licensees

355. Section 310(b)(4) of the Act establishes a 25% benchmark for investment by foreign individuals, governments, and corporations in U.S.-organized entities that directly or indirectly control U.S. common carrier wireless and satellite radio earth station licensees.¹²⁵² This section of the Act also

¹²⁴⁶ 2016 *Foreign Ownership Order*, 31 FCC Rcd at 11277, para. 6; *Foreign Participation Order*, 12 FCC Rcd at 23919, paras. 61-62.

¹²⁴⁷ DOJ Dec. 17, 2018 *Ex Parte* Letter at 1.

¹²⁴⁸ See *supra* n.1245.

¹²⁴⁹ Joint Opposition at 120-21.

¹²⁵⁰ DOJ Dec. 17, 2018 *Ex Parte* Letter at 1.

¹²⁵¹ DOJ Dec. 17, 2018 *Ex Parte* Letter at 1. We note that the Executive Branch agencies have not raised any additional national security or supply chain-related concerns since the release of the *Supply Chain Executive Order* in May of this year. We also note that the Commission and other U.S. government agencies are actively addressing possible issues with the use of Huawei and ZTE equipment in other proceedings. See, e.g., *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Notice of Proposed Rulemaking, 33 FCC Rcd 4058 (2018); Executive Order 13873, 84 Fed. Reg. 22689, Securing the Information and Communications Technology and Services Supply Chain (May 15, 2019), <https://www.whitehouse.gov/presidential-actions/executive-order-securing-information-communications-technology-services-supply-chain/>.

¹²⁵² 47 U.S.C. § 310(b)(4) ("No broadcast or common carrier or aeronautical en route or aeronautical fixed radio station license shall be granted to or held by . . . any corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof, or by any corporation organized under the laws of a foreign country, if the Commission finds that the public interest will be served by the refusal or revocation of such license.").

grants the Commission discretion to allow higher levels of foreign ownership in a licensee's controlling U.S.-organized parent unless the Commission finds that the public interest would be served by refusing to permit such foreign ownership.¹²⁵³ The Commission's public interest analysis under section 310(b)(4) when an entity proposes to exceed the 25% benchmark also considers national security, law enforcement, foreign policy, or trade policy issues that may be raised by the foreign ownership.¹²⁵⁴

356. T-Mobile, on behalf of its current and future licensee and lessee subsidiaries (Licensee-Subsidiaries), has filed a petition for declaratory ruling, pursuant to section 310(b)(4) of the Act¹²⁵⁵ and section 1.5000(a)(1) of the Commission's rules,¹²⁵⁶ that it would not serve the public interest to prohibit the post-closing foreign ownership of T-Mobile in excess of the 25% benchmark in section 310(b)(4).¹²⁵⁷ T-Mobile filed the petition in connection with the proposed transfer of control to T-Mobile of common carrier wireless licenses and leases and common carrier fixed satellite earth station licenses held by subsidiaries of Sprint, as well as the *pro forma* transfer of licenses and leases held by subsidiaries of T-Mobile.¹²⁵⁸

357. As noted in section II above, following consummation of the proposed transaction, 69% of T-Mobile's fully diluted shares of common stock would be held by wholly-owned subsidiaries of Deutsche Telekom (approximately 42%) and SoftBank (approximately 27%), subject to a proxy that would be held by Deutsche Telekom to direct the voting of SoftBank's T-Mobile shares.¹²⁵⁹ The remaining approximately 31% of T-Mobile's fully diluted shares of common stock would be held by its public shareholders, none of which would hold 5% or more of T-Mobile's shares.¹²⁶⁰ T-Mobile states that, as a result of having the right to designate a majority of T-Mobile's Board members¹²⁶¹ and the right to direct the voting of SoftBank's shares, T-Mobile's controlling shareholder, Deutsche Telekom, would retain *de facto* control of T-Mobile post-closing even though Deutsche Telekom's shareholdings in T-Mobile would drop below 50%.

358. The petition asks the Commission specifically to approve, under section 1.5001(i) of the

¹²⁵³ 47 U.S.C. § 310(b)(4). Under the Commission's secondary market rules, spectrum lessees (and spectrum sublessees) providing common carrier service are subject to the same foreign ownership requirements that apply to common carrier licensees under sections 310(a) and (b) of the Act. 47 CFR §§ 1.9020(d)(2)(ii), 1.9030(d)(2)(ii), 1.9035(e)(1).

¹²⁵⁴ *Foreign Participation Order*, 12 FCC Rcd at 23918-21, paras. 59-66.

¹²⁵⁵ 47 U.S.C. § 310(b)(4).

¹²⁵⁶ 47 CFR § 1.5000(a)(1). The rules applicable to foreign ownership of common carrier licensees and spectrum lessees are set forth in sections 1.5000 through 1.5004 of the Commission's rules, 47 CFR §§ 1.5000-1.5004. *2016 Foreign Ownership Order*, 31 FCC Rcd 11272; *2013 Foreign Ownership Order*, 28 FCC Rcd 5741.

¹²⁵⁷ T-Mobile Section 310(b) Petition.

¹²⁵⁸ T-Mobile Section 310(b) Petition at 3.

¹²⁵⁹ Public Interest Statement at 6.

¹²⁶⁰ T-Mobile Section 310(b) Petition at 5-7. Each share of Sprint common stock issued and outstanding immediately prior to closing (other than shares held by Galaxy Investment Holdings, Inc. and Starburst I, Inc., which are subsidiaries of SoftBank Capital and collectively own approximately 84% of Sprint, and shares held directly by Sprint as treasury stock), would be converted into the right to receive 0.10256 shares of T-Mobile common stock. SoftBank and its affiliates would receive the same amount of T-Mobile common stock per share of Sprint common stock as all other Sprint stockholders. Public Interest Statement at 5.

¹²⁶¹ T-Mobile's Board of Directors would be comprised of 14 members. Pursuant to the Business Combination Agreement, Deutsche Telekom would designate nine directors (at least two of whom would be independent). SoftBank would designate four directors (at least two of whom would be independent). The remaining director would be the CEO of the combined company, John Legere, T-Mobile's current CEO.

rules,¹²⁶² the direct and indirect equity and voting interests that would be held in the combined company upon closing by the following foreign individuals and entities at levels exceeding 5% of the reorganized T-Mobile's equity and/or voting interests, specifically: Deutsche Telekom Holding B.V. (DT Holding); T-Mobile Global Holding GmbH (T-Mobile Holding); T-Mobile Global Zwischenholding GmbH (T-Mobile Global);¹²⁶³ Deutsche Telekom; Kreditanstalt für Wiederaufbau (KfW); the Federal Republic of Germany (FRG);¹²⁶⁴ SoftBank Group Capital Limited (SoftBank Capital); SoftBank; and Mr. Masayoshi Son.¹²⁶⁵ The petition also requests advance approval, under section 1.5001(k)(1) of the rules,¹²⁶⁶ for Deutsche Telekom and the foreign-organized subsidiaries through which it would hold its interests in the reorganized T-Mobile to increase the level of their controlling ownership interests in the reorganized T-Mobile, at some future time, up to any amount, including 100% of T-Mobile's equity and voting;¹²⁶⁷ and advance approval, under section 1.5001(k)(2) of the rules,¹²⁶⁸ for the combined company's non-controlling foreign interest holders, SoftBank Group, SoftBank, and Mr. Son, to increase their aggregate interests in T-Mobile, at some future time, up to and including a non-controlling 49.99% equity and voting interest in T-Mobile.¹²⁶⁹

359. T-Mobile notes that the Commission has previously approved 100% aggregate foreign ownership of T-Mobile, including specifically by Deutsche Telekom and the foreign-organized, wholly-owned subsidiaries through which Deutsche Telekom would continue to hold its investment in T-Mobile post-closing. T-Mobile's existing foreign ownership ruling also grants advance approval for KfW and the FRG to increase their non-controlling interests in T-Mobile at some future time, up to and including a non-controlling, direct and/or indirect 49.99% equity and/or voting interest in T-Mobile.¹²⁷⁰ T-Mobile also states that the Commission similarly has authorized 100% foreign ownership of Sprint by SoftBank and its direct, wholly-owned subsidiary, SoftBank Capital.¹²⁷¹ That ruling also authorizes Mr. Masayoshi Son, a Japanese citizen and Chief Executive Officer of SoftBank Group, to hold up to and including a

¹²⁶² 47 CFR § 1.5001(i).

¹²⁶³ Deutsche Telekom Holding B.V. (DT Holding), which is an indirect, wholly-owned subsidiary of Deutsche Telekom, would hold Deutsche Telekom's 42% interest in T-Mobile directly. DT Holding is organized in the Netherlands and is a direct, wholly-owned subsidiary of T-Mobile Global Holding GmbH (T-Mobile Holding), a limited company formed in Germany. T-Mobile Holding is, in turn, wholly owned by T-Mobile Global Zwischenholding GmbH (T-Mobile Global), a limited company formed in Germany that is directly wholly owned by Deutsche Telekom.

¹²⁶⁴ Kreditanstalt für Wiederaufbau (KfW), a bank controlled by the German government and federal states, holds approximately 17% of Deutsche Telekom's equity and voting interests. The Federal Republic of Germany (FRG) holds approximately 15% of Deutsche Telekom's equity and voting interests. FRG also directly holds an approximately 80% interest in KfW.

¹²⁶⁵ SoftBank Capital, a U.K. limited company, would hold SoftBank's 27% interest in T-Mobile directly, subject to Deutsche Telekom's proxy to direct the voting of SoftBank's T-Mobile shares. SoftBank Capital is a direct, wholly-owned subsidiary of SoftBank. Mr. Masayoshi Son, a citizen of Japan, is the CEO of SoftBank and holds 21% of its equity and voting interests. T-Mobile Section 310(b) Petition at 7.

¹²⁶⁶ 47 CFR § 1.5001(k)(1).

¹²⁶⁷ T-Mobile Section 310(b) Petition at 8.

¹²⁶⁸ 47 CFR § 1.5001(k)(2).

¹²⁶⁹ T-Mobile Section 310(b) Petition at 8.

¹²⁷⁰ T-Mobile Section 310(b) Petition at 3; *see also International Authorizations Granted*, Public Notice, 29 FCC Rcd 140, 142 (IB 2014) (granting T-Mobile's section 310(b) petition for declaratory ruling under section 1.5000(a) of the rules).

¹²⁷¹ T-Mobile Section 310(b) Petition at 3 (citing *Section 214 Applications and International Authorizations Granted*, Public Notice, 31 FCC Rcd 7743, 7744 (IB 2016) (*Section 214 Applications and International Authorizations Public Notice*)).

non-controlling, direct and/or indirect 49.99% equity and/or voting interest in Sprint.¹²⁷² According to T-Mobile, no new foreign individuals or foreign-organized entities not previously approved by the Commission would be introduced into the combined company's ownership structure as a result of this transaction.¹²⁷³

360. The only comments we received objecting to grant of the Petition based on the foreign ownership interests that would be held in T-Mobile post-closing were those raising national security issues, which we discuss above.¹²⁷⁴ We therefore find that the national security, law enforcement, public safety and other related concerns raised by parties associated with the foreign ownership of the applicants do not require any special conditions on this transaction. Therefore, based on our review of the record under section 310(b)(4) of the Act and the Commission's foreign ownership rules and policies, we find that the public interest would not be served by prohibiting the foreign ownership that would be held in T-Mobile post-closing.

B. Declaratory Ruling

361. We grant T-Mobile's Petition subject to the conditions set out below. First, this ruling authorizes aggregate foreign ownership of T-Mobile, as the controlling U.S. parent of the subject common carrier Licensee-Subsidiaries, to exceed, directly and/or indirectly, 25% of T-Mobile's equity and/or voting interests, subject to the terms and conditions set forth in section 1.5004 of the rules,¹²⁷⁵ including the requirement to obtain Commission approval before foreign ownership of the T-Mobile Licensee-Subsidiaries exceeds the terms and conditions of this ruling.

362. In addition, pursuant to section 1.5001(i) of the rules, this ruling specifically permits the following direct and/or indirect foreign equity and voting interests which we find would be held in T-Mobile upon closing:¹²⁷⁶ DT Holding, T-Mobile Holding, T-Mobile Global, and Deutsche Telekom (42% equity and 69% voting interest);¹²⁷⁷ KfW (7.14% equity and 17% voting interest); the FRG (12% equity and 32% voting interest); SoftBank Capital and SoftBank (27% equity and 0.00% voting interest); and Mr. Son (5.67% equity and 0.00% voting interest). This ruling also specifically permits DT Holding, T-Mobile Holding, T-Mobile Global, and Deutsche Telekom to increase the aggregate level of their controlling ownership interests in the reorganized T-Mobile, at some future time, up to any amount, including 100% of T-Mobile's equity and voting interests; and specifically permits the combined company's non-controlling foreign interest holders, SoftBank Group, SoftBank, and Mr. Son, to increase their aggregate interests in T-Mobile, at some future time, up to and including a non-controlling 49.99% equity and voting interest in T-Mobile.

363. Finally, under this ruling, after closing T-Mobile would continue to have an affirmative duty to monitor its foreign equity and voting interests, calculate these interests consistent with the principles enunciated by the Commission, including the standards and criteria set forth in sections 1.5002

¹²⁷² *Section 214 Applications and International Authorizations Public Notice*, 31 FCC Rcd at 7744.

¹²⁷³ T-Mobile Section 310(b) Petition at 3.

¹²⁷⁴ See section IX: National Security, Law Enforcement, Foreign Policy, and Trade Concerns.

¹²⁷⁵ 47 CFR § 1.5004.

¹²⁷⁶ The rules explaining how to calculate indirect equity interests and voting interests for purposes of our foreign ownership review are set forth in section 1.5002 of the rules, 47 CFR § 1.5002. This ruling applies only to foreign ownership calculations under section 310(b) and does not authorize any transfers of control that might occur or be contemplated in the future.

¹²⁷⁷ Deutsche Telekom would hold an aggregate 69% controlling voting interest in T-Mobile upon closing by virtue of Deutsche Telekom's 42% common stock interest and the proxy granted to Deutsche Telekom by SoftBank to direct the voting of SoftBank's 27% common stock interest. For purposes of our foreign ownership calculations, we treat the 69% voting interest (and the 42% equity interest) that would be held by Deutsche Telekom in T-Mobile post-closing as also being held by Deutsche Telekom's named wholly-owned subsidiaries.

through 1.5003 of the Commission's rules,¹²⁷⁸ and otherwise ensure continuing compliance with the provisions of section 310(b) of the Act.

XI. DISH LICENSE EXTENSIONS, COMMITMENTS, AND PROPOSED MODIFICATIONS

364. On July 26, 2019, DISH filed applications, pursuant to section 309(c) of the Communications Act,¹²⁷⁹ for an extension of time to complete construction of its facilities for its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses.¹²⁸⁰ With those requests, DISH expressed a willingness to accept a number of conditions that would generally require it to construct a nationwide 5G broadband network, subjecting itself to making significant financial payments if it fails do so.¹²⁸¹ As discussed above, as part of the proposed settlement of the DOJ's antitrust suit against the merger of T-Mobile and Sprint, DISH would be required by the *DOJ Proposed Final Judgment* to comply with these commitments.¹²⁸²

365. For the reasons discussed below, we find that, upon DISH's purchase of Boost Mobile, granting the requests for extension of time to complete construction, as conditioned, would serve the public interest, convenience, and necessity. To better enable DISH to construct a 5G broadband network, we also propose in that scenario to modify certain of DISH's licenses pursuant to our authority under section 316 of the Communications Act.¹²⁸³ We expect that on the current record these modifications will serve the public interest. However, we direct WTB to make a final public interest determination following the protest period in accordance with the procedures in section 316. These extensions, commitments, and proposed modifications will not take effect unless and until consummation of the Boost Mobile divestiture by DISH. Moreover, the proposed modifications will not become final until adequate time for protest has passed under our rules.

366. We do not address in this MO&O any license changes of control related to DISH, such as those contemplated by the *DOJ Proposed Final Judgment*. The transfer of 800 MHz licenses and any leasing of 600 MHz spectrum contemplated therein will be addressed in due course following submission of appropriate applications and in accordance with the Communications Act and Commission rules. Similarly, we do not herein address DISH's ability to offer international service pursuant to section 214.

367. *Background.* Among other licenses, DISH currently holds AWS-4, Lower 700 MHz E Block, and AWS H Block licenses. For the AWS-4 and Lower 700 MHz E Block licenses, DISH is currently required to provide signal coverage and offer service to 70% of the population of each license's service area by March 7, 2020,¹²⁸⁴ and for the AWS H Block licenses, to provide signal coverage and offer service to 75% of the population by April 29, 2022. DISH has previously explained that it

¹²⁷⁸ 47 CFR §§ 1.5002-1.5003. See also 47 CFR § 1.5004, Note to paragraph (a).

¹²⁷⁹ 47 U.S.C. § 309(c).

¹²⁸⁰ Application for Extension of Time of American H Block Wireless L.L.C., ULS File No. 0008741236 (filed July 26, 2019); Application for Extension of Time of DBSD Corp., ULS File No. 0008741420 (filed July 26, 2019); Application for Extension of Time of Gamma Acquisition L.L.C., ULS File No. 0008741603 (filed July 26, 2019); and Application for Extension of Time of Manifest Wireless L.L.C., ULS File No. 0008741789 (filed July 26, 2019).

¹²⁸¹ Letter from Jeffrey H. Blum, Senior Vice President, Public Policy and Government Affairs, DISH, to Donald Stockdale, Chief, Wireless Telecommunications Bureau, WT Docket No. 18-197 (filed July 26, 2019) (DISH July 26, 2019 Commitments Letter).

¹²⁸² *DOJ Proposed Final Judgment* at 23.

¹²⁸³ 47 U.S.C. § 316(a).

¹²⁸⁴ For the Lower 700 MHz E Block licenses, DISH can alternatively provide signal coverage and offer service to 70% of the geographic area.

anticipates meeting those obligations using a narrowband IoT network.¹²⁸⁵

368. DISH now proposes to construct what it describes as a “first-of-its-kind” 5G network built from the ground up with an architecture that can take advantage of expected 5G functionality.”¹²⁸⁶ DISH explains that its agreement with the Applicants will allow it to use New T-Mobile’s narrowband IoT network rather than building its own, which allows it to redeploy those resources to build the 5G network instead.¹²⁸⁷ DISH further contends that an extension of the construction deadlines for its licenses will enable it to construct its proposed 5G broadband network (as opposed to a narrowband IoT network) by June 2023.¹²⁸⁸

369. DISH commits to deploying 5G Broadband Service on its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses to at least 20% of the United States population by June 14, 2022, and also deploying a core network by that date.¹²⁸⁹ DISH also commits to deploying 5G Broadband Service on its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses to at least 70% of the United States population by June 14, 2023.¹²⁹⁰ DISH further commits by June 14, 2023, to providing download speeds of at least 35 Mbps to at least 70% of the United States population (as verified by a drive test); to deploying at least 15,000 5G sites; and to deploying at least 30 megahertz of downlink 5G spectrum averaged over all DISH 5G sites deployed nationwide.¹²⁹¹ DISH also commits to deploying 5G Broadband Service on each of its 600 MHz licenses by June 14, 2023, four years earlier than the June 14, 2027, interim construction milestone for such licenses.¹²⁹² In particular, DISH commits to offer 5G Broadband Service using its 600 MHz licenses to at least 70% of the U.S. population no later than June 14, 2023, and to at least 75% of the population in each Partial Economic Area (PEA) no later than June 14, 2025.¹²⁹³

370. DISH contends that its new network will provide a new nationwide facilities-based

¹²⁸⁵ Letter from Jeffrey H. Blum, Senior Vice President, Public Policy and Government Affairs, DISH, to Donald Stockdale, Chief, Wireless Telecommunications Bureau, attached to license record for AWS-4 call sign T070272001 (Sept. 21, 2018); Required Notification of Manifest Wireless L.L.C., ULS File No. 0007690895, Attach., DBSD Services Limited, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C.’s Consolidated Interim Construction Notification for AWS-4 and Lower 700 MHz E Block Licenses (filed Mar. 7, 2017). We take no position herein on whether DISH’s contemplated IoT deployment would in fact satisfy its existing obligations.

¹²⁸⁶ DISH July 26, 2019 Commitments Letter at 2.

¹²⁸⁷ *Id.*; DISH Aug. 1, 2019 *Ex Parte* Letter at 3; The Motley Fool, DISH Q2 2019 Earnings Conference Call Transcript, <https://www.fool.com/earnings/call-transcripts/2019/07/30/dish-network-corp-dish-q2-2019-earnings-call-trans.aspx> (last visited Oct. 14, 2019).

¹²⁸⁸ DISH July 26, 2019 Commitments Letter at 1-5. With respect to its previously announced plans to rely upon construction of an IoT network to satisfy the construction obligations associated with its Lower 700 MHz E Block and AWS-4 licenses, DISH is waiving its rights to use these licenses, as well as its 600 MHz and AWS H Block licenses, under the FCC’s flexible use policies and instead have these licenses conditioned on an obligation to provide 5G Broadband Service. *Id.*, Attach. A at 1. This condition would not preclude DISH from providing IoT as a service in addition to the 5G Broadband Service, but DISH would be precluded from relying on IoT operations to satisfy its buildout obligations under its commitments.

¹²⁸⁹ DISH July 26, 2019 Commitments Letter at 3. DISH defines 5G Broadband Service as the GPP Release 15 (or newer) standard capable of providing Enhanced Mobile Broadband (eMBB) functionality. DISH July 26, 2019 Commitments Letter, Attach. A at 7. “5G” is defined as the 5G New Radio interface standard as described in 3GPP Release 15 or 3GPP Release 16. *Id.*

¹²⁹⁰ DISH July 26, 2019 Commitments Letter at 3.

¹²⁹¹ DISH July 26, 2019 Commitments Letter at 3.

¹²⁹² *Id.* at 3-4. *See* 47 CFR § 27.14(t).

¹²⁹³ DISH July 26, 2019 Commitments Letter at 4, Attach. A at 2.

entrant into the mobile wireless industry, and that its deployment will promote U.S. leadership in 5G.¹²⁹⁴ DISH has also claimed that its acquisition of Boost Mobile and the other Sprint prepaid assets will facilitate and expedite its entry into the mobile wireless market,¹²⁹⁵ and the approximately 9 million subscribers it is acquiring will provide it with a “jump-start[,]” as it will not have to build a subscriber base “from scratch.”¹²⁹⁶ We also note that the *DOJ Proposed Final Judgment* not only requires the Applicants to sell to DISH Sprint’s prepaid mobile wireless businesses—approximately 9.3 million subscribers, associated employees, dealer network, and other assets—but also provides DISH the opportunity to acquire from New T-Mobile at least 20,000 cell sites and at least 400 retail stores as those sites and stores are de-commissioned during the New T-Mobile network roll-out.¹²⁹⁷

371. The *DOJ Proposed Final Judgment* also requires New T-Mobile and DISH to enter into a “full” MVNO agreement consistent with the Applicants’ previous commitments to the Commission,¹²⁹⁸ and a roaming agreement that provides nationwide, non-discriminatory roaming.¹²⁹⁹ The *DOJ Proposed Final Judgment* requires New T-Mobile and DISH to negotiate in good faith to reach an agreement permitting New T-Mobile to lease some or all of DISH’s 600 MHz spectrum for deployment of service to retail consumers by New T-Mobile, thus making the 600 MHz spectrum available for consumer use before DISH has completed building out its network and assisting New T-Mobile in transitioning consumers to its 5G network.¹³⁰⁰ Finally, the *DOJ Proposed Final Judgment* provides DISH the option to acquire New T-Mobile’s 800 MHz licenses within three years, subject to Commission approval.¹³⁰¹

372. *Discussion.* We find it would be in the public interest to grant DISH’s requested extension of time to complete construction of its facilities for its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses pursuant to section 1.925 of our Rules,¹³⁰² with significant conditions to ensure that DISH fulfills its commitments, contingent and effective upon consummation of the divestitures contemplated by the *DOJ Proposed Final Judgment*. We agree with DISH that its acquisition of Sprint’s prepaid assets along with the set of MVNO, wholesale, and roaming rights agreed to with the Applicants provides DISH the means to provide nationwide service on a competitive 5G network. We expect as DISH’s customers transition to DISH’s own network, they will continue to enjoy the same high or higher quality of coverage and service.

373. We find that grant of the requested extension of time to construct AWS-4, Lower 700 MHz E Block, and AWS H Block facilities is warranted under section 1.925(b)(3)(ii), which provides that the Commission may grant a request for waiver on the basis that “[i]n view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.”¹³⁰³ We conclude that the

¹²⁹⁴ DISH July 26, 2019 Commitments Letter at 1; *see also* DISH Aug. 1, 2019 *Ex Parte* Letter at 3.

¹²⁹⁵ DISH July 26, 2019 Commitments Letter at 1-2; DISH Aug. 1, 2019 *Ex Parte* Letter at 3.

¹²⁹⁶ The Motley Fool, DISH Q2 2019 Earnings Conference Call Transcript, <https://www.fool.com/earnings/call-transcripts/2019/07/30/dish-network-corp-dish-q2-2019-earnings-call-trans.aspx> (last visited Oct. 14, 2019).

¹²⁹⁷ *DOJ Proposed Final Judgment* at 13-18.

¹²⁹⁸ *Id.* at 19-20.

¹²⁹⁹ *Id.* at 20.

¹³⁰⁰ *Id.* at 18-19; *DOJ Competitive Impact Statement* at 10.

¹³⁰¹ *DOJ Proposed Final Judgment* at 11-13. If DISH elects not to acquire the 800 MHz licenses, it will be required to pay a penalty of \$360,000,000 to the United States, unless DISH has deployed a core network and offered 5G Broadband Service to at least 20% of the U.S. population over DISH’s facilities-based network within three years of the closing of the sale of Sprint’s prepaid mobile wireless businesses to DISH. *Id.* at 12.

¹³⁰² 47 CFR § 1.925.

¹³⁰³ 47 CFR § 1.925(b)(3)(ii).

circumstances surrounding DISH's contemplated acquisition of divestiture assets associated with the proposed merger of T-Mobile and Sprint present unique factual circumstances that would render denial of a waiver of sections 27.14(g), (q), and (r) to extend the construction period for the DISH AWS-4, Lower 700 MHz E Block, and AWS H Block facilities contrary to the public interest.

374. We expect that combining DISH's 5G deployment commitments with the assets it is receiving from and agreements it has reached with T-Mobile and Sprint, pursuant to the *DOJ Proposed Final Judgment*, will advance the deployment of advanced 5G wireless services. We anticipate these arrangements will promote competition.¹³⁰⁴ Building on an existing customer base, DISH will have access to key elements essential to developing a facilities-based wireless service offering, such as ample spectrum in multiple bands, an existing and significant customer base, and access to existing infrastructure. Moreover, DISH's anticipated 5G network build would further increase its incentives, as the buyer of Boost, to grow market share and provide robust competition.

375. Regarding DISH's request that we modify its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses to extend and align their license terms and also to adjust the final and interim construction deadlines for DISH's 600 MHz licenses, we adopt an order of proposed modification. Pursuant to our authority under section 316 of the Communications Act¹³⁰⁵ and section 1.87 of our rules,¹³⁰⁶ we propose to modify DISH's licenses by accelerating the construction deadline for DISH's 600 MHz licenses until June 14, 2025, while removing the interim construction deadline, and extending the terms of DISH's AWS-4, AWS H Block, and Lower 700 MHz E Block licenses until June 14, 2023. DISH has indicated that it will not protest these proposed license modifications, necessary to effectuate a portion of the commitments DISH has made.¹³⁰⁷ However, both section 316 of the Communications Act and section 1.87 of our rules provide that any other licensee or permittee who believes that its license or permit would be modified by the proposed action may also protest the proposed action.¹³⁰⁸ Any such protest must be filed with the Commission within 30 days of the date of release of this Order of Proposed Modification.

376. To assure the Commission that it will actually use the extended construction periods requested for its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses to build a new 5G Broadband Service network, DISH has made a number of commitments regarding the transfer of control of its licenses and the use of its network.¹³⁰⁹ DISH commits to not transfer control of its 600 MHz or AWS-4 licenses for six years without the advance approval of both the Commission and the DOJ.¹³¹⁰ It also commits to not providing, in any 12-month period, in any PEA for its 600 MHz licenses or in any Economic Area for its AWS-4 licenses, more than 35% of the capacity of its 5G network to any of the three largest wireless facilities-based service providers (alone or in combination) without prior

¹³⁰⁴ Although we recognize additional potential benefits associated with DISH's entry as a fourth national facilities-based wireless provider, our conclusion that approval of the T-Mobile/Sprint transaction is in the public interest is based upon the conditions proposed by the Applicants on May 20, 2019, including the divestiture of Boost under commitments pertaining to its operation as an MVNO pending any potential facilities deployment, and does not depend on any additional requirements, such as those contained in the *DOJ Proposed Final Judgment* or in the resolutions reached by other agencies reviewing the transaction.

¹³⁰⁵ 47 U.S.C. § 316.

¹³⁰⁶ 47 CFR § 1.87.

¹³⁰⁷ DISH July 26, 2019 Commitments Letter at 2 & n.2.

¹³⁰⁸ 47 U.S.C. § 316(a)(2); 47 CFR § 1.87(c).

¹³⁰⁹ DISH July 26, 2019 Commitments Letter, Attach. A at 3.

¹³¹⁰ *Id.* Even without this commitment, DISH would need the Commission's prior approval to transfer control of any of its licenses. 47 U.S.C. § 310(d).

Commission approval.¹³¹¹ These commitments will be imposed as conditions of the grant of the requested extensions of time. We also note that in determining whether we would provide prior approval to any such proposed transaction or arrangement, we would take into account in determining whether such transactions would serve the public interest, the extent to which they could promote competition and avoid unjust enrichment.

377. The significant public interest benefits promised by DISH will occur only if it actually constructs the 5G Broadband Service network it has committed to build, with the speeds and quality of service it has committed to provide. Although DISH has significant commercial incentives to build its proposed 5G network,¹³¹² it will nonetheless be a significant and expensive undertaking: DISH is planning on spending \$10 billion.¹³¹³ We therefore determine that we should impose as conditions of approval of DISH's request to extend the construction deadlines for its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses until June 14, 2023, all of the restrictions and commitments made by DISH in sections II through VII of Attachment A of DISH's July 26, 2019 letter, with the definitions contained in section IX of that Attachment. These conditions will create additional financial incentives, totaling in the billions of dollars, to ensure DISH undertakes its committed buildout.

378. In particular, DISH committed, and we will impose as conditions to our grant, to make significant payments to the U.S. Treasury if it does not meet its commitments. As discussed above, regarding the conditions placed on our approval of the T-Mobile/Sprint applications, although DISH described these payments as "voluntary contributions," because we are imposing these commitments as conditions to our approval and on DISH's licenses, they are binding on DISH. If DISH fails to meet the conditions of our approval, it *must* make the payments required. In addition, DISH continues to be subject to all of the Commission's other enforcement and regulatory powers, including the loss of part or all of any of its licenses for failing to meet its build-out requirements.¹³¹⁴

379. If DISH fails to provide 5G broadband service to at least 20% of the United States population and has not deployed a core network by June 14, 2022, using its AWS-4, Lower 700 MHz E Block, and AWS H Block licenses, then with regard to *each* frequency band, if it misses the population goal by 25% or less (i.e., 4% of the U.S. population or less), then DISH shall pay \$16 million. Thus, for example, if DISH is capable of providing service to 21% of the U.S. population using its AWS-4 licenses, but only 19% of the population using its Lower 700 MHz E Block and AWS H Block licenses, then DISH would be required to pay \$32 million to the U.S. Treasury.¹³¹⁵

¹³¹¹ DISH July 26, 2019 Commitments Letter, Attach. A at 3. Even without this commitment, Commission approval would be required for certain spectrum-leasing arrangements. 47 CFR § 1.9030.

¹³¹² We note that while its MVNO agreement with T-Mobile is required to be on very favorable terms, the economics of the mobile wireless industry are such that it would be less expensive for DISH to carry traffic on its own network than to pay T-Mobile to carry that traffic.

¹³¹³ The Motley Fool, DISH Q2 2019 Earnings Conference Call Transcript, <https://www.fool.com/earnings/call-transcripts/2019/07/30/dish-network-corp-dish-q2-2019-earnings-call-trans.aspx> (last visited Oct. 14, 2019).

¹³¹⁴ For example, with respect to DISH's AWS-4 and AWS H Block licenses, under current rules, if DISH fails to meet the Commission's final construction benchmarks, the authorization for each license area in which it fails to meet the requirement terminates automatically. 47 C.F.R. § 27.14(q), (r). With respect to DISH's Lower 700 MHz E Block licenses, consistent with current rules, if DISH fails to meet the Commission's construction benchmarks, it keeps the areas of the license that it serves and the remaining unserved areas are returned to the Commission's inventory for relicensing. *Wireless Telecommunications Bureau Announces Process for Re-Licensing 700 MHz Spectrum in Unserved Areas*, WT Docket No. 06-150, Public Notice, 34 FCC Rcd 350 (WTB 2019). We also note that section V of the Commitments Letter puts in place a framework for contingent extensions of these obligations. DISH July 26, 2019 Commitments Letter, Attach. A at 3-4.

¹³¹⁵ DISH July 26, 2019 Commitments Letter, Attach. A at 2, 5. The required payment increases if DISH falls further from its goal: if DISH "misses" by greater than 25% but less than 50%, it would owe \$32 million per band; greater than 50% but less than 75%, \$48 million per band; and greater than 75%, \$66 million per band. Thus, if

(continued....)

380. DISH is also required, by June 14, 2023, to provide to at least 70% of the U.S. population download speeds of at least 35 Mbps, as verified by a drive test; to deploy at least 15,000 5G sites; and to deploy at least 30 megahertz of DISH's downlink 5G spectrum averaged over 15,000 5G sites.¹³¹⁶ If it misses these commitments, for *each* of the three commitments, DISH is required to pay \$10 million for each percent missed, rounded to the nearest tenth of a percent, but with a total limit of \$1 billion with respect to these three commitments.¹³¹⁷ For example, if DISH meets its other commitments, but builds only 10,000 cell sites, it has failed to meet one-third of its commitment on this element, and would be required to pay \$333 million to the U.S. Treasury. DISH has also committed to building out its network and offering service to at least 70% of the U.S. population by June 14, 2023, on each of the bands discussed above—the AWS-4 band, the Lower 700 MHz E Block band, and the AWS H Block band, and has committed to making significant payments if it fails to do so. Specifically, DISH has committed to pay \$6 million for each percent (rounded to the nearest tenth of a percent) by which it misses its commitment for the AWS-4 band; \$2 million for each percent (rounded to the nearest tenth of a percent) by which it misses its commitment for the Lower 700 MHz E Block band; and \$2 million for each percent (rounded to the nearest tenth of a percent) by which it misses its commitment for the AWS H Block band.¹³¹⁸ The total maximum payment related to these three band-specific commitments is \$1 billion.

381. To determine whether DISH meets its commitments and to calculate the amount it must pay if it does not, DISH also committed to providing a report within six months of June 14, 2023 (i.e., by December 23, 2023), similar to the one the Applicants are required to file.¹³¹⁹ The report will contain the results of a drive test of DISH's network reflecting the actual user experience under ordinary circumstances,¹³²⁰ polygon shapefiles showing the coverage of DISH's 5G Network, the number of people covered by DISH's 5G Network, a list of DISH's 5G cell sites, and a certification from a DISH engineering executive that the representations in the submissions are true and correct.¹³²¹ We direct WTB to determine whether DISH has met its commitments. WTB may, in its reasonable discretion, appropriately reduce the metric, extend the deadline, or reduce the amount DISH would be required to pay the U.S. Treasury due to unanticipated circumstances beyond DISH's control; however, unanticipated circumstances do not include anticipated (or reasonably anticipated) supply chain or standards process delays, or Commission action or inaction on requests by DISH.¹³²² Finally, in addition to our imposing DISH's commitments as conditions of our approval, we note that the *DOJ Proposed Final Judgment*, to which DISH has been joined as a defendant, would require DISH comply with these commitments, and provides for appointment of a monitoring trustee, one of whose jobs would be to monitor DISH's progress in using the assets it acquires from the Applicants.¹³²³ Thus, in addition to the reports it is required to file with us, the *DOJ Proposed Final Judgment* would place DISH under scrutiny from an independent monitor to ensure that it fulfills its commitments here. Further, if DISH fails to do so, it

(Continued from previous page) _____

DISH completely failed to build its network by June 14, 2022, it would be required to pay the U.S. Treasury \$198 million, except that if DISH fails to deploy a core network by June 14, 2022, it would be required to make a payment of \$200 million, regardless of shortfalls in the population coverage commitment. *Id.*, Attach. A at 5.

¹³¹⁶ *Id.*, Attach. A at 2.

¹³¹⁷ *Id.*, Attach. A at 5.

¹³¹⁸ *Id.*, Attach. A at 5-6.

¹³¹⁹ *Id.*, Attach. A at 6.

¹³²⁰ The details and methodology of the drive test shall be agreed to by DISH and WTB within 180 days of this MO&O and shall be revisited at least three months before June 14, 2023. The drive test shall be overseen by an independent monitor. *Id.*, Attach. A at 1 & n.1.

¹³²¹ *Id.*, Attach. A at 6.

¹³²² *Id.*, Attach. A at 6-7.

¹³²³ *DOJ Proposed Final Judgment* at 23.

would not only be liable to make significant payments to the U.S. Treasury as required by this MO&O, but subject to the contempt power of the federal courts as well.

382. While DISH has committed to constructing a network offering 5G broadband service regardless of whether it acquires the prepaid wireless assets and full MVNO agreement from the Applicants, on the record before us we cannot conclude with any confidence that DISH would be able to do so by the deadlines to which it has committed itself without these acquisitions. Accordingly, we are not herein granting DISH's requests for extension of time, nor modifying DISH's licenses, but are directing WTB to do so consistent with this MO&O upon DISH's consummation of its agreements with the Applicants. We direct WTB to add a special condition to the DISH 600 MHz, AWS-4, Lower 700 MHz E Block, and AWS H Block licenses that DISH is obligated to provide 5G Broadband Service over such licenses, to extend the construction dates for the DISH AWS-4, Lower 700 MHz E Block, and AWS H Block licenses consistent with our conclusions above, and to modify the DISH 600 MHz, AWS-4, Lower 700 MHz E Block, and AWS H Block licenses consistent with our proposed license modifications above and the requirements of section 316 of the Communications Act and section 1.87 of our rules.

383. Finally, we find that it would be inappropriate to hold DISH to its March 7, 2020, construction deadlines for its AWS-4 and Lower 700 MHz E Block licenses and the current March 7, 2020, expiration date of its Lower 700 MHz E Block licenses at this time, given the status of proceedings pending the contemplated divestiture. We thus toll those deadlines and the license expiration dates from the date of this MO&O until either the construction deadlines and license terms are modified in accordance with this Order of Proposed Modification or T-Mobile and Sprint are unable to or have agreed not to merge. Should the proposed transaction between T-Mobile and Sprint not occur, we anticipate, for the reason set forth above, that WTB would deny the pending DISH requests for extension of the construction deadlines for the AWS-4, Lower 700 MHz E Block, and AWS H Block licenses and decide not to modify the DISH 600 MHz, AWS-4, Lower 700 MHz E Block, and AWS H Block licenses as proposed above.

XII. CONCLUSION

384. Following our careful review of the record, and considering the conditions we impose herein, we reach the following conclusions. First, the combination of T-Mobile and Sprint will yield significant network deployment benefits, increasing the quality and availability of advanced wireless services. Those benefits will occur nationwide, but will be particularly significant for rural areas, where the conditions require robust broadband services deployment well beyond what the Applicants would otherwise deliver in the absence of the transaction. Increasing the quality of the Applicants' network will deliver benefits directly to their customers, while also yielding dynamic competitive benefits as they create a strong alternative to the two leading national networks. Moreover, the Applicants' improved network will allow them to deliver an in-home broadband service bringing consumers benefits beyond those in the mobile wireless market. Additionally, the combination will enhance competition in the enterprise market and likely facilitate the development of innovative service offerings in 4K video and IoT.

385. Second, as to potential harms, conditions that we impose herein eliminate our concerns arising from the removal of competition between the Applicants' brands. In particular, the condition requiring the divestiture of Boost Mobile will result in it serving as an important independent competitive force, particularly for those price-sensitive consumers in densely-populated areas for whom the risk of overall competitive harm would have been highest absent any conditions. We also impose as a condition the Applicants' price commitment, further ensuring that the transaction will not result in consumer price increases. With these conditions and the quality and dynamic competitive benefits of the transaction, we conclude that it would not substantially lessen competition. Third, balancing the transaction's significant public interest and competitive benefits against the now-remedied risk of competitive harm, we conclude that the combination of T-Mobile and Sprint, as conditioned, would serve the public interest, convenience, and necessity.

386. Finally, we expect additional public interest benefits would flow from extending DISH's

licenses and imposing other commitments and modifications to bind it to a timeline for deploying, in connection with its acquisition of Boost Mobile, a robust nationwide 5G network. Accordingly, should DISH acquire Boost Mobile, the extensions, commitments, and modifications described in Appendix H would also serve the public interest, convenience, and necessity, subject to the completion of the section 316 process for modifying the DISH licenses by WTB.

XIII. ORDERING CLAUSES

387. ACCORDINGLY, having reviewed the Applications and the record in this proceeding, **IT IS ORDERED** that, pursuant to sections 4(i) and (j), 214, 303(b), 303(r), 309, 310(b), and 310(d) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 214, 303(b), 303(r), 309, 310(b), 310(d), and the Cable Landing License Act, 47 U.S.C. §§ 34-39, the applications for the transfer of control of various wireless licenses and spectrum leasing arrangements, earth station authorizations, cable television relay service station licenses, experimental radio station authorizations, international section 214 authorizations, interests in submarine cable landing licenses, and domestic section 214 authority listed in Appendix A **ARE GRANTED**, to the extent specified in this Memorandum Opinion and Order and Declaratory Ruling and **SUBJECT TO** the conditions specified herein.

388. **IT IS FURTHER ORDERED** that the conditions incorporated herein shall continue to apply until they expire by their own terms as expressly stated or as otherwise provided in this Memorandum Opinion and Order and Declaratory Ruling.

389. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 303(b), and 310(b)(4) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303(b), and 310(b)(4), and sections 1.5000 through 1.5004 of the Commission's rules, 47 CFR §§ 1.5000-1.5004, the Petition for Declaratory Ruling filed by T-Mobile **IS GRANTED** to the extent specified in this Memorandum Opinion and Order and Declaratory Ruling.

390. **IT IS FURTHER ORDERED** that the above grant of Applications shall include authority for T-Mobile, consistent with the terms of this Memorandum Opinion and Order and Declaratory Ruling, to acquire control of: (a) any licenses and authorizations issued to Sprint, its subsidiaries, or its controlled entities during the Commission's consideration of the Applications and the period required for consummation of the transaction following approval; (b) any applications that have been filed by Sprint, its subsidiaries, or its controlled entities, and that are pending at the time of consummation; and (c) licenses, spectrum leasing arrangements, or other authorizations that may have been inadvertently omitted from the Applications that are held by Sprint, its subsidiaries, or its controlled entities.

391. **IT IS FURTHER ORDERED** that the above grant of Applications shall include authority for the *pro forma* transfer of control to T-Mobile, consistent with the terms of this Memorandum Opinion and Order and Declaratory Ruling, of: (a) any licenses and authorizations issued to any subsidiaries of T-Mobile during the Commission's consideration of the Applications and the period required for consummation of the transaction following approval; (b) any applications that have been filed by any subsidiaries of T-Mobile, and that are pending at the time of consummation; and (c) licenses, spectrum leasing arrangements, or other authorizations that may have been inadvertently omitted from the Applications that are held by any subsidiaries of T-Mobile.

392. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 303(r), 309, and 310(d) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303(r), 309, 310(d), the Petitions to Deny filed by Aureon, Atif Khan, Stanley D. Besecker, and Free Conferencing **ARE DISMISSED** for the reasons stated herein, and the Petitions to Deny filed by Yusupov, Altice, American Antitrust Institute, Broadcast Data Corp., C Spire, Common Cause et al., Console Enterprises, DISH, Free Press, Greenlining, Liberty Cablevision, NTCA, Rural Operators, RWA, Union Telephone et al., and Voqal **ARE DENIED** for the reasons stated herein.

393. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 214, 303(b), 303(r), 309, 310(b), and 310(d) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), (j), 214,

303(b), 303(r), 309, 310(b), and 310(d), that grant of the Applications IS CONDITIONED UPON T-Mobile and the post-transaction Sprint assuming, as specified herein, all obligations of Sprint with respect to the reconfiguration of the 800 MHz band, including without limitation, those set out in *Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, 19 FCC Rcd 14969 (2004), and subsequent Commission orders in WT Docket 02-55, and specifically including the obligation to maintain the required letter of credit.

394. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 5(c), 303(b), 303(r), 309, and 310(d) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), (j), 155(c), 303(b), 303(r), 309, and 310(d), and sections 0.131, 0.201, and 0.331, 47 CFR §§ 0.131, 0.201, and 0.331, the Wireless Telecommunications Bureau is directed to process the DISH applications, ULS File Nos. 0008741236, 0008741420, 0008741603, and 0008741789 et al., seeking an extension of time to construct facilities in accordance with this Order of Proposed Modification and **SUBJECT TO** the conditions specified herein.

395. **IT IS PROPOSED**, pursuant to sections 4(i) and 316(a) of the Communications Act of 1934, 47 U.S.C. §§ 154(i), 316, and section 1.87 of the Commission's rules, 47 CFR § 1.87, that DISH's 600 MHz, AWS-4, Lower 700 MHz E Block, and AWS H Block licenses BE MODIFIED by accelerating the construction deadline for DISH's 600 MHz licenses to June 14, 2025, while removing the interim construction deadline for those licenses, and extending the terms of DISH's AWS-4, AWS H Block, and Lower 700 MHz E Block licenses until June 14, 2023, in accordance with this Order of Proposed Modification and **SUBJECT TO** the conditions specified herein. Protests pursuant to section 316(a) may be filed within 30 days of release of this Order of Proposed Modification.

396. **IT IS FURTHER ORDERED** that this Order of Proposed Modification SHALL BE SENT by certified mail, return receipt requested, to DISH Network Corporation, 1110 Vermont Avenue, N.W., Suite 750, Washington, DC 20005, Attn: Jeffrey H. Blum, Senior Vice President, Public Policy & Government Affairs.

397. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 5(c), 303(b), 303(r), 309, 310(d), and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), (j), 155(c), 303(b), 303(r), 309, 310(d), and 316, and sections 0.131, 0.201, 0.331, 1.87, 47 CFR §§ 0.131, 0.201, 0.331, and 1.87, the Wireless Telecommunications Bureau is directed to issue a final order of modification concerning the DISH 600 MHz, AWS-4, Lower 700 MHz E Block, and AWS H Block licenses consistent with this Order of Proposed Modification and **SUBJECT TO** the conditions specified herein.

398. **IT IS FURTHER ORDERED** that, pursuant to sections 4(i) and (j), 5(c), 303(b), 303(r), 309, and 310(d) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), (j), 155(c), 303(b), 303(r), 309, and 310(d), we toll the March 7, 2020, construction deadlines for the DISH AWS-4 and Lower 700 MHz E Block licenses and the March 7, 2020, expiration date of DISH's Lower 700 MHz E Block licenses from the date of this Order of Proposed Modification until either the construction deadlines and license terms are modified in accordance with this Order of Proposed Modification or T-Mobile and Sprint are unable to or have agreed not to complete their proposed transaction.

399. **IT IS FURTHER ORDERED** that this Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification **SHALL BE EFFECTIVE** upon release, in accordance with section 1.103 of the Commission's rules, 47 CFR § 1.103. Petitions for reconsideration under section 1.106 of the Commission's rules, 47 CFR § 1.106, may be filed within thirty days of the date of release of this Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification. **IT IS FURTHER ORDERED** that all grants of applications referenced herein or occurring pursuant to this Memorandum Opinion and Order are without prejudice to any enforcement actions the Commission may deem appropriate in light of any investigations into violations of the Commission's Lifeline rules or other FCC regulations.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A
List of Applications

SECTION 310(d) APPLICATIONS*Parts 22, 24, 27, 30, 87, 90, and 101 – Wireless Radio Services*

Applications for consent to the transfer of control of licenses held by subsidiaries of Sprint from Sprint to T-Mobile:

<u>File No.</u>	<u>Licensee</u>	<u>Lead Call Sign</u>
0008224209 ¹	Sprint Spectrum Realty Company, LLC	KNLRF200
0008235840	American Telecasting Development, LLC	B002
0008235852	American Telecasting of Anchorage, LLC	WMX713
0008235851	American Telecasting of Columbus, LLC	B095
0008235858	American Telecasting of Ft. Collins, LLC	B149
0008235667	American Telecasting of Green Bay, LLC	B018
0008235679	American Telecasting of Lansing, LLC	B241
0008235685	American Telecasting of Lincoln, LLC	B256
0008235694	American Telecasting of Medford, LLC	B288
0008235698	American Telecasting of Michiana, LLC	B126
0008235705	American Telecasting of Monterey, LLC	B397
0008235708	American Telecasting of Redding, LLC	B371
0008235723	American Telecasting of Yuba City, LLC	B485
0008236000	Clearwire Hawaii Partners Spectrum, LLC	B192
0008235280	Clearwire Spectrum Holdings II LLC	B085
0008235060	Clearwire Spectrum Holdings III, LLC	B020
0008236496	Clearwire Spectrum Holdings LLC	B266
0008236687	Fixed Wireless Holdings, LLC	B014
0008235294	Nextel West Corp.	KNAN853
0008234511	NSAC, LLC	B004
0008236561	PCTV Gold II, LLC	B011
0008236568	Sprint (Bay Area), LLC	WHT700
0008236543	Sprint PR Spectrum LLC	KNLH423
0008236514	Sprint Puerto Rico Holdings LLC	WQYU424
0008236415	Sprint Spectrum License Holder LLC	WLK242
0008235383	Sprint Spectrum, L.P.	KNLRF208
0008236216	SprintCom, Inc.	B075
0008236163	TDI Acquisition Sub, LLC	WMI303
0008236117	WBSY Licensing, LLC	B228
0008235860	APC Realty and Equipment Company, LLC	WPSH342
0008235866	Nextel Communications of the Mid-Atlantic, Inc.	WPSG221
0008235873	Nextel of New York, Inc.	WPUJ847
0008235874	Nextel of Puerto Rico, Inc.	WPRQ760
0008235879	Nextel South Corp.	WPEF425
0008235890	PRWireless PR, LLC	WPNN780
0008235895	Sprint Administrative Services Group	WPPD279
0008235898	Sprint Communications Company, LP	794SE
0008235903	Sprint Communications, Inc.	WOJ40

¹ This application is the lead application for the wireless radio services.

<u>File No.</u>	<u>Licensee</u>	<u>Lead Call Sign</u>
0008235919	Sprint Spectrum License Holder II LLC	KNLH500
0008235946	Sprint Spectrum License Holder III LLC	WPVC984
0008235388	Sprint Telephony PCS, LLC	WPON274
0008831419	WCOF, LLC	B152
0008831426	People's Choice TV of St. Louis, LLC	B066

Applications for consent to the *pro forma* transfer of control of licenses held by subsidiaries of T-Mobile:

<u>File No.</u>	<u>Licensee</u>	<u>Lead Call Sign</u>
0008245816	T-Mobile Puerto Rico LLC	KNLRF249
0008243638	SunCom Wireless License Company, LLC	KNKN557
0008243417	Powertel Memphis Licenses, Inc.	KNLRF255
0008253402	T-Mobile License LLC	KNLRF202
0008243390	Iowa Wireless Services Holding Corporation	KNLGF769

Parts 27, 30, and 90 – Wireless Radio Services Spectrum Leasing Arrangements

Applications for consent to the transfer of control of spectrum leasing arrangements pursuant to which subsidiaries of Sprint are the spectrum lessee from Sprint to T-Mobile:

<u>File No.</u>	<u>Lessee/Sublessee</u>	<u>Lead Lease ID</u>
0008234826	American Telecasting of Denver, LLC	L000002648
0008235055	American Telecasting of Fort Myers, LLC	L000002337
0008235066	American Telecasting of Little Rock, LLC	L000000199
0008235084	American Telecasting of Louisville, LLC	L000000262
0008235095	American Telecasting of Santa Barbara, LLC	L000003594
0008235605	American Telecasting of Sheridan, LLC	L000002493
0008235608	Fresno MMDS Associates, LLC	L000000485
0008235643	Kennewick Licensing, LLC	L000005239
0008235647	PCTV Sub, LLC	L000003929
0008235661	People's Choice TV of Houston, LLC	L000001677
0008235682	People's Choice TV of St. Louis, LLC	L000002312
0008235699	SpeedChoice of Phoenix, LLC	L000001990
0008235710	Transworld Telecom II, LLC	L000003931
0008235724	WBS of America, LLC	L000004063
0008235733	WBS of Sacramento, LLC	L000033003
0008235774	Wireless Broadband Services of America, LLC	L000001595
0008235800	SpeedChoice of Detroit, LLC	L000001759
0008235828	Alda Wireless Holdings, LLC	L000022687
0008235836	American Telecasting Development, LLC	L000000259
0008235854	American Telecasting of Anchorage, LLC	L000002488
0008235819	American Telecasting of Columbus, LLC	L000001638
0008235831	American Telecasting of Ft. Collins, LLC	L000002549
0008235675	American Telecasting of Green Bay, LLC	L000002048
0008235683	American Telecasting of Lansing, LLC	L000002690
0008235690	American Telecasting of Lincoln, LLC	L000002703
0008235696	American Telecasting of Medford, LLC	L000002516
0008235701	American Telecasting of Michiana, LLC	L000001625
0008235706	American Telecasting of Monterey, LLC	L000000225

<u>File No.</u>	<u>Lessee/Sublessee</u>	<u>Lead Lease ID</u>
0008235711	American Telecasting of Redding, LLC	L000002487
0008235718	American Telecasting of Seattle, LLC	L000003953
0008266885	American Telecasting of Seattle, LLC	L000031135
0008235726	American Telecasting of Yuba City, LLC	L000010348
0008235732	ATI Sub, LLC	L000003928
0008235737	Broadcast Cable, LLC	L000002011
0008236390	Clearwire Hawaii Partners Spectrum, LLC	L000001566
0008235279	Clearwire Spectrum Holdings II LLC	L000000886
0008235203	Clearwire Spectrum Holdings III, LLC	L000005241
0008235205	Clearwire Spectrum Holdings III, LLC	L000039732
0008236558	Clearwire Spectrum Holdings LLC	L000000253
0008266905	Clearwire Spectrum Holdings LLC	L000000945
0008236715	Fixed Wireless Holdings, LLC	L000000159
0008266899	Fixed Wireless Holdings, LLC	L000001180
0008235293	Nextel West Corp.	L000026606
0008234513	NSAC, LLC	L000000168
0008236564	PCTV Gold II, LLC	L000001637
0008236559	Sprint (Bay Area), LLC	L000000341
0008236524	Sprint PR Spectrum LLC	L000023619
0008236502	Sprint Puerto Rico Holdings LLC	L000023616
0008236405	Sprint Spectrum License Holder LLC	L000020418
0008235384	Sprint Spectrum, L.P.	L000013987
0008236182	SprintCom, Inc.	L000017748
0008236156	TDI Acquisition Sub, LLC	L000003926
0008236108	WBSY Licensing, LLC	L000003476
6042EDSL18 ²	Clearwire Spectrum Holdings II LLC	L000003688
6043EDSL18 ³	Clearwire Spectrum Holdings III, LLC	L000008676
6046EDSL18 ⁴	NSAC, LLC	L000006063
6045EDSL18 ⁵	SpeedChoice of Detroit, LLC	L000001836
6044EDSL18 ⁶	Sprint PR Spectrum LLC	L000009842

Applications for consent to the *pro forma* transfer of control of spectrum leasing arrangements pursuant to which subsidiaries of T-Mobile are the lessee:

<u>File No.</u>	<u>Lessee/Sublessee</u>	<u>Lead Lease ID</u>
0008253328	T-Mobile License LLC	L000017243
0008245179	Iowa Wireless Services Holding Corporation	L000001109

² This application is a manual filing, and can be located as an attachment to the ULS licensing record for lease identifier L000003688.

³ This application is a manual filing, and can be located as an attachment to the ULS licensing record for lease identifier L000008676.

⁴ This application is a manual filing, and can be located as an attachment to the ULS licensing record for lease identifier L000006063.

⁵ This application is a manual filing, and can be located as an attachment to the ULS licensing record for lease identifier L000001836.

⁶ This application is a manual filing, and can be located as an attachment to the ULS licensing record for lease identifier L000009842.

<u>File No.</u>	<u>Lessee/Sublessee</u>	<u>Lead Lease ID</u>
0008253834	Iowa Wireless Services Holding Corporation	L000020146

Part 25 – Earth Station Licenses

Applications for consent to the transfer of control of licenses held by subsidiaries of Sprint from Sprint to T-Mobile:

<u>File No.</u>	<u>Licensee</u>	<u>Lead Call Sign</u>
SES-T/C-20180618-01523	Nextel Communications of the Mid-Atlantic, Inc.	E040169
SES-T/C-20180618-01532	Sprint Communications Company, LP	E6241

Part 78 – Cable Television Relay Service (CARS)

Applications for consent to the transfer of control of licenses held by subsidiaries of Sprint from Sprint to T-Mobile:

<u>File No.</u>	<u>Licensee</u>	<u>Call Sign</u>
CAR-20180621AA-09	Fixed Wireless Holdings, LLC	WLY-681
CAR-20180621AB-09	Fixed Wireless Holdings, LLC	WLY-803
CAR-20180622AB-09	NSAC, LLC	WLY-928
CAR-20180622AC-09	NSAC, LLC	WLY-929
CAR-20180627AA-09	NSAC, LLC	WLY-930
CAR-20180627AB-09	NSAC, LLC	WLY-931

Part 5 – Experimental Radio Station Authorizations

Applications for consent to the *pro forma* transfer of control of licenses held by subsidiaries of T-Mobile:

<u>File No.</u>	<u>Licensee</u>	<u>Lead Call Sign</u>
0031-EX-TU-2018	T-Mobile License LLC	WI2XHR
3032-EX-TU-2019	T-Mobile License LLC	WK2XAE

INTERNATIONAL SECTION 214 AUTHORIZATIONS

Applications for consent to the transfer of control of international section 214 authorizations held by subsidiaries of Sprint from Sprint to T-Mobile:

<u>File No.</u>	<u>Authorization Holder</u>	<u>Lead Authorization Number</u>
ITC-T/C-20180618-00118	Sprint Communications Co., LP	ITC-214-19960117-00018
ITC-T/C-20180618-00119	SprintCom, Inc.	ITC-214-19991110-00692
ITC-T/C-20180618-00120	Sprint Communications, Inc.	ITC-214-19970723-00428
ITC-T/C-20180618-00121	Sprint Spectrum, L.P.	ITC-214-1991203-00766
ITC-T/C-20180618-00122	PRWireless PR, LLC	ITC-214-19990615-00426
ITC-T/C-20180618-00123	US Telecom, Inc.	ITC-214-19851107-00004
ITC-T/C-20180618-00124	Virgin Mobile USA, L.P.	ITC-MOD-20151207-00294

Applications for consent to the *pro forma* transfer of control of international section 214 authorizations held by subsidiaries of T-Mobile:

<u>File No.</u>	<u>Authorization Holder</u>	<u>Lead Authorization Number</u>
ITC-T/C-20180618-00100	T-Mobile USA, Inc.	ITC-214-19960930-00473
ITC-T/C-20180618-00101	T-Mobile Puerto Rico LLC	ITC-214-20070626-00246
ITC-T/C-20180618-00102	Iowa Wireless Services LLC	ITC-214-20020513-00251

SUBMARINE CABLE LANDING LICENSES

Application for consent to the transfer of control of interests in international cable landing licenses held by the subsidiary of Sprint listed below from Sprint to T-Mobile:

<u>File No.</u>	<u>Interest Holder</u>	<u>Lead Authorization Number</u>
SCL-T/C-20180618-00015	Sprint Communications Co., LP	SCL-LIC-19920201-00010

DOMESTIC SECTION 214 AUTHORIZATION

Sprint and T-Mobile Joint Application for Consent to Transfer Control of International and Domestic Authority Pursuant to section 214 of the Communications Act of 1934, as Amended, filed in WT Docket No. 18-197.

APPENDIX B**Petitioners and Commenters****Petitions To Deny Filed on or Before August 27, 2018**

Alexander Yusupov Petition To Deny (filed August 27, 2018) (Yusupov Petition)
Altice USA, Inc. (Altice) Petition To Condition or Deny (filed Aug. 27, 2018) (Altice Petition)
Atif Khan Petition To Deny and Comments (filed August 23, 2018) (Atif Khan Petition)
The American Antitrust Institute Petition To Deny (filed Aug. 27, 2018) (American Antitrust Institute Petition)
Broadcast Data Corp. Petition To Deny (filed Aug. 27, 2018) (Broadcast Data Corp. Petition)
CarrierX d/b/a freeconferencecall.com (Free Conferencing) Petition To Deny (filed Aug. 27, 2018) (Free Conferencing Petition)
Cellular South d/b/a C Spire Petition To Condition, or in the Alternative, Deny Any Grant of the Sprint/T-Mobile Application (filed Aug. 27, 2018) (C Spire Petition)
Common Cause, Consumers Union, New America's Open Technology Institute, Public Knowledge, and Writers Guild of America, West, Inc., Petition To Deny (filed Aug. 27, 2018) (Common Cause et al. Petition)
Console Enterprises Petition To Deny (filed Aug. 27, 2018) (Console Enterprises Petition)
DISH Network Corporation Petition To Deny (filed Aug. 27, 2018) (DISH Petition)
Free Press Petition To Deny (filed Aug. 27, 2018) (Free Press Petition)
The Greenlining Institute Petition To Deny (filed Aug. 27, 2018) (Greenlining Petition)
Iowa Network Services, Inc. d/b/a Aureon Network Services (Aureon) Petition To Deny, or in the Alternative, Request To Condition Approval of Applications To Transfer Control of Licenses and Authorizations (filed Aug. 27, 2018) (Aureon Petition)
Liberty Cablevision of Puerto Rico LLC (Liberty Cablevision) Petition To Deny (filed Aug. 27, 2018) (Liberty Cablevision Petition)
NTCA—The Rural Broadband Association (NTCA) Petition To Deny (filed Aug. 27, 2018) (NTCA Petition)
Rural South Carolina Operators (Rural Operators) Petition To Condition or Deny the Transfer of Control of Licenses and Authorizations (filed Aug. 27, 2018) (Rural Operators Petition)
Rural Wireless Association, Inc. (RWA) Petition To Deny (filed Aug. 27, 2018) (RWA Petition)
Stanley D. Besecker Conditional Petition To Deny (filed Aug. 27, 2018) (Stanley Besecker Petition)
Union Telephone Company, Cellular Network Partnership, an Oklahoma Limited Partnership, Nex-Tech Wireless, L.L.C., SI Wireless, LLC (Union Telephone Company et al.), Petition To Deny (filed Aug. 27, 2018) (Union Telephone Petition)
Voqal Petition To Deny the Above-Captioned Applications as Currently Proposed (filed Aug. 27, 2018) (Voqal Petition).

Comments Filed on or Before August 27, 2018

Alex C. Ingram Comments (filed July 20, 2018) (Alex C. Ingram Comments)
Andrea Rice (Member, Missouri Farm Bureau) Comments (filed Aug. 27, 2018) (Andrea Rice Comments)
Americans for Tax Reform and Digital Liberty Comments (filed Aug. 27, 2018) (Americans for Tax Reform Comments)
AT&T Services, Inc. (AT&T) Comments (filed Aug. 27, 2018) (AT&T Comments)
California Public Utilities Commission (CPUC) Comments (filed Aug. 27, 2018) (CPUC Comments)
Charter Communications, Inc. (Charter) Comments (filed Aug. 27, 2018) (Charter Comments)
Christian Sorgi Comments (filed Aug. 27, 2018) (Christian Sorgi Comments)
Christopher Price Comments (filed Aug. 27, 2018) (Christopher Price Comments)
Communications Workers of America (CWA) Comments (filed Aug. 27, 2018) (CWA Comments)

Consumer Policy Solutions (CPS) Comments (filed Aug. 27, 2018) (CPS Comments)
Digital Policy Institute (DPI) Comments (filed Aug. 27, 2018) (DPI Comments)
Free Press Member Comments (filed Aug. 27, 2018) (Free Press Member Comments)
Free State Foundation Comments (filed Aug. 27, 2018) (Free State Foundation Comments)
Frontier Communications Corporation (Frontier) and Windstream Services, LLC (Windstream),
Comments (filed Aug. 27, 2018) (Frontier/Windstream Comments)
Kim Keenan Comments (filed Aug. 27, 2018) (Kim Keenan Comments)
Kingsley Ross Comments (filed Aug. 27, 2018) (Kingsley Ross Comments)
Maneesh Pengasa Comments (filed July 30, 2018) (Pengasa July 2018 Comments)
NE Colorado Cellular, Inc., d/b/a Viaero Wireless (Viaero) Comments (filed Aug. 23, 2018) (Viaero
Comments)
Steven Fletcher Comments (filed Aug. 1, 2018) (Steven Fletcher Comments)
Tucows Comments (filed Aug. 27, 2018) (Tucows Comments)

Comments in Opposition to the Petitions To Deny Filed September 17, 2018

Letter from Colleen Boothby, counsel to the Ad Hoc Telecom Users Committee, to Marlene H. Dortch,
Secretary, FCC, WT Docket No. 18-197 (filed Sept. 17, 2018) (Ad Hoc Opposition)
Information Technology and Innovation Foundation (ITIF) Opposition to Petitions To Deny (filed Sept.
17, 2018) (ITIF Opposition)
International Center for Law and Economics (ICLE) Comments in Opposition to Petitions to Deny (filed
Sept. 17, 2018) (ICLE Opposition)
Free State Foundation Reply Comments (filed Sept. 17, 2018) (Free State Foundation Reply)
NENA, the National Emergency Number Association (filed September 17, 2018) (NENA Comments)
TechFreedom Comments (filed Sept. 17, 2018) (TechFreedom Opposition)

Reply Comments Filed on or Before October 31, 2018

Altice USA, Inc., Reply (filed Oct. 31, 2018) (Altice Reply)
American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) Comments in
Opposition to the Merger (filed Oct. 31, 2018) (AFL-CIO Reply)
CarrierX Reply in Support of Petition To Deny (filed Oct. 31, 2018) (Free Conferencing Reply)
Cellular South d/b/a C Spire Reply (filed Oct. 31, 2018) (C Spire Reply)
Citizens Against Government Waste Reply Comments (filed Sept. 17, 2018) (CAGW Reply)
Communications Workers of America Reply Comments (filed Oct. 31, 2018) (CWA Reply)
DISH Network Corporation Reply (filed Oct. 31, 2018) (DISH Reply)
Enterprise Wireless Alliance Reply Comments (filed Oct. 31, 2018) (EWA Reply)
Free Press Reply to Opposition (filed Oct. 31, 2018) (Free Press Reply)
Free State Foundation Reply Comments (filed Sept. 17, 2018) (Free State Reply)
Huawei Technologies Co., Ltd., and Huawei Technologies USA, Inc., Reply Comments (filed
Sept. 18, 2018) (Huawei Reply)
Liberty Cablevision of Puerto Rico LLC Reply to Opposition of T-Mobile US, Inc. and Sprint
Corporation to Petition To Deny (filed Oct. 31, 2018) (Liberty Cablevision Reply)
National EBS Association (NEBSA) and Catholic Technology Network (CTN) Joint Reply Comments
(filed Oct. 31, 2018) (NEBSA/CTN Reply)
New America's Open Technology Institute (OTI) Reply Comments (filed Oct. 31, 2018) (OTI Reply)
NTCA—The Rural Broadband Association Reply to Opposition (filed Oct. 31, 2018) (NTCA Reply)
Public Knowledge, Open Markets Institute, Writers Guild of America, West, Inc., Common Cause, and
Consumers Union Reply (filed Oct. 31, 2018) (Public Knowledge Reply)
Rural Wireless Association, Inc., Reply to Opposition (filed Oct. 31, 2018) (RWA Reply)
Spotlight Media Corporation and Buffalo-Lake Erie Wireless Systems Co., LLC d/b/a Blue Wireless
Reply (filed Oct. 31, 2018) (Blue Wireless Reply)
Union Telephone Company, Cellular Network Partnership, an Oklahoma Limited Partnership, Nex-Tech

Wireless, L.L.C., SI Wireless, LLC (Union Telephone Company et al.), Reply to Opposition to Petition To Deny (filed Oct. 31, 2018) (Union Telephone Reply)
Voqal Reply to Joint Opposition of T-Mobile US, Inc. and Sprint Corporation (filed Oct. 31, 2018) (Voqal Reply)

Comments on New Econometric Study filed December 4, 2018

Communications Workers of America Comments on Applicants' New Econometric Study (filed Dec. 4, 2018) (CWA Dec. 4 Comments)
DISH Network Corporation Comments in Response to Public Notice Regarding Cornerstone Report (filed Dec. 4, 2018) (DISH Dec. 4 Comments)
OpenMedia Comments in Opposition to the Merger of T-Mobile US, Inc. and Sprint Corp. (filed Dec. 4, 2018) (OpenMedia Dec. 4 Comments)

Comments on New Network and Fixed Wireless Broadband Services filed March 28, 2019

Communications Workers of America Comments on Applicants' Revised Network Combination Plan and Economic Analysis and "New T-Mobile In-Home Internet" (filed Mar. 28, 2019) (CWA Mar. 28 Comments)
DISH Network Corporation Comments in Response in Response to Public Notice (filed Mar. 28, 2019) (DISH Mar. 28, 2019 Comments)
Liberty Cablevision of Puerto Rico LLC Supplemental Comments in Support of Petition To Deny (filed Mar. 28, 2019) (Liberty Cablevision Mar. 28, 2019 Comments)
Rural Wireless Association, Inc., Supplemental Comments (filed Mar. 28, 2019) (RWA March 28, 2019 Comments)

Comments Filed on Other Dates

Gene Retske Comments (filed Aug. 28, 2018) (Gene Retske Comments)
Ultra Mobile and Mint Mobile Comments (filed Aug. 28, 2018) (Ultra Mobile/Mint Mobile Comments)
Cell Nation, Inc. (Cell Nation) Comments (filed Aug. 29, 2018) (Cell Nation Comments)
Crown Castle International Corp. (Crown Castle) Comments (filed Aug. 29, 2018) (Crown Castle Comments)
Tillman Infrastructure Comments (filed Aug. 29, 2018) (Tillman Infrastructure Comments)
Consumer Action for a Strong Economy (CASE) Comments (filed Aug. 30, 2018) (CASE Comments)
Honorable J. Kenneth Blackwell Comments (filed Aug. 30, 2018) (Blackwell Comments)
Prepaid Wireless Group (PWG) Comments (filed Aug. 30, 2018) (PWG Comments)
Assila LLC (Assila) Comments (filed Aug. 31, 2018) (Assila Comments)
Digital Bridge Holdings, LLC (Digital Bridge) and Vertical Bridge Holdings LLC (Vertical Bridge) Joint Comments (filed Aug. 31, 2018) (Digital Bridge/Vertical Bridge Joint Comments)
National Hispanic Council on Aging (NHCOA) Comments (filed Sept. 6, 2018) (NHCOA Comments)
National Puerto Rican Chamber of Commerce (NPRCC) Comments (filed Sept. 10, 2018) (NPRCC Comments)
Center for Individual Freedom Comments (filed Sept. 13, 2018) (Center for Individual Freedom Comments)
Operation Military Family Cares (OMF Cares) Comments (filed Sept. 13, 2018) (OMF Cares Comments)
TracFone Wireless, Inc. (TracFone) Comments (filed Sept. 13, 2018) (TracFone Comments)
Consumers' Research Comments (filed Sept. 17, 2018) (Consumers' Research Comments)
Advanced Communications Law & Policy Institute (ACLP) Comments (filed Sept. 17, 2018) (ACLP Comments)
Latino Coalition Comments (filed Sept. 17, 2018) (Latino Coalition Comments)
Shenandoah Telecommunications, Inc. (Shentel) Comments (filed Sept. 17, 2018) (Shentel Comments)
Will Rinehart Comments (filed Sept. 17, 2018) (Will Rinehart Comments)

Hispanic Heritage Foundation Comments (filed Sept. 18, 2018) (Hispanic Heritage Foundation Comments)
Hispanic Information and Telecommunications Network, Inc. (HITN) Comments (filed Oct. 25, 2018) (HITN Comments)
Media Alliance Comments (filed Dec. 3, 2018) (Media Alliance Comments)
Mayor John Cheminiak (Bellevue, Washington) Comments (filed Dec. 4, 2018) (Cheminiak Comments)
Saint Paul Regional Labor Federation Comments (filed Dec. 13, 2018) (Saint Paul RLF Comments)
Minnesota AFL-CIO Comments (filed Jan. 2, 2019) (Minnesota AFL-CIO Comments)
Howard Media Group Comments (filed Jan. 9, 2019) (Howard Media Comments)
Smith Bagley, Inc. d/b/a Cellular One of North East Arizona Comments (filed Feb. 20, 2019) (Smith Bagley Comments)
Northwest Broadcasting Comments (filed March 13, 2019) (Northwest Broadcasting Comments)
Pennsylvania State Legislative Delegation Comments (filed March 14, 2019) (Pennsylvania Legislature Comments)
Governor Laura Kelly (Kansas) Comments (filed March 15, 2019) (Kelly Comments)
Tennessee Chamber of Commerce & Industry Comments (filed April 17, 2019) (Tennessee Chamber Comments)
Tennessee State Legislative Delegation Comments (filed March 25, 2019) (Tennessee Legislature Comments)
Mayor Sylvester James, Jr. (Kansas City, Missouri) Comments (filed April 18, 2019) (James Comments)
Maneesh Pangasa Comments (filed May 13, 2019) (Pangasa May 2019 Comments)
Atom Tickets Comments (filed May 16, 2019) (Atom Tickets Comments)
Mayor Ken McClure (Springfield, Missouri) Comments (filed May 28, 2019) (McClure Comments)

Filers of *Ex Parte* Submissions and Letters

4C Competition Coalition

AFL-CIO, Blue Wireless, Common Cause, Consumer Reports, CWA-Union, Demand Progress Education Fund, DISH Network, Fight For The Future, The Greenlining Institute, Institute for Local Self-Reliance, INCOMPAS, Mobile Beacon, New America's Open Technology Institute, Next Century Cities, North American Catholic Educational Programming Foundation, NTCA-The Rural Broadband Association, Open Markets Institute, Pine Belt Cellular, Public Knowledge, Rural Wireless Association, Telsasoft, United Wireless Communications, Wireless Internet Service Providers Association, and Writers Guild of America West

Dr. Allen Pratt, Executive Director, National Rural Education Association

Altice USA, Inc.

AT&T Services, Inc.

Barry J. Hobbins

Betsy E. Huber, President, National Grange

Brian Brady, Founder and Chief Executive, Northwest Broadcasting

Brien J. Sheahan, Chairman and CEO, Illinois Commerce Commission

California Emerging Technology Fund

Carlo A. Scissura, President and Chief Executive, New York Building Congress
CarrierX, LLC

Cellular South, Inc. d/b/a C Spire

Charter Communications, Inc.

Christopher Rosario, Representative, Connecticut State House of Representatives

Comcast Corporation and Charter Communications, Inc.

Communications Workers of America

Communications Workers of America, Public Knowledge, and CTC Technology and Energy

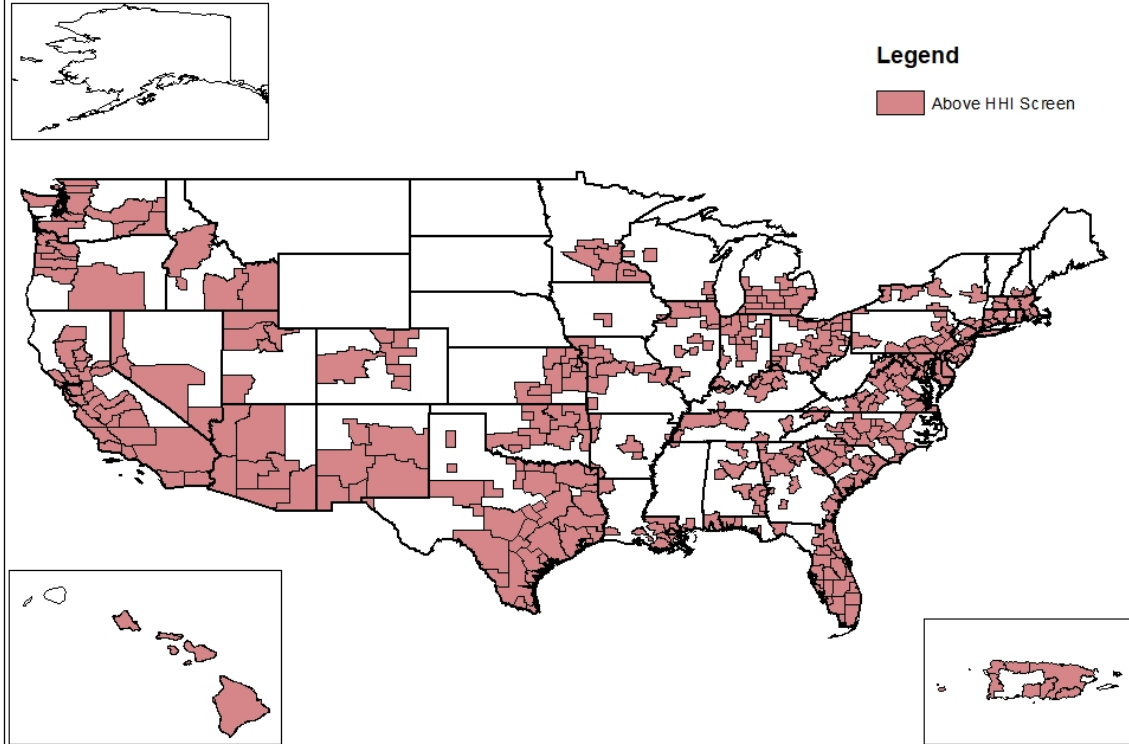
Communications Workers of America, Public Knowledge, New America's Open Technology Institute,
Consumer Reports, and Free Press

Communications Workers of America, Public Knowledge, NTCA—The Rural Broadband Association,

Free Press, Common Cause, and Open Technology Institute
CWA District 2-13
DISH Network Corporation
Ericsson
Eric Steinmann, Development Manager, NTCH, and Thomas Wise, President, Wise Electronics
Free Press
Herring Networks, Inc., dba One America News Network and AWE
ION Media Networks
Jeff Colyer, Governor, Nebraska
Kyle Davis, Government Relations and Public Policy Specialist, Greater Binghamton Chamber of
Commerce
Legacy Equity Advisors
Mach FM Corp.
Maine Office of the Public Advocate
Michael G. Francis, Commissioner, District 4–Louisiana Public Service Commission
Michele N. Siererka, President and Chief Executive, New Jersey Business and Industry Association
Michelle Merriweather, President and Chief Executive, Urban League of Metropolitan Seattle
National EBS Association and Catholic Technology Network
National Hispanic Media Coalition
Navajo Nation
New America's Open Technology Institute
New America's Open Technology Institute and Free Press
Nokia
North American Catholic Educational Programming Foundation, Inc., and Mobile Beacon
NTCH, Inc. and Wise Electronics, Inc.
PCs for People
Pennsylvania Retailers' Association
Peter Adderton
Public Knowledge, Free Press, New America's Open Technology Institute, Consumer Reports, Open
Markets Institute, Common Cause, and Writers Guild of America, West
Puerto Rico Telecommunications Bureau
Richard Blumenthal, Senator, United States Senate, et al.
Rich Young (Sprint Corporation employee)
Ronald Duncan, Chief Executive, GCI
Rural Wireless Association, Inc.
Sean D. Reyes, Attorney General, Utah, and Hector Balderas, Attorney General, New Mexico
Softbank Group Corp.
Softbank Group Corp. and T-Mobile US, Inc.
Sprint Corporation
Tech Knowledge
T-Mobile US, Inc.
T-Mobile US, Inc. and Sprint Corporation
Tony Vargas, Senator, Nebraska State Legislature
TracFone Wireless, Inc.
Union Telephone Company and Cellular Network Partnership
United States Cellular Corporation
Urban One, Inc.
Verizon
Vermont Telephone Co., Inc. and VTel Wireless, Inc.
Voqal
Voqal, North American Catholic Educational Programming Foundation, Inc., and Mobile Beacon
Wireless Infrastructure Association
Wireless Internet Service Providers Association

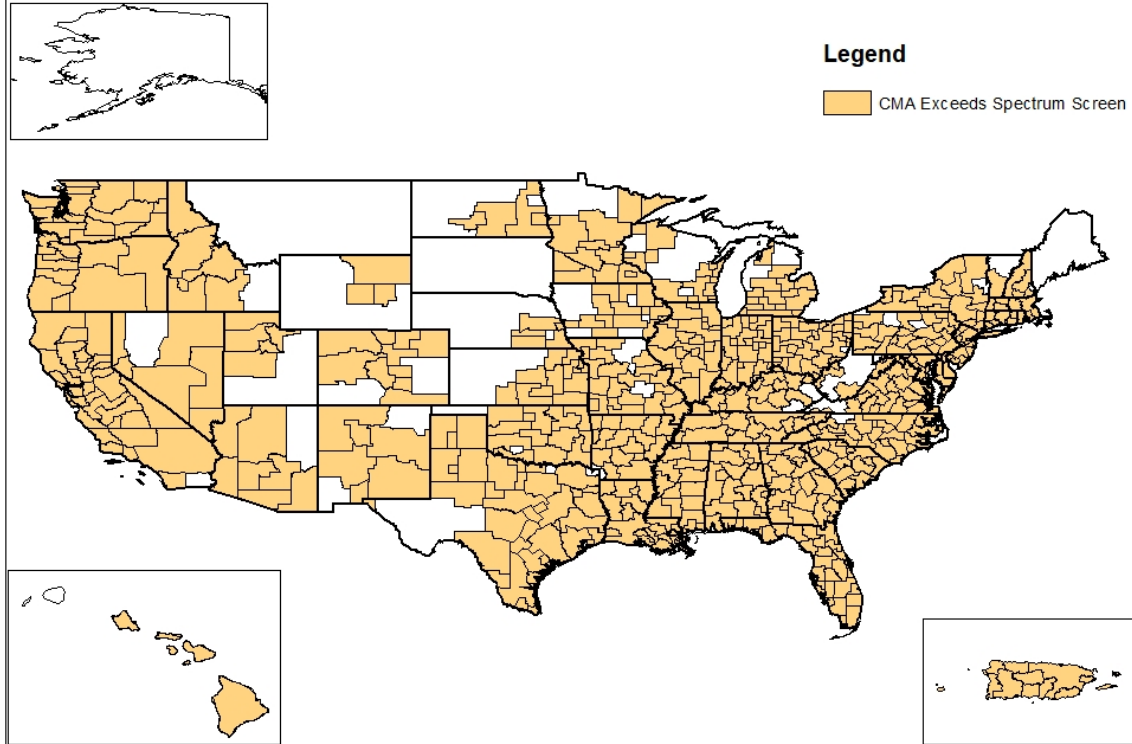
APPENDIX C

CMAAs that Trigger the Market Concentration Screen



APPENDIX D

CMA Exceeds Spectrum Screen



APPENDIX E

CMAs that Trigger Enhanced Factor Review

CMA Number	CMA Name	2010 Population	2010 Population Density (POPS/square mile)
91	San Juan-Caguas, PR	2,138,876	1,964
117	Colorado Springs, CO	645,613	240
147	Ponce, PR	243,147	1,152
169	Mayaguez, PR	222,035	874
202	Arecibo, PR	199,471	842
204	Aguadilla, PR	188,648	1,091
298	Bismarck, ND	108,779	31
392	Idaho 5 - Butte	188,681	14
527	Montana 5 - Mineral	227,235	17
579	North Carolina 15 - Cabarrus	577,701	274
584	North Dakota 5 - Kidder	43,140	4
586	Ohio 2 - Sandusky	254,394	149
629	South Carolina 5 - Georgetown	362,511	148
670	Texas 19 - Atascosa	251,889	19
720	Wyoming 3 - Lincoln	170,579	4
723	Puerto Rico 1 - Rincon	15,200	1,086
724	Puerto Rico 2 - Adjuntas	267,174	469
725	Puerto Rico 3 - Ciales	124,606	381
726	Puerto Rico 4 - Aibonito	275,162	673
727	Puerto Rico 5 - Ceiba	40,351	498
728	Puerto Rico 6 - Vieques	9,301	182
729	Puerto Rico 7 - Culebra	1,818	152

APPENDIX F

Technical Appendix

1. This Appendix contains a summary of the Commission's engineering staff's analysis of the technical information that was submitted by the Applicants to support their claimed efficiencies in connection with the proposed combination of the T-Mobile and Sprint networks.

2. The proposed transaction would combine the terrestrial access networks and spectrum holdings of standalone T-Mobile and standalone Sprint, which the Applicants claim would substantially increase the combined entity's overall network capacity, improve user experience and decrease marginal network capacity costs. As explained below, we find that the proposed transaction likely will generate significant benefits in several areas that will facilitate the combined company's deployment of its 5G network. The projected nationwide 5G offered traffic of New T-Mobile will substantially exceed the combined traffic of standalone Sprint and T-Mobile in a range of between [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]

Furthermore, the Applicants will be able to leverage their complementary spectrum holdings to achieve a depth and quality of 5G coverage that would be infeasible for either company to achieve on a standalone basis. This will be important not only for densely populated areas, but also for more rural areas. The combined company will also benefit from significant economies of scale as compared to the standalone entities.

3. We note, however, that predicting future network performance is a complicated and sometimes imprecise exercise. In some cases, we identified questions about the inputs and outputs provided by the Applicants that create uncertainty for long-term predictions. In particular, we credit significant network marginal cost savings, but evaluate two downward variations on the Applicants' predictions for purposes of conducting an assessment verifiably robust to reasonable variation of uncertain inputs. Moreover, staff review of predicted coverage claims is approximate, not precise, and our internal analysis found in some cases greater and in some cases lesser covered population than the Applicants' predictions. The Applicants' network build commitments, discussed in the body of this MO&O, satisfy us that the committed network performance metrics reflect verifiable network benefits of the proposed transaction.

4. This Appendix first defines and explains the terminology used in section A-I. Section A-II describes the Network Build Model submitted by the Applicants. Section A-III addresses the network complementarities from combining the T-Mobile and Sprint networks. Section A-IV addresses capacity benefits, including the proposed in-home broadband service. Section A-V analyzes the Network Build Model submitted by the Applicants to translate network performance and capacity into a set of incremental network solutions, and evaluates additional factors that may have warranted consideration in the Applicants' models. Section A-V also analyzes the Financial Backend model, which converts the output of the Network Build Model into per-subscriber marginal costs for use in the economic modeling of the transaction. Finally, in section A-VI, this Appendix discusses the results of engineering staff's coverage analysis for the Applicants' predicted tower site and spectrum deployment submissions.

I. TERMINOLOGY

5. *Spectrum* is the set of radio wave frequencies used by an operator to provide communications services to its subscribers.¹ It is measured in Hertz (Hz) which represents the number of wave cycles that will pass a point in one second.² Since radio waves travel at the speed of light, the wave

¹ Newton's Telecom Dictionary 1187 (31st ed. 2018) (Spectrum is defined as "[a] continuous range of frequencies, usually wide in extent within which waves have some specific common characteristics.").

² Weisman, C.J. (2002). *The essential guide to RF and wireless*. Pearson Education, at 9 (Weisman (2002)) ("The number of times a signal goes through a complete up and down cycle (from point A to point E) in one second is the signal's *frequency* (measured in Hertz and abbreviated Hz).").

length is easily calculated from the wave's frequency. When referring to radio spectrum used for mobile broadband services, frequency is typically measured in kilohertz (1000 Hertz), megahertz (MHz) (1 million Hertz), or gigahertz (GHz) (1 billion Hertz). Note that these units can refer to either the frequency of a radio wave, or the bandwidth between two frequencies. For example, there is five megahertz of bandwidth between the radio frequency 1930 MHz (1.93 GHz) and 1935 MHz (1.935 GHz). Spectrum used by mobile providers is typically licensed; however, technologies that use unlicensed spectrum, such as Wi-Fi and Licensed Assisted Access (LAA),³ can also complement and be used to relieve congestion on networks that also use licensed spectrum.

6. *Millimeter wave spectrum* (mmWave or mmW), in the context of this transaction, is spectrum in the frequency range from 24 GHz to 86 GHz.

7. The portion of spectrum used in the cell consists of one or more *radio channels*. *Radio Frequency carrier* (or RF carrier) refers both to the radio equipment for a radio channel and the signals broadcast over the air on that radio channel.⁴ For example, both LTE and 5G-NR can operate with 5+5 megahertz RF carriers, where 5 megahertz is used for uplink transmissions from subscriber devices to the network and another 5 megahertz is used for downlink transmissions from the network to subscriber devices. One RF carrier can support many devices concurrently.

8. *Network equipment* includes *cell sites* that make up the radio network.⁵ Cell sites typically include a support structure (i.e., a tower, building, or other structure that provides a desired height above the ground), antennas, cables, radios, processors, etc. One *site* contains one or more *sectors*,⁶ with most sites having three sectors.⁷ A *sector* corresponds to a geographic *cell* of radio coverage that uses a portion of the spectrum to communicate with a number of *subscriber devices*, such as

³ LAA is the LTE feature that leverages the unlicensed 5 GHz band (using carrier aggregation) in combination with the service provider's licensed spectrum to deliver higher throughput performance for some mobile users. Qualcomm, *Progress on LAA and its relationship to LTE-U and MulteFire* (Feb. 22, 2016), <https://www.qualcomm.com/media/documents/files/laa-webinar-feb-2016.pdf>.

⁴ Weisman (2002) at 9-10 ("Frequency is what separates one [Radio Frequency or RF] signal from another and it is what distinguishes one wireless application from another."); *Id.* at 11-12 ("Only analog signals (sine waves) are used to carry information 'on their backs' as they travel through the air. These analog 'carrier' signals can carry either analog or digital 'information' signals. The process of combining information signals on top of carrier signals is called modulation. . . . When an information signal is combined with a carrier signal the result is known as wireless communications, and the analog signal doing the carrying is called RF or the *carrier*. . . ."); Calhoun, G., *Digital cellular radio*. Artech House, at 206-07 (1988) ("Most radio transmission utilizes a continuous wave of a fixed frequency, called the *carrier*. . . . The modulated carrier—i.e., the carrier with the information . . . actually occupies a narrow region of the spectrum . . . the width of this region—the *occupied bandwidth*—is also measured in KHz or MHz. This is what is commonly referred to as a radio *channel*.").

⁵ Tabbane, S. (2000). *Handbook of Mobile Radio Networks*. Artech House, at 206-07 (Tabbane (2000)) ("The cellular architecture was originally designed as a means of providing a region of substantial geographic size . . . with a communications network using a limited frequency allocation and servicing an increasing traffic demand . . . The mechanism is based on the pathloss property of radio waves, which means that a frequency used on one site can be reused on another site provided that the two sites are sufficiently far from each other. Each site covers an area called a *cell*, the size of which usually depends on user density.").

⁶ *Sectorization* is defined in the Commission's rules as:

"The use of an antenna system at any broadband station, booster station and/or response station hub that is capable of simultaneously transmitting multiple signals over the same frequencies to different portions of the service area and/or simultaneously receiving multiple signals over the same frequencies from different portions of the service area."

47 C.F.R. § 27.4; *see also* Tabbane (2000) at 220 (graphical examples of sites having between one to three sectors).

⁷ Tabbane (2000) at 295.

smartphone devices, within that geographic area.⁸ A *sector* may contain more than one *cell* providing wireless services with different technologies and spectrum bands.⁹ A *cell* is a subset of a *sector* when there is more than one *cell* in a *sector*—different cells in a sector have different bands.¹⁰

9. *Macrocell* refers to a traditional large-scale cell site with traditional antennas or remote radio heads mounted on a tower, building rooftop, or similar large structure, which are then connected to an equipment cabinet or shelter at the base of the tower or within the building or structure.¹¹

10. *Small cell* refers to a low powered radio that operates in the licensed and unlicensed spectrum bands with a small equipment footprint providing limited coverage in typically urban and densely populated areas. *Small cells* can also be used to deal with the growth in usage and can be strategically deployed in highly congested areas to offload traffic from the macrocells. Small cells can employ both licensed and unlicensed spectrum with Wi-Fi or LAA, but they have limited coverage footprints.

11. The *capacity* of a cell is typically measured by the number of simultaneous voice calls that can be made on the cell or the total volume of data throughput provided by the cell.¹² This capacity is a function of both the amounts of spectrum available in the cell and the spectral efficiency.¹³ *Spectral efficiency* refers to the amount of traffic a given amount of spectrum in a cell can support.¹⁴ Newer technologies generally increase spectral efficiency compared to older technologies, for example, 5G-NR has a greater spectral efficiency than LTE and therefore provides more capacity per RF carrier of equal size.

12. The *total capacity* of the radio network is determined by the summation of the capacity of the individual cells. The network traffic is often distributed unevenly over the cells, with the result that the busiest cells are the first to be congested and they drive the need to increase network capacity by deploying additional network solutions. Common ways to increase network capacity are adding cells, adding spectrum, adding sectors, and increasing spectral efficiency through network technology or handset upgrades.

13. *Sector Add* refers to splitting an existing sector into more sectors to serve the same geographical area by using more directional antennas (narrower beam-width) to increase the overall site capacity. A typical site has three sectors with each serving a 120 degrees coverage arc angle. An additional *sector add* will reduce the coverage arc angle by half.¹⁵

⁸ *Id.* Each sector can be considered a new cell as it uses a different set of channels and a directional antenna.

⁹ Submission by Nancy Victory, Counsel to T-Mobile, “T-Mobile 114 K Info. Backup” (Apr. 18, 2019) (T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission), Attach. 5G Backup, Input “114K_Hourly_Throughput_vs>Loading - Aug 3 2018.xlsx.”

¹⁰ T-Mobile Information Request Response (Sept. 5, 2018), Attach. T-Mobile Documentations for Network Build Model, Document 41, “Loading Curve Analysis.docx” at 1.

¹¹ The distinctions between *macro-*, *micro-* or *pico-* cells relates to the concept of “cell layering”—different types of cells are superimposed to serve different groups of people and environments. Tabbane (2000) at 297. Macrocells are traditionally defined having a radius between 1 and 30 km and can be used for filling coverage holes between microcells. *Id.* A microcell is a smaller cell served by a low power base station located in streets or large indoor spaces. *Id.* at 298.

¹² Redl, S. M., Weber, M. K., & Oliphant, M. W. (1995). *An introduction to GSM*. Artech House, at 6.

¹³ *See generally* Tabbane (2000) at 288-300.

¹⁴ Spectral efficiency is a measure of modulation efficiency and can be defined as the number of “bits per second per Hertz” or the number of bits that are transmitted in a given period of time, usually one second, over a radio channel with a defined bandwidth. George Calhoun, Digital Cellular Radio 304-05, 394 (1988).

¹⁵ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document (continued....)

14. *Cell splitting* refers to building one or more new sites to off-load traffic from the congested cell to increase capacity. A new site is placed so that at least one of its sectors overlaps with a congested sector on a pre-existing site and takes over some of its coverage area and some of its traffic. This effectively splits a congested cell of coverage into two or more cells that can share the traffic load.¹⁶ *Cell splitting* in cellular networks is a common but costly and often time-consuming way to add capacity.¹⁷

15. *Carried Traffic* is the amount of traffic usage or traffic demand of the network.

16. *Offered Traffic* is the amount of available network capacity.¹⁸ The total capacity of the network is determined by the number of cells in the network and the capacity of each cell. The capacity of each cell is determined by its amounts of deployed spectrum multiplied by the spectral efficiency of that cell. There are many ways to increase network capacity: adding spectrum, adding sectors, adding small cells, cell splitting, and increasing spectral efficiency.

17. *Loading* refers to the ratio of the carried traffic to offered traffic.¹⁹

18. *Busy Hour* refers to the busiest hour of the day with the highest amount of traffic of the network or the sector.

19. *Network efficiencies* refer to the ability of the network to carry more traffic for the same cost, thus lowering the cost per unit of traffic.

20. *Increasing the spectral efficiency* of cells is generally accomplished by deploying new wireless technologies at both the cells and the user devices. This can involve upgrading some of the radios at a cell site and user devices from an older, less efficient technology to a newer, more efficient technology, such as upgrading to different releases of LTE or replacing LTE with 5G-NR.

21. *Coverage* (area) refers to the geographic footprint within which user access to a wireless network is predicted to be available with high confidence and with an estimated minimum downlink user speed.

22. *RF Link Budget* is an accounting of the RF gains and losses that are budgeted between the radio transmitter and receiver, for either the uplink (Mobile transmitting to Base Station) or the downlink (Base Station transmitting to Mobile), necessary to achieve a minimum uplink and/or downlink user throughput speed. A typical output of an RF Link Budget is a calculated value called the “Maximum Allowable Path Loss (MAPL)” (through the spatial path between the transmitter and receiver). The

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21, “Solution Sets.docx” at 5. The Applicants claim that it typically takes [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] months of lead time for a *sector add*. *Id.*

¹⁶ Tabbane (2000) at 293 (“The cell splitting technique consists of reducing cell sizes with an immediate consequence of increasing network capacity. Each cell is split up into a number of cells of a smaller size.”).

¹⁷ The Applicants claim that it typically takes [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] months to build a new macrocell site. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 5. A macrocell split requires the addition of one or more macrocell to add capacity within the same geographical area as the original cell. The additional capacity is generated by each new site reusing the same amount of spectrum of the original site. Public Interest Statement, Ray Declaration at para. 30. Cellular network capacity can also always be added by building more cells, so theoretically no more spectrum is needed. However, spectrum acquisition is often more economically attractive than cell splitting, in part because acquiring additional spectrum in a geographic area increases the potential capacity of all cells in that area. Building new sites is often the most time-consuming and expensive network solution to increase network capacity.

¹⁸ Public Interest Statement, Ray Declaration at paras. 55, 57.

¹⁹ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, “Loading Curve Analysis.docx” at 1.

MAPL is typically used as an input to an RF Propagation Model, used to predict the extent of the geographic coverage area over which users can expect to receive at least the minimum specified downlink (and/or uplink) speed in the Link Budget.

23. *Rural Area*, according to the Census Bureau, is defined as an area encompassing all population, housing, and territory not included in an urban area.²⁰

24. *In-Home Broadband* is a term used by the Applicants to refer to a proposed residential broadband service with minimum speeds of 25 Mbps in the downlink and 3 Mbps in the uplink.

25. *Eligible Household* refers to a household located in an area where New T-Mobile's network will provide sufficient signal quality as well as capacity suitable to support the in-home broadband.²¹

II. DESCRIPTION OF THE NETWORK BUILD MODEL

26. A “model” normally embodies mathematical structures and logic, based on a set of data “inputs,” whereby model calculations produce certain “outputs” that are used for one or more engineering and financial purposes. For example, a network engineering model may be a set of Excel spreadsheet software calculations, with a certain set of input assumptions, such as the locations of cell sites, spectrum deployed at these cell sites, user traffic demand, RF link budgets, the number of subscribers or population (pops) served by a cell site sector, etc., which are used by the model to calculate certain outputs, such as offered capacity, average user throughput, and the type and amount of incremental capacity solutions required to meet the minimum network performance for assumed levels of user traffic demand.

27. The term “model” may also be used in various industry contexts to refer to an RF propagation model, network coverage model, or 5G channel model, etc. To avoid confusing the term “model” with RF propagation model formulations and logic that have not been presented in the record, in the context of this review, we use the term “*coverage input*” data to characterize Applicant data, such as cell sites locations, antenna properties, and RF link budgets, etc. We also use “*coverage output*” data to characterize submitted data, such as coverage maps and shapefiles.

28. In this transaction, the Applicants base their network build and performance claims on a broad variety of engineering data and calculations submitted in six iterations between August 1, 2018 and April 22, 2019 and which, taken together, constitute the Applicants' Network Build Model.²² The Network Build Model includes six major versions of the Excel software tool with formulas, logic and input assumptions used to calculate (at the sector level) the projected carried traffic, baseline offered traffic, network congestions, incremental network solutions, and average user throughput experience for the planned LTE and 5G networks of T-Mobile, Sprint, and New T-Mobile.

29. The Applicants use various iterations of the Network Build Model to quantify network benefit claims for this proposed transaction, and in particular to quantify per-subscriber costs for utilization in their economic merger simulation. The Network Build Model generates the types and amounts of incremental network solutions needed to achieve the LTE and 5G user experience objectives for T-Mobile as a standalone company, Sprint as a standalone company, and the proposed combined company, New T-Mobile.²³ The Network Build Model calculates the incremental network solutions at

²⁰ The Census Bureau states, “To qualify as an urban area, the territory identified according to criteria must encompass at least 2,500 people, at least 1,500 of which reside outside institutional group quarters.” Census, 2010 Census Urban and Rural Classification and Urban Area Criteria, <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html> (last visited Oct. 14, 2019).

²¹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6.

²² The Applicants also refer to the Network Build Model as the Engineering Model. T-Mobile Information Request Response at 30 (Sept. 5, 2018).

²³ The incremental network solutions generated by the Network Build Model are 5G Upgrades, Low-band Overlay, (continued....)

the sector level, from the baseline network, based on the forecasted numbers of baseline sites, subscribers, usage per subscriber, traffic distributions, amount and type of deployed spectrum, and spectral efficiencies for LTE and 5G.²⁴ The Applicants then use the outputs of the Network Build Model to calculate the marginal cost value per additional subscriber as inputs into their IKK model.²⁵ Specifically, the Network Build Model along with the Financial Backend Model calculate the marginal cost per gigabyte of additional usage of the network, which is then converted to the monthly marginal cost per additional subscriber based on the amount of expected usage per subscriber per month.²⁶

30. The Applicants submitted the original basic Network Build Model on August 1, 2018 which was used to state the public interest benefits in the Public Interest Statement on June 18, 2018 (August 1 Model).²⁷ A more extensive Network Build Model that calculates the incremental network solutions was submitted on September 5, 2018 (September 5 Model).²⁸ Another update to the Network Build Model with minor changes was submitted on September 17, 2018 (September 17 Model).²⁹ Subsequent major updates to the Network Build Model were submitted on February 21, 2019 with some modifications along with modeling results for the gap years from 2019 to 2021 (February 21 Model),³⁰ and on March 6, 2019 (March 6 Model) with the in-home broadband modeling results for New T-Mobile.³¹ The latest Network Build Model update was submitted on April 22, 2019; in this update, the Applicants revised the mmW portion of the Network Build Model to develop site-specific estimates of the percentage of traffic addressable by mmW deployment using actual measurements of subscribers' locations.³²

III. NETWORK COMPLEMENTARITIES

31. We generally agree with the Applicants' assessment that the combination of their networks would generate fundamental network efficiencies. As a matter of basic network planning, combining complementary spectrum and cell sites allows the resulting network to become more efficient at providing both capacity and coverage, and in turn speed and reliability. The ability to deploy multiple spectrum bands simultaneously with different propagation and capacity characteristics would help New T-Mobile to provide higher quality mobile broadband service with greater breadth and depth than either standalone firm could provide. Furthermore, by deploying more spectrum on each cell site, New T-Mobile would be able to increase its overall network capacity substantially at a lower cost than either standalone company.

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Mid-band Overlay, Small Cells, Sector Adds, and Cell Splits. Each solution assumes a specific amount of capacity and an associated cost.

²⁴ The forecasted number of users served by each sector is based on the LTE network historical user distributions.

²⁵ Joint Opposition, Compass Lexecon Declaration at para. 53.

²⁶ Joint Opposition, Compass Lexecon Declaration at para. 87.

²⁷ Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Aug. 1, 2018) (T-Mobile Aug. 1, 2018 Engineering Model Response).

²⁸ T-Mobile Information Request Response, Attach. Network Build Models.

²⁹ T-Mobile Supplement to and Revision of Information Request Response (Sept. 17, 2018), Attach. Network Build Models.

³⁰ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Models.

³¹ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. Network Build Model.

³² T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Attach. Network Build Models.

A. Cell Site Equipment Deployment Efficiencies

32. The Applicants assert that all of T-Mobile's current PCS radios can immediately accommodate an additional 10 (or 5+5) megahertz and **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% of its radios can accommodate an additional 20 (or 10+10) megahertz of PCS spectrum.³³ By deploying higher capacity radios in multiple bands utilizing more available spectrum at any cell site, New T-Mobile can add more capacity at lower per unit capacity costs when splitting a cell or adding a new sector compared to the standalone Sprint and standalone T-Mobile.³⁴

33. We generally agree with the Applicants' claim that cell site complementarities can lead to capacity benefits and that the retained Sprint sites can provide congestion relief to existing T-Mobile sites. We recognize that standalone T-Mobile potentially could acquire access to some of the retained sites by co-locating and leasing with the third-party tower companies since all of Sprint's macrocell sites are leased.³⁵ We note, however, that deploying more spectrum on each cell site would be more cost effective in terms of cell site utilization. Adding capacity to an existing cell site by adding higher capacity radios or reconfiguring underutilized radios is a less costly solution than adding a sector or cell splitting.

B. Spectrum Complementarities

34. T-Mobile's network currently utilizes licensed spectrum in the 600 MHz, Lower 700 MHz, 1900 MHz (PCS), and 1700/2100 MHz (AWS) bands, and it will utilize the mmW spectrum bands (28 GHz and 39 GHz) in the future. T-Mobile currently holds approximately 30 megahertz of 600 MHz spectrum nationwide and 10 megahertz of Lower 700 MHz spectrum for a total of approximately 40 megahertz in the low-band (below 1 GHz) portion. For the mid-band portion (1 to 6 GHz), T-Mobile holds approximately 30 megahertz of PCS spectrum and 40 megahertz of AWS spectrum nationwide for a total of approximately 70 megahertz.³⁶

35. Sprint's network currently utilizes licensed spectrum in the 800 MHz (ESMR), 1900 MHz (PCS), and 2.5 GHz (BRS/EBS) bands. Sprint currently holds approximately 14 megahertz of ESMR spectrum nationwide, which is limited to 10 (5+5) megahertz LTE carriers and 2.5 (1.25+1.25) megahertz CDMA carriers in the low-band portion, and 40 megahertz of PCS spectrum. Sprint also holds approximately 160 megahertz of 2.5 GHz spectrum in the top 100 U.S. markets.³⁷

36. The Applicants state that New T-Mobile's ability to efficiently and optimally utilize low-band and mid-band spectrum will be enabled by the Layer Management capability,³⁸ which would allocate, when possible, the 2.5 GHz band as the primary resource to maximize the network performance and capacity.³⁹ At further distances from the cell site, the Layer Management would utilize other mid-band and low-band spectrum with superior coverage characteristics to provide seamless broadband services.⁴⁰ The Layer Management uses two main mechanisms, Active Load Balancing and Coverage-based Inter-frequency Handover, to optimally allocate traffic across different bands based on customer

³³ T-Mobile Mar. 8, 2019 New T-Mobile Network Migration Overview at 7.

³⁴ *Id.* at 7-8.

³⁵ Public Interest Statement, Saw Declaration at para. 6.

³⁶ Public Interest Statement, Ray Declaration at para. 6.

³⁷ Public Interest Statement, Saw Declaration at para. 7.

³⁸ T-Mobile uses Layer Management today, in the ordinary course of business, to allocate users and traffic between bands and optimize efficiency and customer experience in the network. T-Mobile Apr. 2, 2019 Engineering *Ex Parte* Letter, Attach. C at 1.

³⁹ T-Mobile Apr. 2, 2019 Engineering *Ex Parte* Letter, Attach. B at 3.

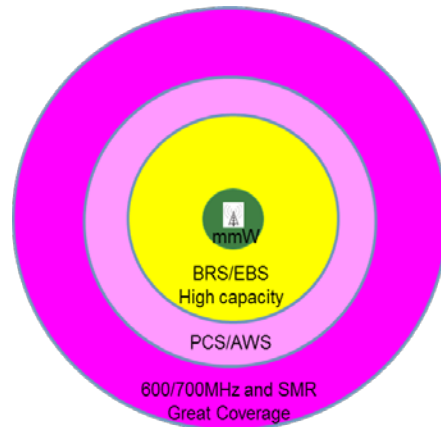
⁴⁰ *Id.*

network experience.⁴¹ The Active Load Balancing relies on the cell air interface scheduler and inter-cell connections to monitor and actively balance the cell traffic loads among different bands based on network settings to improve user experience.⁴² The Coverage-based Inter-frequency Handover optimizes cell transitions as users' RF signal quality changes, moving users to a higher quality cell when the current serving cell signal quality degrades below a target threshold.⁴³

37. For illustrative purposes, the coverage area for a cell with 600 MHz, PCS/AWS, 2.5 GHz, and mmW spectrum would resemble a circle with four concentric rings in which the 600 MHz spectrum would cover the entire area within the outermost ring, the PCS/AWS spectrum would cover the area within the third ring, the 2.5 GHz spectrum would cover the area within the second ring, and the mmW spectrum would only cover the area within the first ring, as shown in Fig. A1 below.

38. The Applicants' spectrum holdings are, in large part, complementary. T-Mobile holds more low-band spectrum, specifically the 600 MHz spectrum, that is more suitable for coverage deployment. Sprint holds more mid-band spectrum, specifically a large amount of 2.5 GHz spectrum, that is more suitable for high capacity deployment. We find that, by simultaneously deploying both low-band and mid-band spectrum, New T-Mobile would provide higher network coverage and capacity performance than either standalone Sprint or standalone T-Mobile could. New T-Mobile's Layer Management would effectively allocate most of the low-band spectrum to mainly serve the outermost or other coverage-challenged areas, leaving the high-capacity mid-band 2.5 GHz spectrum to serve only the inner areas and PCS spectrum to serve mostly the middle areas of the typical cell coverage areas as shown in Fig. A1 below.

Fig. A1: Site Coverage Areas of Different Spectrum Bands (not drawn to scale)



IV. CAPACITY BENEFITS

39. To enable our review of their network claims, the Applicants provided detailed sector level physical site data, types and amounts of spectrum to be deployed, anticipated average sector spectral efficiencies, technology gains, congestion measurements and thresholds, congestion solution gains, and traffic demands related to New T-Mobile, standalone Sprint and standalone T-Mobile. We note that capacity predictions vary depending on which of the several iterations of the Applicants' modeling we employ. However, in all cases, the transaction yields substantial increases in capacity for the merged firm

⁴¹ T-Mobile observed higher throughputs in both high and low frequency bands by using active load balancing and inter-frequency handovers optimization. T-Mobile Apr. 2, 2019 Engineering *Ex Parte* Letter, Attach. C.

⁴² *Id.*

⁴³ T-Mobile Apr. 2, 2019 Engineering *Ex Parte* Letter, Attach. C at 1-2.

relative to the standalone firms. We therefore do not identify which modeling approach and associated set of assumptions is the best reflection of likely capacity, but for purposes of presentation utilize the Applicants’ February 21 baseline network offered 5G traffic calculations,⁴⁴ which, as indicated in Figs. A2, A3, and A4 below, shows that, based on our calculations, New T-Mobile can offer substantially more baseline network capacity than the combined standalone companies. We also note that the Applicants’ network commitments, including their in-home broadband commitments, will tend to increase New T-Mobile’s overall capacity relative to the capacity calculations from the February 21 model presented below.

40. For each spectrum band and company, Fig. A2 shows the baseline average amount of spectrum deployed nationwide, Fig. A3 shows the baseline number of sectors deployed, and Fig. A4 shows the nationwide baseline offered traffic. The nationwide 5G offered traffic of New T-Mobile substantially exceeds the combined traffic of standalone Sprint and T-Mobile, ranging from **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** as shown in Fig. A4.⁴⁵ Furthermore, the Applicants have committed to a substantial 5G network build-out, within six years of the merger closing date, of “**[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** 5G sites nationwide; an average of **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** megahertz of low-band and mid-band 5G spectrum deployed across the 5G sites; 99% of the population experiencing download speeds equal to, or greater than, 50 Mbps; and 90% of the population experiencing download speeds equal to, or greater than, 100 Mbps.”⁴⁶ This commitment will ensure that the theoretical capacity gains projected by the Network Build Model are realized.

Fig. A2: Nationwide Baseline Spectrum Deployment
[BEGIN HIGHLY CONF. INFO.]

Average 5G 600 MHz Band DL Spectrum Deployed (MHz)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Average 5G 2.5 GHz Band DL Spectrum Deployed (MHz)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Average 5G AWS Band DL Spectrum Deployed (MHz)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Average 5G PCS Band DL Spectrum Deployed (MHz)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Average 5G mmWave Band DL Spectrum Deployed (MHz)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						

[END HIGHLY CONF. INFO.]

⁴⁴ Baseline scenarios refer to network deployment scenarios before any incremental network solutions are needed due to network congestion.

⁴⁵ The network integration period is up to the first three years after the closing of this proposed transaction. New T-Mobile’s total network capacity will also include legacy Sprint’s capacity because Sprint’s sites are not yet decommissioned. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. A, Declaration of Mark McDiarmid, at paras. 5, 8.c, 12.

⁴⁶ T-Mobile/Sprint May 20, 2019 Commitments Letter at 3.

Fig. A3: Nationwide Baseline Sectors Deployment
[BEGIN HIGHLY CONF. INFO.]

Number of 5G 600 MHz Band Sectors Deployed	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Number of 5G 2.5 GHz Band Sectors Deployed	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Number of 5G AWS Band Sectors Deployed	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Number of 5G PCS Band Sectors Deployed	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Number of 5G mmWave Band Sectors Deployed	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						

[END HIGHLY CONF. INFO.]

Fig. A4: Nationwide Baseline Offered Traffic⁴⁷
[BEGIN HIGHLY CONF. INFO.]

Baseline 5G 600 MHz Band Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G 2.5 GHz Band Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G mmWave Band Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G PCS Band Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G AWS Band Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G Total Offered DL Traffic (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
New T-Mobile 5G Total Offered DL Traffic Gain Over Standalone T-Mobile + Sprint				

[END HIGHLY CONF. INFO.]

41. For consumers, the New T-Mobile capacity gains we predict will necessarily yield some combination of quality and quantity benefits because the quality of network services are a function of available capacity and the number of simultaneous users attempting to access that capacity. Assuming hypothetically that the same number of subscribers access the network, they would experience significantly increased speeds and network quality. On the other hand, with greater capacity, many more users could access the network, while still achieving the same speed and quality of the standalone networks. As with any wireless network, the degree to which additional capacity is apportioned to improve user experience or to serve additional users on the network will be determined by the service provider.

⁴⁷ New T-Mobile’s offered traffic in this table is based on its default deployment baseline in 2021 as increased each year based on the February 21, 2019 iteration of the network build model. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in Scenarios tab. We note that New T-Mobile would have higher offered traffic based on its actual planned deployment baseline in 2024, which includes further network deployment beyond the minimum performance builds predicted by the network build model with lower demand assumptions. We further note that the network planned under the network build commitments will likely further increase offered capacity relative to the predictions from this iteration of the model. We do not reach a conclusion as to the best precise estimate of likely network capacity, but find that the merged firm would have sufficiently increased overall network capacity compared to the sum of the standalone companies for us to credit it as a significant public interest benefit of the transaction.

42. The Applicants have also committed to provide in-home broadband service using excess capacity that the combined 5G network will yield in certain specific areas. The in-home broadband service will rely upon indoor Customer Premise Equipment (CPE) to provide minimum download and upload speeds of 25 Mbps and 3 Mbps, respectively.⁴⁸ The Applicants commit to market this service to 28.0 million Eligible Households, including 5.6 million Rural Households within six years of the merger closing date.⁴⁹ The Applicants provided the March 6 Network Build Model to demonstrate the effects of providing New T-Mobile’s in-home broadband service.⁵⁰ We have analyzed the assumptions, methodology, and unused network capacity claims the Applicants identified to enable them to provide the in-home broadband service.⁵¹ We have also analyzed the Network Build Model’s sector-level data submitted by the Applicants. We find that New T-Mobile should be able to provide this service in selected areas consistent with the throughput and usage metrics to which the Applicants have committed.⁵² As shown in Fig. A5, there are no additional incremental network solutions triggered for the in-home broadband service as the incremental network solutions are the same as those for the scenario without the in-home broadband service. We observe, however, that the in-home broadband service commitment does not account for higher monthly usage limits than those assumed by the Applicants. Incremental network solutions will likely need to be implemented at certain higher usage limits as also shown in Fig. A5 below.

Fig. A5: Incremental Solutions With and Without In-Home Broadband Service under Different Data Usage Conditions
[BEGIN HIGHLY CONF. INFO.]

Incremental Solutions	2024 New T-Mo, no IHB (Sc #17)	2024 New T-Mo, with IHB (Sc #20), 500 GB	2024 New T-Mo, with IHB (Sc #20), 600 GB	2024 New T-Mo, with IHB (Sc #20), 700 GB
5G Upgrade				
Lowband Overlay				
Midband Overlay -- 2.5G				
Midband Overlay -- AWS/PCS				
Small Cells				
Sector Adds				
Cell Splits				

[END HIGHLY CONF. INFO.]

⁴⁸ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Appx. B, Declaration of Mark McDiarmid, at para. 3.

⁴⁹ T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 2.

⁵⁰ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_In-Home_Broadband_Submission_New_T-Mobile.xlsx.”

⁵¹ Applicants provided details about the in-home broadband service in several submissions, along with assumptions, methodologies and claims regarding this service. T-Mobile Information Request Response at 49-50; T-Mobile Information Request Response, Attach. Specs. 29, 30; Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Oct. 30, 2018), Attach. Engineering Material Update (attaching documents, “53. Broadband Capability.docx” and “53. supplement - Site Level Broadband Households in 2024.xlsx”); T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter (attaching Exh. A to Declaration of Mark McDiarmid, 53a. Home Broadband Support in the New T-Mobile Network); T-Mobile May 1, 2019 *Ex Parte* Letter.

⁵² T-Mobile/Sprint May 20, 2019 Commitments Letter, Attach. 1 at 6-7 (defining “In-Home Broadband Service,” and “Supported Households”).

V. ANALYSIS OF THE NETWORK BUILD MODEL AND THE FINANCIAL BACKEND MODEL

A. Methodology, Assumptions, and Calculations

1. Overview of Network Build Model Methodology and Assumptions

43. The August 1 Model was the first version of the Network Build Model submitted by the Applicants.⁵³ It only calculates the baseline offered traffic at the site level, in 2021 and 2024, for the 5G networks of T-Mobile, Sprint, and New T-Mobile based on the forecasted amounts of spectrum deployed in 600 MHz, AWS, PCS, 2.5 GHz, and mmW bands and the associated spectral efficiency assumptions, as shown in Fig. A6. In addition, a separate LTE module of the August 1 Model calculates the sector offered traffic for LTE in 2021 based on the forecasted amounts of spectrum deployed in 600 MHz, AWS, PCS, and 2.5 GHz bands and the associated spectral efficiency assumptions, as also shown in Fig. A6.⁵⁴

Fig. A6: Spectral Efficiency Assumptions of the Network Build Model

Average LTE Spectral Efficiency (bps/Hz)	2021	2022	2023	2024
Low-Band 4x2 MIMO	2.1	2.1	2.1	2.1
Mid-Band 4x4 MIMO	2.5	2.5	2.5	2.5
Average 5G Spectral Efficiency (bps/Hz)	2021	2022	2023	2024
Low-Band 4x2 MIMO	2.5	2.5	2.5	2.5
Mid-Band 4x4 MIMO	3.8	3.8	3.8	3.8
mmWave mMIMO	7	7	7	7

44. All of the Network Build Models, except the April 22 version, assumed a constant mmW propagation factor of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** that tried to address the limited propagation characteristics of mmW spectrum. Standalone T-Mobile’s and New T-Mobile’s average LTE and 5G carried traffic is calculated by applying the same average of T-Mobile’s historical carried traffic in 2016 and 2017 of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**%.⁵⁵ In addition, standalone Sprint’s average LTE and 5G carried traffic is calculated by applying the same average of Sprint’s historical carried traffic in 2016 and 2017 of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**%.⁵⁶

45. The September 5 Model is an updated and completely revised Network Build Model for the period from end-of-year 2021 to 2024. It is much more extensive and sophisticated than the August 1 Model and includes two distinct but integrated network modules—one for the LTE network and one for the 5G network. The LTE module of the September 5 Model is based on an extended version of T-

⁵³ T-Mobile Aug. 1, 2018 Engineering Model Response at 1; *see also* T-Mobile Supplement to and Revision of Information Request Response at 2 (Sept. 17, 2018).

⁵⁴ Public Interest Statement, Ray Declaration at para. 49, Table 3; T-Mobile Aug. 1, 2018 Engineering Model Response, Attach. Network Build Models.

⁵⁵ Public Interest Statement, Ray Declaration at paras. 55-58.

⁵⁶ *Id.*

Mobile's ordinary course LTE capacity planning model,⁵⁷ and it is integrated with the 5G module, which was based on the same fundamental concepts, such as throughput, congestion, user demand, and network solution sets to demonstrate this transaction's potential 5G network benefits.⁵⁸ Both the 5G and LTE modules in the September 5 Model and subsequent models calculate the outputs as incremental network solutions needed to maintain the target network congestion thresholds and the average subscriber all-day throughput experience.⁵⁹ The incremental network solutions generated by the September 5 Model, in the order of increasing costs and deployments, are 5G Upgrades, Low-band Overlay, Mid-band Overlay, Small Cells, Sector Adds, and Cell Splits. Each incremental network solution assumes a specific amount of capacity and an associated cost. The outputs of the September 5 Model and subsequent models are then used to inform the economic studies that the Applicants claim to demonstrate the quantifiable marginal cost efficiencies of this proposed transaction.⁶⁰ In addition, the September 5 Model's output of the subscriber average all-day throughput experience is used to calculate the consumer valuation of increased throughput, or customer's willingness to pay for increased throughput.

46. The September 17 Model represents a further revision of the Network Build Model that corrects some rare instances of "impermissible mixing of sector adds and cell splits as the model resolves congestion for the second technology," which is inconsistent with the least costly incremental network solutions objective.⁶¹ The September 17 Model process is the same for standalone T-Mobile and standalone Sprint, and the parameters for modeling New T-Mobile are aggregated from the standalone companies. In its ordinary course of business, T-Mobile seeks to maintain an average user busy hour congestion throughput of at least **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps for the LTE network, with key areas in all markets at **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps. These congestion criteria enable reliable video and other LTE applications.⁶² Any sector with the average user LTE throughput below this threshold during the busy hour is considered congested and the Network Build Model would trigger incremental LTE network solutions to meet the congestion throughput target. T-Mobile measures the LTE network load based on the number of radio resource control (RRC) connections during the busy hour as a representation of active users in each sector.⁶³

47. The LTE module of the September 17 Model relies on the number of RRC connections per 5 megahertz to deliver the target minimum user throughput of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps as the congestion threshold.⁶⁴ The RRC connections

⁵⁷ The LTE module of the Sept. 5, 2018 and Sept. 17, 2018 versions of the Network Build Model, to the extent possible, "uses the same assumptions, methodology, algorithms, and solutions that T-Mobile and Sprint use in the ordinary course process" of capacity planning. T-Mobile Supplement to and Revision of Information Request Response at 2 (Sept. 17, 2018).

⁵⁸ We note that the 5G network module utilizes a new "loading curve" concept derived from historical LTE network measurements which is different from the LTE network module. Joint Opposition, Ray Reply Declaration at paras. 21, 26.

⁵⁹ T-Mobile Supplement to and Revision of Information Request Response at 2.

⁶⁰ See *infra* section A-V.C: Crediting Cost Benefits from the Network Build Model for Purposes of Predicting Merger Price Effects (explaining that the Applicants used a Financial Backend Model to convert Network Build Model solutions into marginal costs).

⁶¹ T-Mobile Supplement to and Revision of Information Request Response at 1 (Sept. 17, 2018).

⁶² Joint Opposition, Ray Reply Declaration at paras. 10-11.

⁶³ Joint Opposition, Ray Reply Declaration at para. 8.

⁶⁴ LTE RRC number of connections is used as a proxy for the number of user connections in a specific sector which is indicative of the sector loading. The number of RRC connections congestion thresholds are **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** connections per 5 megahertz for **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps user throughput; and **[BEGIN HIGHLY CONF.**

(continued....)

corresponding to the congestion thresholds were obtained from the correlation analyses between millions of collected radio network and Ookla data points.⁶⁵ T-Mobile states that its ordinary course LTE network congestion model has been highly accurate in predicting sector congestions, with an accuracy of 99.4%, and that it had helped to direct approximately \$10 billion in network expenditures over the past five years.⁶⁶

48. The September 17 Model also incorporates Sprint's business rules for capacity planning of the standalone Sprint's version of the model.⁶⁷ The version of the September 17 Model for standalone Sprint uses a single LTE congestion threshold of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps user throughput, or **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** RRC connections per 5 megahertz.⁶⁸ This version of the Network Build Model did not model the time periods from 2019 to 2021 because the Applicants claimed that integration efforts would not be completed until 2021.⁶⁹

49. The 5G module of the September 17 Model, although contained in the same Excel file, is distinct from the LTE module. Each module has its own input assumptions and calculations, which are integrated only after a 5G Upgrade is selected as the first incremental network solution when any LTE sector is congested. The Applicants state that the congestion criteria for the 5G network would need to be higher than LTE congestion criteria because of the expected higher quality video service.⁷⁰ The congestion threshold for the 5G network is **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps, which is based on the minimum throughput requirement for unimpaired 4K Ultra HD video experience.⁷¹ To ensure similar 5G user experience in instances where 5G users can only connect to the LTE network, the equivalent 5G congestion threshold of **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** RRC connections per 5 megahertz is used on the LTE network.

50. The 5G module of the September 17 Model uses completely different algorithms, compared to the LTE module, to calculate 5G network congestions, the required incremental network solutions, and the average subscriber all-day throughputs. Instead, a loading curve (derived by the Applicants based on T-Mobile's 4x4 MIMO LTE network measurements) correlates the 5G busy hour user throughputs and the 5G busy hour sector loadings and is used as the basis for calculations to determine network congestions, the required incremental network solutions, and the average subscriber all-day throughputs for the 5G module of the Network Build Model.⁷² The 5G module of the September

(Continued from previous page) _____
INFO.] [END HIGHLY CONF. INFO.] connections per 5 megahertz for **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps user throughput. Joint Opposition, Ray Reply Declaration at para. 11.

⁶⁵ Ookla is an independent company that collects crowdsourcing end-to-end user speed experience data. Joint Opposition, Ray Reply Declaration at para. 11.

⁶⁶ Joint Opposition, Ray Reply Declaration at para. 13.

⁶⁷ *Id.* at para. 14.

⁶⁸ T-Mobile Supplement to and Revision of Information Request Response, Attach. Network Build Model, "Montana Capacity Analysis_Sprint.xlsx."

⁶⁹ Joint Opposition, Ray Reply Declaration at para. 15.

⁷⁰ *Id.* at para. 25.

⁷¹ *Id.*

⁷² Loading refers to the ratio of the carried traffic to offered traffic. In general, higher network loading correlates with lower user throughputs, and lower network loading correlates with higher user throughputs. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1; *see also* Joint Opposition, Compass Lexecon Declaration at para. 56.

17 Model, while similar in concept, is fundamentally different from the LTE module which is based on T-Mobile ordinary course of business capacity planning model.

51. The September 17 Model also revised upward the amounts of forecasted spectrum that could be refarmed for 5G deployment compared to the Public Interest statements based on the August 1 Model.⁷³ In addition, there are two different modeling demand scenarios for the September 17 version—one scenario with relaxed (or unconstrained) usage per subscriber forecasts and the other scenario with maintained (or constrained) usage per subscriber forecasts that are used as the basis for the IKK model. As shown in Fig. A7, the maintained usage forecasts are significantly lower than the relaxed usage scenario. Fig. A7 also shows that the nationwide baseline 5G offered traffic of New T-Mobile is significantly higher than the baseline offered traffic of the combined standalone Sprint and T-Mobile, which range from approximately 2.3 times to 1.7 times higher in 2021 and 2024, respectively.

Fig. A7: Two Different Data Usage Scenarios for the September 17 Model
[BEGIN HIGHLY CONF. INFO.]

5G Relaxed (Unconstrained) Usage (GB/month/user)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
5G Maintained (Constrained) Usage (GB/month/user) - Compass Lexecon	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
Baseline 5G Offered Traffic Nationwide (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile				
New T-Mobile/(Sprint & T-Mobile) Ratio				
5G Carried Traffic Nationwide (PB/month)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile - Maintain				
New T-Mobile - Relax				
5G Network Utilization (%)	2021	2022	2023	2024
T-Mobile				
Sprint				
New T-Mobile - Maintain				
New T-Mobile - Relax				

[END HIGHLY CONF. INFO.]

52. The February 21 Model, the fourth version of the Network Build Model, addresses the modeling network integration years from 2019 to 2021 that were not included in the previous versions. In addition, there are some changes to the calculations of the LTE user throughputs, which now use “an empirical loading curve that maps sector loading (measured as by busy-hour users per 5 MHz) to all-day

⁷³ Joint Opposition, Ray Reply Declaration at para. 20.

Ookla throughputs,” similar to the 5G module’s algorithms to calculate 5G user throughputs.⁷⁴ The calculations of LTE incremental network solutions, based on ordinary course model functionality, remain the same as the September 17 Model, which is based on the number of RRC connections per 5 megahertz of spectrum. In addition, there are updates to the inputs of the model to use the most current information.⁷⁵ The history of forecasted maintained usage per subscriber is shown in Figs. A7-A8. This version of the Network Build Model allows for [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.].⁷⁶

Fig. A8: New Data Usage Forecasts for the February 21 Model
 [BEGIN HIGHLY CONF. INFO.]

Maintained Usage - Compass Lexecon (GB/month/user)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
Baseline 5G Offered Traffic Nationwide (PB/month)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile						
5G Carried Traffic Nationwide (PB/month)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile - Maintain						
New T-Mobile - Relax						
5G Network Utilization (%)	2019	2020	2021	2022	2023	2024
T-Mobile						
Sprint						
New T-Mobile - Maintain						
New T-Mobile - Relax						

[END HIGHLY CONF. INFO.]

53. The March 6 Model, the fifth version of the Network Build Model, includes New T-Mobile’s proposed in-home broadband service that would target underutilized capacity of lightly loaded sectors of its mobile 5G network. This version of the Network Build Model calculates incremental network solutions for the combined mobile broadband service and in-home broadband service of New T-Mobile.⁷⁷ This model incorporates traffic from the in-home broadband service by using three additional parameters in the Scenarios tab, namely, the in-home subscriber count scenario, the in-home usage per subscriber per month, and the in-home busy hour factor.⁷⁸

⁷⁴ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 23.

⁷⁵ This version now also uses Sprint’s internal customer demand forecasts for the number of subscribers and the LTE/5G handset mix. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 31.

⁷⁶ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 29-30.

⁷⁷ T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Appx. C at 2.

⁷⁸ T-Mobile Apr. 1, 2019 Engineering Model Adjustments *Ex Parte* Letter at 4-5; *see also* T-Mobile Mar. 6, 2019 In-Home Broadband *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_In-Home_Broadband_Submission_New_T-Mobile.xlsx,” Scenarios tab.

54. The April 22 Model, the sixth version of the Network Build Model, mainly addresses the 5G modeling of mmW deployment with effective utilization variations for each site condition. More specifically, the April 22 Model uses a “traffic addressable by mmWave” factor instead of a constant “propagation adjustment” factor per sector, based on the percentage of measured traffic that could be addressed by mmW spectrum for that sector.⁷⁹ The [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.].⁸⁰ In addition, the mmW incremental network solution has to meet one additional condition for deployment—the minimum threshold of the “traffic addressable by mmWave” factor.⁸¹ The Applicants state that this specific threshold level was selected because it provides a viable and cost-effective solution compared to other incremental network solutions.⁸²

2. Calculations of the Network Build Model

55. The Network Build Model is composed of two network modules, LTE and 5G, which are separated by different tabs in Excel. There is one outputs tab labeled, Scenarios, and four assumption input tabs labeled, Demand, Curve, InputCalcs, and SiteRef. The algorithms and calculations are contained in five tabs labeled, Level1, Level2_LTE, Level3_LTE, Level2_5G, and Level3_5G. There are three levels or stages of the network module calculations. Level 1 calculates the baseline offered traffic for each sector for both LTE and 5G networks, Level 2 calculates sector congestion and average user throughput before any incremental network solution, and Level 3 calculates the required incremental network solutions and the average all-hour user throughput for each sector after the incremental network solutions are deployed. The main outputs of the Network Build Model are the nationwide incremental network solutions required to meet the user throughput objectives with the main inputs of (1) site configurations, (2) deployed spectrum, (3) spectral efficiencies, (4) minimum user throughput objectives, (5) LTE feature gains, (6) incremental network solution capacity gains, (7) number of subscriber forecasts, (8) usage per subscribers, and the (9) loading curve of the relationship between average user throughputs and the busy hour sector loadings.⁸³

a. LTE Network Module

56. The LTE network calculations for each sector are performed in three different tabs labeled, Level1, Level2_LTE, and Level3_LTE. Level1 calculates the baseline LTE offered traffic as the product of deployed LTE spectrum and the associated LTE spectral efficiencies for low-band and mid-band spectrum. Level2_LTE calculates the sector congestion, before any incremental network solution, by comparing the number of LTE users assigned to that sector per 5 megahertz, including otherwise 5G

⁷⁹ [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]. T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Kapoor Declaration at paras. 17-18.

⁸⁰ [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]. Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. C at 2 (filed Apr. 22, 2019).

⁸¹ The minimum threshold of the “traffic addressable by mmWave” factor to be considered for incremental network solution deployment is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]. Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, Attach. C at 3; T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Kapoor Declaration at para. 13.

⁸² *Id.*

⁸³ Busy hour sector loading is the ratio of carried traffic to offered traffic for the sector during the busy hour. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx.”

users who would be connecting to the LTE sector if that sector is not yet 5G deployed, against the target congestion threshold of maximum RRC connections per 5 megahertz. The target RRC connections per 5 megahertz congestion thresholds are [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.] user throughput for 5G users connecting to LTE-only sites.⁸⁴ Level3_LTE calculates the sector incremental network solutions, with increasing solution costs for 5G upgrade, small cells, sector adds and cell splits when the LTE sector is determined to be congested at Level2_LTE. For each incremental network solution deployed with the associated capacity gain,⁸⁵ a new revised number of LTE users per 5 megahertz are compared to the target maximum RRC connections per 5 megahertz. LTE congestion is triggered when the revised number of users per 5 megahertz exceeds the maximum RRC connections per 5 megahertz for that sector. The average LTE user throughput for each sector is calculated as: the product of the average Ookla user throughput,⁸⁶ the total LTE features gain since 2017, and the incremental solution gain, divided by the total LTE traffic growth since 2017.⁸⁷

b. 5G Network Module

57. The 5G network calculations for each sector also are performed in three different tabs labeled, Level1, Level2_5G, and Level3_5G. Level1 calculates the baseline 5G offered traffic as the product of deployed 5G spectrum and the associated 5G spectral efficiencies for low-band, mid-band, and mmW spectrum.⁸⁸ Level2_5G calculates the sector congestion, before any incremental network solution, by calculating the busy hour sector loading to look up the average busy hour user throughput using the 5G busy hour loading curve data.⁸⁹ If the average busy hour user throughput for the sector is below the 5G target congestion threshold of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] Mbps, then that sector is marked as congested.⁹⁰ Level3_5G calculates the sector incremental network solutions, with increasing solution cost and deployment priority, for 5G upgrade, low-band overlay, mid-band overlay, mmW overlay, small cells, sector adds and cell splits when the 5G sector is determined to be congested at Level2_5G, as illustrated in Fig. A9.

⁸⁴ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in SiteRef, InputCalcs, Level1 and Level2_LTE tabs.

⁸⁵ In the LTE network module of the Network Build Model, incremental capacity gains (over a macrocell sector’s capacity) of a small cell, a sector, and a cell split are [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], respectively. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in Level3_LTE tab; T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4-6.

⁸⁶ The average Ookla user throughputs data were collected in 2017.

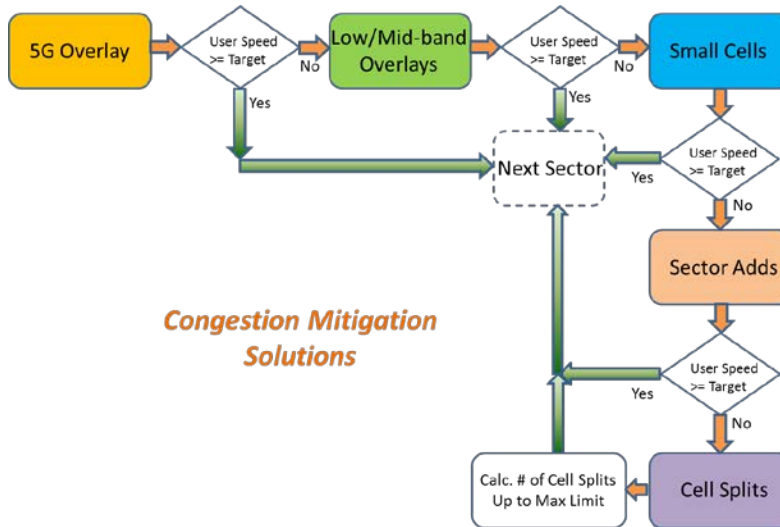
⁸⁷ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in Level3_LTE tab.

⁸⁸ The amount of mmWave spectrum is adjusted by the propagation adjustment factor of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% to yield the effective mmWave spectrum used in calculating the offered traffic of mmWave deployment.

⁸⁹ Sector busy hour loading is calculated as the ratio of the busy hour carried traffic, which is the product of the assigned number of subscribers in that sector and the busy hour usage per subscriber, to the offered traffic, which is the product of the amount of spectrum, the associated spectral efficiencies and 3,600 seconds/hour. The sector loading curve data is in the Curve tab.

⁹⁰ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in SiteRef, InputCalcs, Level1 and Level2_5G tabs.

Fig. A9: The Network Solution Modeling Process



58. For each incremental network solution deployed with the associated capacity gain,⁹¹ a revised user throughput is recalculated from the revised sector loading to look up the average busy hour user throughput via the 5G busy hour loading curve data. The revised sector loading is calculated as the product of the previous sector loading and the ratio of the previous sector throughput to the revised sector throughput after each incremental network solution is deployed.⁹² In addition, the all-day average user throughput is calculated as the product of the busy hour average user throughput and the ratio of the all-day to busy hour user throughput to sector throughput ratio at the final loading.⁹³ For each 5G sector, the model calculates its busy hour traffic loading, which is the ratio of busy hour carried traffic to busy hour offered traffic where:

[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

59. If the sector is marked as congested when the average busy hour user throughput is less than [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] Mbps based on its loading and offered traffic, then subsequent network solutions are applied. For each subsequent network solution

⁹¹ In the 5G network module of the Network Build Model, incremental capacity gains (over a macrocell sector’s capacity) of a small cell, a sector, and a cell split are [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], respectively. T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in Level3_5G tab; T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4-6.

⁹² T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, “Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx,” in Level3_5G tab.

⁹³ *Id.*

deployment, the model recalculates a revised sector loading and the average user throughput to determine if a sector remains congested. The final and most expensive network solution is the cell split, which is a new cell site to be built near the original congested sector in order to off-load some traffic from it. The Applicants state that the average cell split solution gain is **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% of a macrocell capacity based on T-Mobile’s network statistics of the reduction of the number of RRC connected users in the congested sector.⁹⁴

60. The model determines the 5G sector congestion by calculating the average user throughput using a table lookup from the busy hour traffic loading curve.⁹⁵ The traffic loading curve was obtained by using spline regression analysis of the network measured data relationship between the ratio of Ookla user throughput to sector throughput and the cell loading during the busy hour.⁹⁶ For the low-band and mid-band spectrum overlay network solutions, the revised sector loading after each implemented solution is recalculated as:

$$\text{Revised Loading} = \text{Previous Loading} * \left(\frac{\text{Previous Sector Throughput}}{\text{New Sector Throughput}} \right)$$

61. The new user throughput is recalculated using the revised sector loading. The sector is still marked as congested if the new average busy hour user average throughput is still below **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps congestion threshold based on the user to sector throughput ratio using the loading curve table look-up, as shown in Fig. A10.⁹⁷

⁹⁴ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 5.

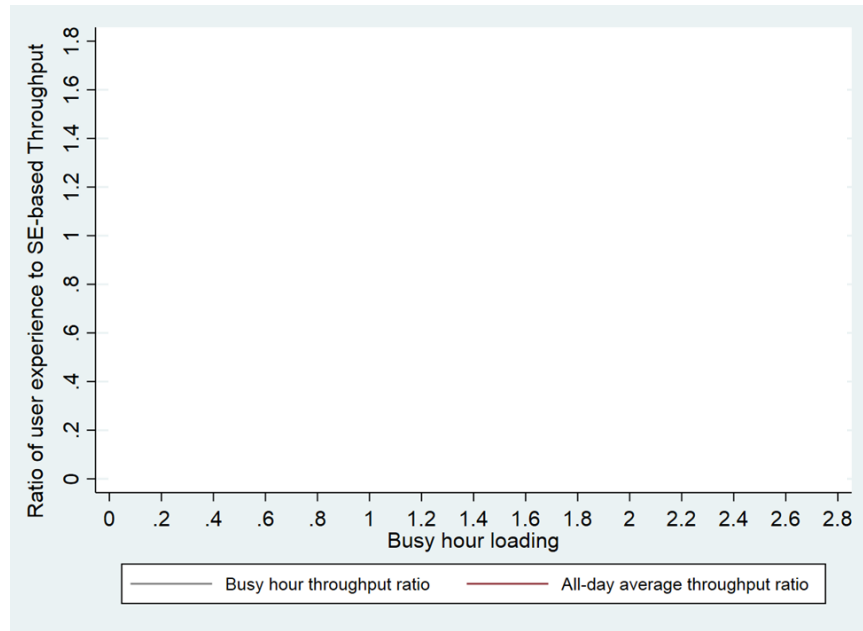
⁹⁵ The average user throughput in a sector is the product of the sector offered traffic and the ratio of user to sector throughput, which is a function of the busy hour loading.

⁹⁶ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, “Loading Curve Analysis.docx” at 2.

⁹⁷ *Id.* at 4.

$$User\ Throughput = User2Sector\ Throughput\ Ratio * Revised\ Sector\ Throughput$$

Fig. A10: 5G Loading Curve
[BEGIN HIGHLY CONF. INFO.]



[END HIGHLY CONF. INFO.]

62. For the small cells, sector additions, and cell splits network solutions, the model calculates the number of each solution required to reduce the sector loading to the required level that would yield the average busy hour user throughput of at least **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps. The required number of each solution, rounded up to the closest integer value, is calculated as:

[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

63. The solution gain for each sector addition and cell split is **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% of a macrocell capacity, and **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]**% of a macrocell capacity for each small cell solution gain.⁹⁸ The revised sector loading after each implemented solution is recalculated as:

[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

⁹⁸ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, "Solution Sets.docx" at 4-5.

64. The model steps through each congestion mitigation solution, subject to certain constraints such as the maximum number of cell splits and which sectors can deploy a small cell solution, and then recalculates the new average busy hour user throughput using the revised sector loading. The sector is still flagged as congested, if the new average user throughput remains below **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps during the busy hour.

c. 5G Loading Curves

65. The Applicants estimate the 5G busy-hour and the 5G all-day loading curves based on their 4x4 MIMO LTE network observations with 4x4 MIMO capable devices for multiple hours of Ookla throughputs from March 1, 2018 to June 18, 2018 and cover **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** sectors and **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** cells.⁹⁹ The 5G busy-hour loading curve is used for two purposes:¹⁰⁰ (1) to determine if a site is congested in their 5G network models,¹⁰¹ and (2) to calibrate a 5G all-day loading curve.¹⁰² The 5G busy-hour loading curve¹⁰³ maps the user throughput ratio¹⁰⁴ and loading¹⁰⁵ at the sector level.¹⁰⁶ Since the Applicants have not built their future 5G networks, and therefore have no actual network measurements for their future 5G networks, the Applicants use measurement data from T-Mobile's 4x4 MIMO LTE network to estimate the 5G busy-hour loading curve.¹⁰⁷ The 5G all-day loading curve maps a 5G sector-level busy-hour loading to a weighted average all-day user throughput for each sector of their 5G networks.¹⁰⁸ The averaged all-day user throughput is

⁹⁹ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1.

¹⁰⁰ We note that this is a "multi-hour" loading curve, rather than a "busy-hour" loading curve since it was estimated using Ookla observations in multiple hours, which are not necessarily busy hours in a day. T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission, 5G Backup, "114K_Hourly_Throughput_vs>Loading - Aug 3 2018.xlsx."

¹⁰¹ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Models, "Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx," "Montana_Capacity_Analysis_Submission_T-Mobile.xlsx," and "Montana_Capacity_Analysis_Submission_Sprint.xlsx," in Curve tab, Level2_5G tab (Columns K-P), and Level3_5G tab (Columns L-T).

¹⁰² T-Mobile Sept. 5, 2018 Network Modeling Filing, Document 41, "Loading Curve Analysis.docx" at 2-3.

¹⁰³ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Models, "Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx," "Montana_Capacity_Analysis_Submission_T-Mobile.xlsx," and "Montana_Capacity_Analysis_Submission_Sprint.xlsx," in Curve tab, Level2_5G tab (Columns L and M), and Level3_5G tab (Columns O and P).

¹⁰⁴ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1 ("the ratio of user experience to SE-based throughput"), at 1 & n.1 ("User experience throughput is measured using data from Ookla.").

¹⁰⁵ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1 & n.1 ("Loading is defined as the ratio of carried traffic to offered traffic.").

¹⁰⁶ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Models, Curve tab in the Excel workbooks. Since the networks are dimensioned at the busy hour, the estimated cell-level 5G multi-hour loading curve is used as the busy-hour loading curve in the Applicants' network models.

¹⁰⁷ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1.

¹⁰⁸ Joint Opposition, Compass Lexecon Declaration at para. 137; T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1-6.

then used to estimate consumer valuations of merger-specific increased average user throughputs between the New T-Mobile 5G network and that of the standalone networks during the busy hour.¹⁰⁹

66. The 5G multi-hour loading curve is estimated using a spline regression at the cell level. The dependent variable is the hourly cell throughput ratio, and the independent variables are the cell loading with knots (or breakpoints) at **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] values.¹¹⁰ This organizational structure divides the loading variable into five equal-sized groups.¹¹¹ The Applicants calculate the cell loading as the carried traffic in the cell divided by the offered traffic in the sector which contains the cell.¹¹² Both site and day dummies are also included in the spline regression to account for site- and day-specific fixed effects.¹¹³ Based on the above cell-level 5G busy-hour regression result, the Applicants calculate the sector-hour throughput ratio for any given sector-hour loading as:¹¹⁴

[BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]

67. The sector level non-busy-hour (i.e., Hours 2-24) loading is calculated by projecting busy-hour loading to non-busy-hours using the distribution of T-Mobile's traffic across the day.¹¹⁵ Specifically, the sector level non-busy-hour loading is calculated as the busy-hour loading times the ratio of non-busy-hour traffic relative to the busy-hour traffic for each sector for each of 23 non-busy hours in a

¹⁰⁹ Joint Opposition, Compass Lexecon Declaration at para. 137.

¹¹⁰ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1-3.

¹¹¹ *Id.* at 1.

¹¹² *Id.* at 1 & n.1; the Applicants state that "(l)oadin g is defined as the ratio of carried traffic to offered traffic." However, after careful examination of the data file provided by the Applicants, the cell loading is calculated as the carried traffic in the cell divided by the offered traffic in the sector which contains the cell, not by the offered traffic in the cell itself. The data file from the Applicants does not have cell level offered traffic, it only has sector level offered traffic. T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission, 5G Backup, "114K_Hourly_Throughput_vs>Loading - Aug 3 2018.xlsx" (Columns G-I).

¹¹³ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 1.

¹¹⁴ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 2 (Table 1); *see also* T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission, 5G Backup, Output "reg_sp_combined.doc."

¹¹⁵ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, "Loading Curve Analysis.docx" at 2.

day.¹¹⁶ For example, if the busy-hour loading is 0.8, and the ratio of a non-busy hour traffic relative to the busy-hour traffic is 0.9, then the loading in the non-busy hour is calculated as 0.8×0.9 or 0.72. The 5G all-day loading curve is obtained using almost the same spline regression of the sector-level traffic weighted average all-day user throughput ratio on the sector-level busy-hour loading.¹¹⁷ The all-day loading curve is used by the Applicants to estimate the average user throughput in the Network Build Model, which is then used to estimate consumer valuations of network quality improvements.¹¹⁸

3. Network Solution Description

68. The network solutions are a set of available solutions to solve the radio network congestions. Each network solution has a cost associated with building and deploying the solution as well as a maintenance cost. The LTE module of the Network Build Model has the following available network solutions in the order of increasing costs and deployment priority: 5G upgrade, small cells, sector adds, and cell splits. The 5G module of the Network Build Model has the following available network solutions in the order of increasing costs and deployment priority: low-band overlay, mid-band overlay, mmW overlay, small cells, sector adds, and cell splits. The role of these solutions is as follows:

a. 5G Upgrades

69. This congestion-avoidance solution is available for any congested LTE site to upgrade to a 5G site with higher spectral efficiencies. T-Mobile has been deploying and will continue to deploy 5G software upgradeable LTE radios at many of its existing sites. In addition, these new radios are much more capable and efficient at handling broader spectrum bands for 5G and LTE.

b. Spectrum Overlays

70. The “low-band, mid-band and mmWave spectrum overlay congestion-avoidance solution” refers to the addition of radio resources that can accommodate additional deployed spectrum.¹¹⁹ And if needed, new antennas for new spectrum bands are also added, which is the preferred network solution because it is the cheapest solution per incremental unit of capacity and it also provides the fastest relief to sector congestion.¹²⁰ However, we note that the overall congestion relief benefits of the overlay solution depend on the overall penetration of devices capable of supporting the new overlay band. The additional spectrum overlay capacity gain for spectrum in the same band is simply the ratio of the newly added amount of spectrum to the total existing amount of spectrum.¹²¹ However, mmW spectrum requires special treatment because of its limited propagation characteristics using a “propagation adjustment” factor or “traffic addressable by mmWave” factor to calculate the effective amount of spectrum that mmW overlay can be used to off-load the sector traffic.¹²²

¹¹⁶ T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission, 5G Backup, Code, “5g_backup.do” (lines 143-66).

¹¹⁷ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 41, “Loading Curve Analysis.docx” at 3; and T-Mobile 114 K Info. Backup Apr. 18, 2019 Submission, 5G Backup, Code, “5g_backup.do” (lines 203-22).

¹¹⁸ T-Mobile Information Request Response (Sept. 5, 2018), Attach. T-Mobile Documentations for Network Build Model, Document 41, “Loading Curve Analysis.docx” at 2-3; *see also* Joint Opposition, Compass Lexecon Declaration at paras. 137-38.

¹¹⁹ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 3.

¹²⁰ Typical spectrum overlay deployment lead time is **[BEGIN HIGHLY CONF. INFO.]** **[END HIGHLY CONF. INFO.]** months. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4.

¹²¹ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 3.

¹²² Version 6th of the Network Build Model uses the site-specific “traffic addressable by mmWave” factor and all

(continued....)

c. Small Cells

71. The small cells solution offers small coverage footprints and is suitable for built-up areas with heavy traffic demand. Small cells can offer an effective network solution to deploy the radio resources to only those locations with the highest traffic concentrations. However, the Applicants state that “this niche fit has resulted in limited adoption in the industry, given the added difficulty of siting and distributed transport challenges.”¹²³ There are only [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] small cells within the small cell polygon, typically in high population density and high site density areas, compared to a total of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] cells in the [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] Mbps polygon, which is typically the core urban areas.¹²⁴ One additional small cell capacity gain is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of the macrocell capacity which is the average gain based on T-Mobile network statistics of the reduction of the number of RRC connections in the congested sector of a macrocell.¹²⁵

d. Sector Additions

72. The sector add solution refers to adding an extra sector or effectively splitting an existing congested sector into two sectors while still serving the same coverage area. This solution adds additional network capacity by deploying two sectors to cover an area previously served by only one sector. One additional sector capacity gain is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of the macrocell capacity which is the average gain based on T-Mobile network statistics of the reduction of the number of RRC connections in the congested sector.¹²⁶

e. Macrocell Splits

73. The macrocell split solution refers to building a new macrocell site that will provide more capacity and increase radio network densification. This solution adds additional network capacity by deploying two or more macrocell sites to cover an area previously served by only one site. One additional site capacity gain is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of the macrocell capacity, which is the average gain based on T-Mobile network statistics of the reduction of the number of RRC connections in the congested sectors in a site. Cell splitting is the most expensive and time-consuming option which is used as the last network solution to address the sector congestion.¹²⁷

(Continued from previous page) _____
older versions use the “propagation adjustment” factor.

¹²³ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4.

¹²⁴ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 28, “Polygons Map - 2Mbps vs 4Mbps and Small Cells.docx” at 1.

¹²⁵ RRC connections is a proxy for the number of connected LTE users on the cell site. Typical small cell deployment lead time is at least [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] months. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4.

¹²⁶ Typical sector add deployment lead time is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] months. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4.

¹²⁷ Typical cell split deployment lead time is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] months. T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 21, “Solution Sets.docx” at 4.

B. Additional Considerations

1. Dynamic Spectrum Sharing for 5G

74. The Network Build Model treats portions of the LTE spectrum as reformed for the 5G network even if 5G is not yet ubiquitously deployed in a market.¹²⁸ We are concerned that this may be an inefficient use of spectrum because some LTE-only sites would have less spectrum for LTE after the refarm even though they have yet to deploy 5G. Furthermore, the Network Build Model predicts that some sectors with lightly loaded LTE traffic have highly congested 5G traffic requiring multiple expensive site splits.¹²⁹ The upcoming availability of Ericsson's RAN dynamic spectrum sharing feature (to be available in the second half of 2019 for all base stations newer than 2015), which is a base station software that Ericsson says can dynamically share the same carrier (or spectrum) between LTE and 5G in milliseconds depending on the real time traffic demand of LTE and 5G users and increase the efficiency of spectrum utilization and minimize spectrum wastage.¹³⁰

75. The Applicants note that there are several limitations of dynamic spectrum sharing deployments,¹³¹ such as additional control signaling overheads, **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.], feature compatibility restrictions (for e.g., NB-IoT), and the commercial availability risk.¹³² While these points are well-taken, nonetheless, we find that the dynamic spectrum sharing feature, if technologically and commercially feasible, would likely increase the network efficiencies during the 5G transition period for either of the Applicants or New T-Mobile. Dynamic spectrum sharing would be particularly beneficial for the standalone companies, which have less spectrum. The Applicants would no longer need to dedicate a fixed amount of spectrum for 5G migration (a traditional spectrum refarming method) and the base station software would dynamically, in milliseconds, utilize the appropriate amount of spectrum resource for each technology depending on different demands. This would greatly simplify the Applicants' network planning and spectrum refarming for 5G deployment, although we note that there are some overhead inefficiencies, costs for acquiring the software, and some older base stations are not supported—in addition to the technological and commercial risk of relying on a new product from a single vendor. Furthermore, LTE-only devices performance will not likely be negatively affected compared to static refarming, when 5G devices penetration is low, since the spectrum resources are dynamically allocated in real time or near real time.

2. Cell Splits Utilization of LTE Spectrum

76. Typical cell splits utilize all the available spectrum to maximize the spectrum utilization. The 5G module of the Network Build Model assumes that only the spectrum reserved for 5G deployment can be used for subsequent 5G split cells, as shown in Fig. A11. However, the available LTE spectrum

¹²⁸ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Network Build Model, "Montana_Capacity_Analysis_Submission_New_T-Mobile.xlsx," in SiteRef, Level1, Level2_LTE, Level3_LTE, Level2_5G, Level3_5G tabs.

¹²⁹ *Id.*

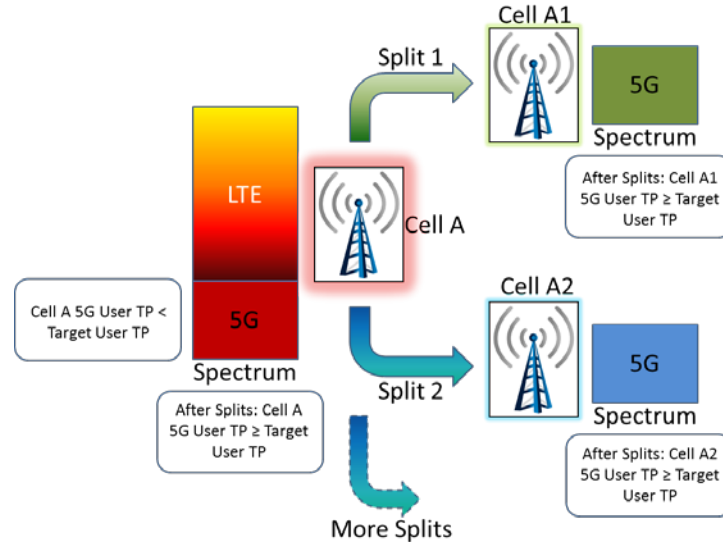
¹³⁰ Ericsson, *Ericsson and Intel to show live demo of 4G + 5G dynamic spectrum sharing at MWC 2019* (Feb. 22, 2019), <https://www.ericsson.com/en/press-releases/2019/2/ericsson-and-intel-to-show-live-demo-of-4g--5g-dynamic-spectrum-sharing-at-mwc-2019>; Ericsson, *Ericsson Spectrum Sharing*, <https://www.ericsson.com/en/portfolio/networks/ericsson-radio-system/radio-system-software/ericsson-spectrum-sharing> (last visited Oct. 14, 2019).

¹³¹ Dynamic spectrum sharing is a 5G feature that would enable complete utilization and dynamically efficient sharing of the deployed spectrum for both 5G and LTE demands. Ericsson, *Ericsson Spectrum Sharing*, <https://www.ericsson.com/en/portfolio/networks/ericsson-radio-system/radio-system-software/ericsson-spectrum-sharing> (last visited Oct. 14, 2019).

¹³² T-Mobile Apr. 2, 2019 Engineering *Ex Parte* Letter, Attach. G at 1-2.

deployed in the original congested site is completely unutilized in the newly split 5G cells, which generates a high number of cell splits for some highly congested sectors where the amount of available 5G spectrum is limited compared to LTE spectrum primarily in 2021 and 2022 for standalone T-Mobile.

Fig. A11: Network Build Model 5G Cell Splitting Process



77. A fully utilized LTE spectrum deployment in the newly split 5G cells could serve as a more cost-effective network solution as shown in Fig. A12 below. Additional 5G cell splits could fully deploy LTE spectrum with software defined LTE radios that also could off-load 5G traffic when a sector is congested, although at lower spectral efficiencies. The LTE radios could be software upgraded to 5G radios later when needed.¹³³ New 5G capable devices will have both LTE and 5G capabilities that can connect to either or both 5G and LTE networks.¹³⁴ It is important to note that this proposed LTE solution for 5G congestion would not relieve 5G congestion per se nor would it affect the marginal cost of delivering 5G data. The solution would instead downgrade traffic from 5G to LTE when LTE is available and a 5G cell is congested, depriving users of 5G's full performance benefits. Furthermore, if both LTE and 5G are deployed, the solution provides users capacity only when both the 5G and the LTE capacity of a particular cell are congested simultaneously. The Network Build Model does not allow offloading of 5G traffic to LTE, so if the 5G capacity of the original cell is congested but the LTE capacity is not, adding LTE capacity to the new cells (Cells A1 and A2 in the diagram) would have little or no effect on the performance of data exchanges with users.

78. T-Mobile claims that the “[BEGIN HIGHLY CONF. INFO.]

[END

HIGHLY CONF. INFO].”¹³⁵ However, T-Mobile previously had stated that the “T-Mobile (the anchor network) has been deploying radio resources that are software upgradeable to 5G at many of its existing cell sites and will continue to do so during the transition process.”¹³⁶

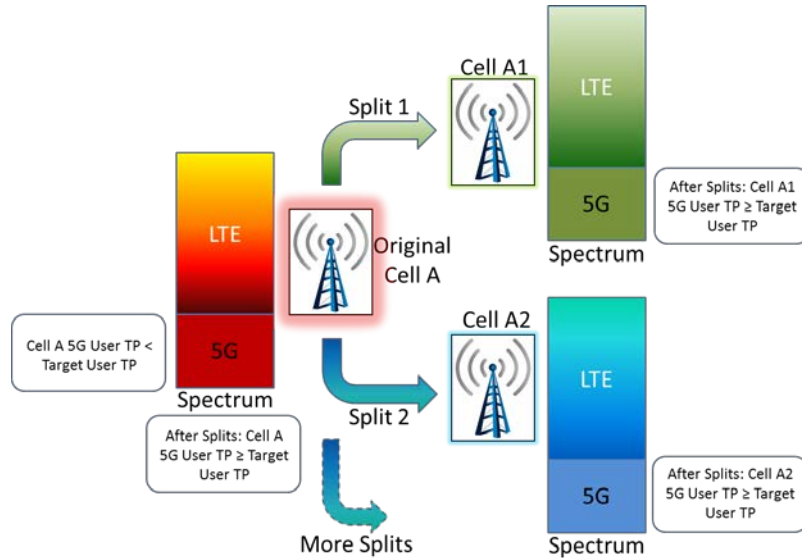
¹³³ Joint Opposition, Ray Reply Declaration at para. 51.

¹³⁴ GSMA White Paper, *Road to 5G: Introduction and Migration*, at 16 and 21 (Apr. 2018), https://www.gsma.com/futurenetworks/wp-content/uploads/2018/04/Road-to-5G-Introduction-and-Migration_FINAL.pdf.

¹³⁵ T-Mobile Supplemental Information Request Response at 2 (Dec. 6, 2018).

¹³⁶ Joint Opposition, Ray Reply Declaration at para. 51.

Fig. A12: Alternative Network Build Model 5G Cell Splitting Process



3. mmWave Spectrum Modeling

79. Existing T-Mobile mmW spectrum could play a more critical role in solving congestion in T-Mobile core areas for highly congested sectors that require multiple cell splits. The Network Build Model¹³⁷ assumes that the mmW spectrum has a constant “propagation adjustment” factor of 10% because the Applicants consider mmW propagation only covers approximately [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% of the coverage area of the average macrocell site in the core areas.¹³⁸ This constant propagation adjustment factor assumption is based on the average inter-site distance (ISD) of all existing macrocell sites within the core of T-Mobile’s markets.¹³⁹ We believe that a constant propagation adjustment factor may be too restrictive and inflexible for sites with ISDs smaller than [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] meters. A variable propagation adjustment factor based on each macrocell site ISD may be more suitable and should have been considered; this would more accurately reflect the effective amount of mmW spectrum that can be used for congestion relief at each site. The Applicants’ April 22, 2019 version of the Network Build Model has improved the mmW modeling, such that the propagation adjustment factor is now site-specific based on network measurements of coverage areas addressable by mmW spectrum.¹⁴⁰

¹³⁷ Up to the “March 6, 2019” version of the Network Build Model.

¹³⁸ T-Mobile Apr. 22, 2019 *Ex Parte* Letter, Compass Lexecon Attach. at 2; T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 18, “mmWave Factor.docx” at 2, stating that the [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.].

¹³⁹ T-Mobile Information Request Response, Attach. T-Mobile Documentations for Network Build Model, Document 18, “mmWave Factor.docx” at 2, stating [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.].

¹⁴⁰ The site-specific “addressable traffic by mmWave” factor is used to determine the amount of effective mmWave spectrum that can be used to off-load traffic from the macrocells. This factor is calculated [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.].

80. The Applicants' Network Build Model assumes that current small cell polygons are constant until 2024, and their models use these as the locations where they can deploy small cells. The small cells, with small equipment footprints, have lower transmission power and antenna heights and are network solutions to solve congestion suitable for small areas with heavy traffic concentration. In highly congested areas with a high number of macrocell splits and small ISDs, cheaper solutions, such as small cells, could offer a more cost-effective solution when the coverage area of a macrocell approaches that of a microcell. While the Network Build Model does not address these issues, we note that the availability of backhaul, power, and appropriate attachment locations, in addition to the siting authorization process, can determine which solution is most cost-effective.

81. We evaluated the September 17 version of the Network Build Model for standalone T-Mobile congested sectors and found that only [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] congested sectors, out of the [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] total congested sectors, are allowed to deploy small cells solution.¹⁴¹ However, there are [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] congested sectors that have the nearest inter-site distances (ISD) less than [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] meters, which is the average ISD for the first national launch polygon in the core areas of T-Mobile's markets. Macrocell splits are expensive and time consuming to deploy and there are many sectors in the Network Build Model for standalone T-Mobile that have a high number of cell splits to solve congestion. For Sprint, the cell split limits range from two to eight cell splits for one originally congested sector and for T-Mobile, the limits range from six to twenty-four cell splits. Clearly for some congested sectors in urban or suburban areas, it is likely not practical to deploy that many macrocells that close to each other. Small cells could offer a more cost-effective solution in at least some cases, but are unable to be deployed because they fall outside of the small cell polygon.

4. Static Spectrum Holding Assumption

82. Acquiring spectrum is another way to ubiquitously increase capacity throughout a large area that the additional spectrum is licensed. Spectrum is generally acquired over a geographic area, such as a CMA, which can be used at every cell in that market. The total capacity for the network is simply the product of the number of cells, deployed spectrum per cell, and the spectral efficiency. Furthermore, the additional spectrum also reduces the costs of adding additional capacity by cell splitting because each new cell will have the extra amount of additional capacity generated by the additional spectrum. Additional mmW, CBRS, and other spectrum, although constrained by limited propagation, could play a role in denser areas as one of the more cost-effective network solutions to solve the predicted severe 5G network congestions for standalone T-Mobile. Although the Commission has an aggressive strategy to put more spectrum into the marketplace, the amount, timing, bands, and cost of the spectrum are uncertain.

C. Crediting Cost Benefits from the Network Build Model for Purposes of Predicting Merger Price Effects

83. In order to predict merger price effects in their static unilateral effects economic model, the Applicants used a Financial Backend Model to convert Network Build Model solutions into marginal costs. Each version of the Network Build Model, beginning with the September 17 submission as described above, has an associated Financial Backend Model.¹⁴² We find that significant marginal cost reductions are creditable as verifiable merger efficiencies quantified by these models, but in light of questions parties raised in the record as to several inputs, we examine two alternative cost savings.¹⁴³

¹⁴¹ The analysis was based on sites that fall within the small cell polygon.

¹⁴² See *supra* section A-II: Description of the Network Build Model (describing each iteration of the Network Build Model that was submitted.).

¹⁴³ See *infra* section A-V.C: Crediting Cost Benefits from the Network Build Model for Purposes of Predicting

84. The Network Build Model produces as an output a solution set of incremental network solutions for each year it is run.¹⁴⁴ The Applicants then feed this yearly output into the Financial Backend Model, which is used to convert the output into a dollar figure. Each solution has an associated annual operating cost (OpEx) and capital cost (CapEx). The OpEx and CapEx costs are then totaled, with CapEx amortized over five years (for T-Mobile and New T-Mobile) or seven years (for Sprint). The total cost is then compared with the cost of incremental network solutions suggested by the Network Build Model in response to 10% changes in total traffic, to produce a marginal total network cost.¹⁴⁵ Specifically, the Applicants compare the costs of the baseline total 5G or LTE traffic levels with the costs of total traffic at 90% and 110% of the baseline levels for 5G or LTE. This marginal cost is converted to a monthly figure and divided by the total traffic amount to produce a marginal cost per GB, as indicated by Equation (1)

$$MC_{GB} \equiv f_{GB}(OpEx, CapEx) \quad (1)$$

where f_{GB} represents a function which for a given year takes as inputs the levels of OpEx and CapEx under different traffic assumptions, denoted $OpEx$ and $CapEx$, and maps them into a marginal cost per GB for that year.¹⁴⁶ Finally, marginal cost per GB is multiplied by the per subscriber monthly demand from the Network Build Model to calculate a marginal cost per additional subscriber per month. As demonstrated by Equation (2), this marginal cost per additional subscriber is a function of the marginal cost per GB and the per-subscriber monthly demand.

$$MC_{SUB} \equiv f_{SUB}(MC_{GB}, D_{SUB}) \quad (2)$$

85. The Financial Backend Model also keeps 5G marginal costs separate from LTE marginal costs—solution sets with 10% changes to traffic were run separately for 5G and LTE.¹⁴⁷ A key input of the Financial Backend Model is the cost for each solution. On September 17, the Applicants asserted the following costs, as shown in Fig. A13.

(Continued from previous page) _____
Merger Price Effects (explaining the two different versions of marginal cost that staff ran through the IKK model).

¹⁴⁴ See *supra* section A-II: Description of the Network Build Model (explaining that the Network Build Model generates the types and amounts of incremental network solutions).

¹⁴⁵ T-Mobile Supplement to and Revision of Information Request Response (Sept. 17, 2018), Attach. Financial Backend Model.

¹⁴⁶ More precisely, $OpEx$ and $CapEx$ are vectors containing two elements, including OpEx and CapEx based on 100% traffic and either OpEx and CapEx based on 90% traffic or 110% traffic as deemed appropriate by the Applicants for a given year. We note that f_{GB} and other functions specified in this Appendix can vary by year, but for concision we have withheld year identifiers.

¹⁴⁷ T-Mobile Supplement to and Revision of Information Request Response (Sept. 17, 2018), Attach. Financial Backend Model.

Fig. A13: Applicants’ Solution Costs–September 2018
[BEGIN HIGHLY CONF. INFO]

Stand-Alone T-Mobile	Incremental Solutions						
	5G Upgrade	Lowband Overlay	Midband Overlay	Small Cells	Sector Adds	Cell Splits	
CapEx (\$/Unit)							
OpEx (\$/Unit/Year)							
Stand-Alone Sprint	Incremental Solutions						
	5G Upgrade	Mini Macros	Cell Splits				
CapEx (\$/Unit)							
OpEx (\$/Unit/Year)							
New T-Mobile	Incremental Solutions						
	5G Upgrade	Lowband Overlay	Midband Overlay	Small Cells	Sector Adds	Cell Splits	
CapEx (\$/Unit)							
OpEx (\$/Unit/Year)							

[END HIGHLY CONF INFO.]

86. When the Applicants resubmitted the model in February 2019 with new incremental solution options, they also submitted new costs for solutions.¹⁴⁸ The costs for the new solutions as shown in Fig. A14 are:

¹⁴⁸ T-Mobile Feb. 21, 2019 *Ex Parte* Letter, Attach. Financial Backend Model.

**Fig. A14: Applicants’ New Solution Costs–February 2019
[BEGIN HIGHLY CONF. INFO]**

Stand-Alone T-Mobile	Incremental Solutions				
	mmWave Overlay	Add-on: Lowband w/o Clubbing	Add-on: Cell Split w/ mmWave	Add-on: mmWave w/o Clubbing	
CapEx (\$/Unit)					
OpEx (\$/Unit/Year)					
Stand-Alone Sprint	Incremental Solutions				
	Add-On: Cell Splits with FD-MIMO				
CapEx (\$/Unit)					
OpEx (\$/Unit/Year)					
New T-Mobile	Incremental Solutions				
	mmWave Overlay w/ Clubbing	Add-on: mmWave w/o Clubbing	Add-on: Lowband w/o Clubbing	Add-on: AWS/PCS w/o Clubbing	
CapEx (\$/Unit)					
OpEx (\$/Unit/Year)					
New T-Mobile (cont.)	Incremental Solutions				
	Add-on: Small Cell w/ AWS/PCS	Add-on: Sector Add w/ AWS/PCS	Add-on: Cell Split w/ AWS/PCS	Add-on: Cell Split w/ mmWave	
CapEx (\$/Unit)					
OpEx (\$/Unit/Year)					

[END HIGHLY CONF INFO.]

87. In addition to these new solutions, the Applicants submitted new costs for their original solutions for standalone T-Mobile and New T-Mobile as shown in Fig. A15.¹⁴⁹ Unlike in their original submission, standalone T-Mobile and New T-Mobile were not assumed to have the same costs for all solutions. Sprint’s original costs remained unchanged.

¹⁴⁹ *Id.*

Fig. A15: Applicants’ Updated Solution Costs–February 2019
[BEGIN HIGHLY CONF. INFO]

		Incremental Solutions						
		5G Upgrade	Lowband Overlay	Midband Overlay	Small Cells	Sector Adds	Cell Splits	
Stand-Alone T-Mobile	CapEx (\$/Unit)							
	OpEx (\$/Unit/Year)							
		Incremental Solutions						
		5G Upgrade	Lowband Overlay	Midband Overlay - 2.5 GHz	Midband Overlay - AWS/PCS	Small Cells	Sector Adds	Cell Splits
New T-Mobile	CapEx (\$/Unit)							
	OpEx (\$/Unit/Year)							

[END HIGHLY CONF. INFO]

88. The Financial Backend Model is highly sensitive to changes in demand. This is because per-user demand is an input in not just the Financial Backend Model (see Equation (2)), but also in the Network Build Model. A decrease or increase in per-user demand will produce a smaller or greater incremental network solution set from the Network Build Model, which will, in turn, result in a decrease or increase in OpEx and Cap Ex, as demonstrated by Equations (3) and (4).

$$OpEx \equiv g_{OpEx}(D_{SUB}) \quad (3)$$

$$CapEx \equiv g_{CapEx}(D_{SUB}) \quad (4)$$

This results in a change in marginal cost per GB. Substituting (3) and (4) into (1) yields Equation (5).

$$MC_{GB} = f_{GB}(g_{OpEx}(D_{SUB}), g_{CapEx}(D_{SUB})) \quad (5)$$

where bold font indicates that OpEx and CapEx at 100% traffic and following a 10% change are entering the marginal cost per GB function.¹⁵⁰ Finally, substituting (5) into (2) result in Equation (6).

$$MC_{SUB} = f_{SUB}(f_{GB}(g_{OpEx}(D_{SUB}), g_{CapEx}(D_{SUB})), D_{SUB}) \quad (6)$$

As demonstrated in (6), per-user demand factors into three different components of the right-hand side of the equation.

89. In addition, we note that the Maintain Usage Scenario for standalone T-Mobile is responsive to the Financial Backend Model. To calculate demand in the Maintain Usage case, the Applicants constrained demand based on the total OpEx costs (but not CapEx) of the solution sets from the 5G network model as calculated in the Financial Backend Model,¹⁵¹ implying that demand is a function of OpEx (Equation (7)).

$$D_{SUB} = h(OpEx) \quad (7)$$

¹⁵⁰ In other words, $g_{OpEx}(D_{SUB})$ and $g_{CapEx}(D_{SUB})$ are vector functions. As before, we omit year indicators.

¹⁵¹ Joint Opposition, Ewens Reply Declaration at 16.

Substituting (7) into (3) and (4), gives us Equation (8) which indicates that both OpEx and CapEx are functions of OpEx.¹⁵²

$$OpEx = g_{OpEx}(h(OpEx)) \quad CapEx = g_{CapEx}(h(OpEx)) \quad (8)$$

Equation (8) suggests that demand must be calculated recursively; when per-user demand is constrained, OpEx costs decrease, and when OpEx costs decrease, per-user demand is relaxed.¹⁵³

90. This relationship between OpEx and constrained demand indicates that the cost of each of the incremental solutions in the Financial Backend Model is an input into demand. Accordingly, when the OpEx costs submitted in February 2019, as described in the Figures above, were reduced for some solutions, this resulted in a substantial increase in per-user demand in the Maintain Usage case. However, the majority of costs for any solution, and thus for any solution set, are not OpEx, but CapEx. Accordingly, the increase in per-user demand that resulted from reduced OpEx costs had the seemingly counterintuitive effect of raising total costs, as the model allowed for more capital-intensive solutions. As a result, marginal cost per additional subscriber increased by as much as [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO]% in a given year between the September and February submissions. In the Maintain Usage case, a decrease in OpEx costs leads to an increase in per-user demand and to investment decisions that have non-obvious outcomes. We thus have concerns with the results from the Maintain Usage case outputs.

91. In addition to the Maintain Usage case, separate demand assumptions exist for Sprint and for unrestrained T-Mobile usage (Relaxed Case) for each year through 2024. Projecting usage six years into the future is not a standard practice and introduces additional uncertainty.¹⁵⁴ Moreover, there are specific concerns relating to the development of the demand projections for use in the Network Build Model. The Sprint demand forecast increases from [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB per month in 2019 to [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB per month in 2024,¹⁵⁵ whereas the T-Mobile Relax demand forecast increases from [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB per month in 2019 to [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB per month in 2024.¹⁵⁶ The disparity in the two demand forecasts range from T-Mobile projecting [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] usage than Sprint in 2019, to projecting [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] than Sprint in 2024. The record indicates that the T-Mobile relaxed case demand estimates do not reflect an ordinary course business planning exercise. The Sprint demand estimates are more conservative, and staff acknowledges

¹⁵² This implies that functions h and g_{OpEx} are inverse functions (over a certain interval).

¹⁵³ The record did not allow us to verify whether this recursive procedure is undertaken by the Applicants in the ordinary course of business or was applied exclusively in support of the proposed transaction. Additionally, we do not have sufficient inputs—which include best course of action judgements by the Applicants’ executives—to replicate the procedure ourselves in response to changes in efficiencies.

¹⁵⁴ See, e.g., TMUS-FCC-07845583 “Demand Forecast.” This October 2016 forecast projected out through 2021. For year 2019, it forecasted monthly per-subscriber usage of [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO] GB. However, in the submission made by the parties in September 2018, the 2019 projection had dropped to [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO] GB per month, a reduction of approximately [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO]% in a period of just two years for a projection that was originally only three years.

¹⁵⁵ SPR-FCC-08669596, at 13 [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO].

¹⁵⁶ TMUS-FCC-07978714, at “Subs and Tonnage Forecast” tab (T-Mobile, “Subscriber and Traffic Forecast – with comments.xlsx,” June 20, 2018).

that those estimates could easily turn out to be too conservative.¹⁵⁷ Fig. A16 below shows demand forecasts that appear in the record or are publicly available.

Fig. A16: Sample of Record and Publicly Available Demand Forecasts
[BEGIN HIGHLY CONF. INFO]

Forecast	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR	Network
Sprint May 2018 LTE ¹⁵⁸											4G
Cisco Feb. 2019 4G ¹⁵⁹		3.5					6.4			13%	4G
T-Mobile April 2018 ¹⁶⁰											4G
AT&T April 2017 ¹⁶¹											ALL
Ericsson June ¹⁶² 2019		5.7	7						39	32%	ALL
AT&T Sept. 2017 ¹⁶³											ALL
T-Mobile 4G/5G forecast ¹⁶⁴											ALL
Cisco Feb. 2019 per capita ¹⁶⁵		3.8					16.4			34%	ALL

¹⁵⁷ See *supra* section V.B.3: Unilateral Effects, paras. 157-59.

¹⁵⁸ See SPR-FCC-08669596 “18.2 Customer Demand Forecast” at 13. Usage per subscriber on Sprint’s 4G LTE network.

¹⁵⁹ Cisco, VNI Mobile Forecast Highlights Tool, publicly available at https://www.cisco.com/c/m/en_us/solutions/service-provider/forecast-highlights-mobile.html (last visited Oct. 14, 2019). United States, Mobile Network Type, Traffic by Network Type—5G, 4G, 3G, 2G. Usage per 4G connection in USA; Cisco forecasts 1.5 and 3.1 total connections per user in 2017 and 2022, respectively.

¹⁶⁰ TMUS-FCC-07080092. Usage per LTE device (including IoT) on T-Mobile network.

¹⁶¹ ATT-STMOFCC-00104369 at Fig. 1. Usage per post-paid smartphone on T-Mobile network.

¹⁶² Ericsson, Ericsson Mobility Report, at 35 (June 2019), publicly available at <https://www.ericsson.com/49d1d9/assets/local/mobility-report/documents/2019/ericsson-mobility-report-june-2019.pdf>. Usage per smartphone in North America.

¹⁶³ See ATT-STMOFCC-00113604 “Wireless Cost Structure” at 8. Usage per subscriber on AT&T network, unmanaged and unlimited data. The observed and projected usages of [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO] GB in 2016 and 2021, respectively, were derived from a subset of AT&T consumers of [BEGIN HIGHLY CONF. INFO] [END HIGHLY CONF. INFO] plans.

¹⁶⁴ See generally T-Mobile Record Submissions. Usage per 4G and 5G subscriber on T-Mobile network, weighted by percentage of subscribers by standard.

¹⁶⁵ Cisco, VNI Mobile Forecast Highlights Tool, publicly available at https://www.cisco.com/c/m/en_us/solutions/service-provider/forecast-highlights-mobile.html (last visited Oct. 14,

(continued....)

Forecast	2016	2017	2018	2019	2020	2021	2022	2023	2024	CAGR	Network
Ericsson Nov. 2018 ¹⁶⁶		6.6	8.6						50	34%	ALL
Ericsson June 2018 ¹⁶⁷	5.2	7.2						49		38%	ALL
Sprint May 2018 5G ¹⁶⁸											5G
T-Mobile 5G forecast ¹⁶⁹											5G
Cisco Feb. 2019 5G ¹⁷⁰							21.7			N/A	5G

[END HIGHLY CONF. INFO]

92. In light of the foregoing, we find that the Applicants' models yield verifiable quantifications of marginal cost benefits, but with some uncertainty as to certain modeling choices and inputs. In order to undertake an economic analysis robust to reasonable variations along those lines, staff adjusted the Network Build Model and Financial Backend Models to produce various alternative scenarios. In the Sprint demand scenario, staff adjusted the Network Build Model and Financial Backend Model to apply the Sprint demand forecast to standalone Sprint, standalone T-Mobile, and New T-Mobile, while accepting all other assumptions in the Network Build Model. Staff then passed the resulting efficiencies through the IKK model to test the effects on market prices with these reduced efficiencies, which are shown in Fig. 3c of this MO&O.¹⁷¹

93. Finally, staff ran multiple simulations of the Network Build Model and Financial Backend Model to test the sensitivities based on various adjustments made to the Network Build Model to account for issues discussed above, such as dynamic spectrum sharing, cell split utilization of 5G spectrum, and millimeter-wave spectrum deployment. After analyzing various combinations of these simulations' effects on network marginal costs and taking into account the uncertainty with other

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2019). United States, 2022 Forecast Highlights. Usage per capita in USA, reduced by growth of users as proportion of population.

¹⁶⁶ Ericsson, Ericsson Mobility Report, at 31 (Nov. 2018), publicly available at <https://www.ericsson.com/491e34/assets/local/mobility-report/documents/2018/ericsson-mobility-report-november-2018.pdf>. Usage per smartphone in North America.

¹⁶⁷ Ericsson, Ericsson Mobility Report, at 35 (June 2018), publicly available at <https://www.ericsson.com/en/mobility-report/reports>. Usage per smartphone in North America.

¹⁶⁸ Usage per 5G subscriber on Sprint network; assumes that initially "a 5G smart phone consumes [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]% more data than a 4G smartphone if 5G coverage reaches 100% of 4G coverage." SPR-FCC-04338918 at 5.

¹⁶⁹ See generally T-Mobile Record Submissions. Usage per 5G subscriber on T-Mobile network.

¹⁷⁰ Cisco, VNI Mobile Forecast Highlights Tool, publicly available at https://www.cisco.com/c/m/en_us/solutions/service-provider/forecast-highlights-mobile.html (last visited Oct. 14, 2019). United States, Mobile Network Type, Traffic by Network Type—5G, 4G, 3G, 2G. Usage per 5G connection in USA; Cisco forecasts 3.1 total connections per user in 2022.

¹⁷¹ See *supra* Fig. 3c: Marginal Cost Savings; New T-Mobile Baseline Scenario with Sprint-Demand Adjustment.

elements of the model, staff cut 50% of the Applicants' stated marginal cost benefits.¹⁷² Due to insufficient information in the model provided, however, staff did not evaluate how that marginal cost cut would stimulate the build out of additional network capacity, which in turn very likely would increase the final marginal cost calculation above the level of the initial cut. These efficiencies estimates were also used as inputs into the IKK model as a sensitivity test against the demand adjustment described above.

VI. NETWORK COVERAGE ANALYSIS

94. Prospectively predicting the coverage of any network is a complicated undertaking. Actual coverage will depend on various technical factors, including the characteristics of technology deployed, the specifics of the network deployment, and the strength of the available RF signal. It also depends on environmental considerations including topography, density, and type of physical infrastructure in the covered area and even atmospheric conditions. There are additional challenges to predicting the coverage provided by a new technology like 5G. In this case, however, in addition to a robust network build plan, the Applicants have provided extensive coverage commitments, with significant associated penalties if they are not met, that add significant additional certainty to our analysis. The Public Interest Statement presents predictions of 5G covered population, coverage maps, and network throughput speeds by covered population of the New T-Mobile network in comparison to the predicted coverage and network throughput speeds of both the T-Mobile and Sprint networks on a standalone basis.¹⁷³

95. To assess the Applicants' claims, staff requested additional information about each of the networks.¹⁷⁴ In response, the Applicants supplied additional coverage input data, including base station site locations, pertinent antenna information, information about proprietary 5G radio planning software, and LTE link budgets for the existing standalone T-Mobile network and 5G networks.¹⁷⁵ Staff analyzed the population coverage of the Applicants' network deployment plan at the census block level, using the Applicants' predicted site locations and 5G RF link budgets, along with the propagation and antenna models in a LTE RF system scenarios technical report provided by 3GPP and ETSI.¹⁷⁶ However, we note that some formulas and calculations used to produce the submitted coverage data were not presented in the record and thus cannot be directly verified.¹⁷⁷

¹⁷² See *supra* Fig. 3b: Marginal Cost Savings; New T-Mobile Baseline Scenario at 50% of Claimed Efficiencies.

¹⁷³ Public Interest Statement at 23, 26-27, 46-47 (showing Figs. 2, 4-5, 9-10, and Table 9, respectively). Information provided in the Public Interest Statement included: coverage maps of 5G Coverage in 2024 for T-Mobile and Sprint standalone networks (Fig. 2 and Fig. 9), and New T-Mobile network (Fig. 10); 5G Throughput by Covered Pops (2021–Fig. 4, 2024–Fig. 5); and 5G Coverage Comparisons (Table 9).

¹⁷⁴ Upon reviewing the Applicants' Public Interest Statement, the Commission requested information (Information Request) with a number of specific requests, two of which (#20 and #21) were focused on, a) RF coverage maps (along with propagation model assumptions and link budget calculations for producing coverage map shapefiles) of the Applicants' current networks (#20), and b) RF coverage maps by average download data rates for the projected networks in 2021 and 2024 (#21). T-Mobile Information Request at 6 (Aug. 15, 2018); Sprint Information Request at 5-6 (Aug. 15, 2018).

¹⁷⁵ Applicants' Information Request Response #20 included LTE RF link budgets, user reference guide documentation, input configuration data information used by a proprietary 5G radio planning tool suite by TEOCO Ltd., and resulting coverage maps and shapefiles. T-Mobile Information Request Response, Attach. Spec. 20 (Sept. 5, 2018).

¹⁷⁶ ETSI, TR 36.942, Evolved Universal Terrestrial Radio Access (E-UTRA), Radio Frequency (RF) system scenarios (3GPP TR 36.942 version 15.0.0 Release 15) (July 24, 2018), https://www.etsi.org/deliver/etsi_tr/136900_136999/136942/15.00.00_60/tr_136942v150000p.pdf (describing antenna and propagation models in sections 4.2 and 4.5, respectively).

¹⁷⁷ T-Mobile Dec. 28, 2018 *Ex Parte* Letter at 1-2. T-Mobile described their use of a proprietary RF engineering database (Asset) (stating that “[i]n generating population coverage figures, all sites/sectors/bands for each network

(continued....)

96. We find that the Applicants' 2024 coverage estimates likely reflect probable coverage areas for New T-Mobile based on the submitted site configurations and coverage claims,¹⁷⁸ within a reasonable margin of error. First, we predict that approximately 89.5% U.S. population coverage with 5G would be achieved for the submitted build-plan by New T-Mobile in the mid-band PCS, AWS, and 2.5 GHz spectrum. This compares to the 86% coverage that was claimed by the Applicants in year 2024.¹⁷⁹ By contrast, staff's coverage analysis suggests that the submitted build-plan for New T-Mobile would achieve approximately 94% U.S. population 5G coverage using the Applicants' **[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]** Mbps cell edge user throughput RF link budget in the 600 MHz band.¹⁸⁰ This compares to the 99% coverage that was claimed.¹⁸¹ We note, however, that the Applicants' coverage commitments do not specify the precise equipment locations used for these modeling exercises, and we expect that any coverage shortfall will be met by additional builds as required by the Applicants' commitments.

97. The distribution of the 5G speeds to covered populations can also be confirmed. The Applicants submitted data to show 5G speeds versus covered population distribution for years 2021 and 2024, for each of the three networks (i.e., New T-Mobile and each of the standalone Sprint and T-Mobile networks). We observe that the calculations were performed correctly for the population that T-Mobile assigned to each sector, however, the method used to calculate the specific number of covered pops for each sector could not be directly verified from the data presented.¹⁸² Similarly, our analysis shows that the distribution of user throughput by covered population in the Applicants' Network Build Model is similar to the distribution of 5G user downlink throughput independently calculated by staff, assuming the use of carrier aggregation across multiple frequency bands.¹⁸³

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scenario are propagated in T-Mobile's RF engineering database (Asset) providing simulated coverage to a geographic area. **[BEGIN HIGHLY CONF. INFO.]**

[END HIGHLY CONF. INFO.] This process is the basis of the throughput population served in Fig. 1 along with the creation of the spaghetti graphs in Figs. 4-5 of the Public Interest Statement."); *see also* Public Interest Statement at 18, 26-27 (showing Figs. 1, 4-5, respectively).

¹⁷⁸ *See generally* Public Interest Statement, Ray Declaration; T-Mobile Information Request Response (Sept. 5, 2018); Joint Opposition, Ray Reply Declaration; Letter from Nancy J. Victory, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Oct. 30, 2018), Attach. Engineering Material Update.

¹⁷⁹ Public Interest Statement, Ray Declaration at para. 39, Table 1 (stating "14% uncovered" in mid-band spectrum by New T-Mobile by 2024).

¹⁸⁰ T-Mobile Information Request Response, Attach. Spec. 20, "S20_LTE Link Budgets.xlsx"; T-Mobile Dec. 28, 2018 *Ex Parte* Letter at 2, stating, "T-Mobile has utilized adapted LTE link budgets as provided in Specification 20 to represent and project 5G coverage."

¹⁸¹ Public Interest Statement, Ray Declaration at para. 39, Table 1 (stating "1% uncovered" in low-band spectrum by New T-Mobile by 2024).

¹⁸² T-Mobile Dec. 28, 2018 *Ex Parte* Letter at 1-2 (stating that a proprietary RF engineering database (Asset) was used to provide simulated coverage to a geographic area in generating population coverage figures). The proprietary nature of this RF engineering tool suite made it impractical to directly and independently verify the Applicants' calculations of the covered population for each base station site, sector, and frequency band.

¹⁸³ Staff calculations are based on the Applicants' submitted, predicted, build plan and do not account for additional or modified builds undertaken by Applicants to meet their commitments. While the committed level of coverage and throughput appear technically feasible, doing so may require additional deployment costs beyond those incorporated into the Applicants' original submitted, predicted build plan, and they may deviate from that plan in order to meet technical and marketplace needs while still meeting the commitments.

APPENDIX G

Applicants'
Commitments

May 20, 2019

VIA HAND DELIVERY

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

**HIGHLY CONFIDENTIAL INFORMATION – SUBJECT TO PROTECTIVE ORDER
IN WT DOCKET NO. 18-197 BEFORE THE FEDERAL COMMUNICATIONS
COMMISSION**

**Re: Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer
Control of Licenses and Authorizations; WT Docket No. 18-197**

Dear Ms. Dortch:

T-Mobile US, Inc. (“T-Mobile”) and Sprint Corporation (“Sprint”, and collectively with T-Mobile, “Applicants”) hereby file this written *ex parte* presentation in the above-referenced docket pursuant to Section 1.1206(b) of the Commission’s Rules, 47 C.F.R. § 1.1206(b). Based on the record in this proceeding and subject to the commitments set forth herein, the Applicants request grant of their applications for transfer of control to permit the merger of T-Mobile and Sprint.

In their Public Interest Statement (“PIS”) and subsequent business, engineering and economic showings, Applicants have demonstrated that their merger will produce enormous consumer benefits and intensify competition. The merged company (“New T-Mobile”) will be able to leverage a unique combination of complementary spectrum and cell sites to unlock massive synergies. This will allow New T-Mobile to invest nearly \$40 billion within three years of closing to deliver a more robust nationwide 5G network and next-generation services than either company can achieve on its own. New T-Mobile’s 5G network will have Sprint’s mid-band spectrum to create massive capacity, T-Mobile’s low-band spectrum to provide broad coverage, and lower costs so that American consumers will pay less and get more. The nationwide 5G network will deliver transformative fiber-like speeds for mobile services; bring broadband wireless service to millions of unserved and underserved rural Americans; unleash a competitive alternative to in-home, fixed broadband providers; benefit MVNOS; and accelerate 5G deployment in the United States, thereby ensuring American leadership in the next-generation of wireless technology.

The Applicants recently have discussed the merger’s benefits with the Commission and listened to concerns about certain aspects of the transaction. In order to respond to these concerns and

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Ms. Marlene H. Dortch
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address them definitively, the Applicants submit herewith proposed commitments to ensure that: (1) New T-Mobile builds a world-leading 5G network; (2) rural Americans receive robust 5G broadband service; (3) in-home broadband competition is enhanced and choice becomes a reality for American consumers; and (4) Boost Mobile is divested to a serious and credible buyer who can compete aggressively in prepaid services on a long-term basis. These commitments will be enforced by strong verification measures, substantial voluntary contributions for missed deadlines, and continuation of the voluntary contributions until unmet obligations are fulfilled. In addition, the Applicants reconfirm their prior commitment to make available the same or better rate plans as those offered by T-Mobile or Sprint as of February 4, 2019 for three years following the merger. Finally, the Applicants make commitments concerning the Altice post-merger MVNO relationship with New T-Mobile. Each of these commitments is summarized below and set forth in detail in the attachments.

Commitment to Build a World-Leading Nationwide 5G Network

New T-Mobile's ability to create an unprecedented, world-leading, nationwide 5G network is the uncontested keystone of this merger. By combining Sprint's mid-band spectrum and T-Mobile's low band spectrum, the merger will position the United States to lead the 5G era by not only accelerating the deployment of a nationwide 5G network, but also increasing competitive pressure on other mobile wireless carriers to accelerate and expand their planned 5G deployments. New T-Mobile's 5G network will be the competitive spark that will ensure America remains the world's leading technological incubator for next-generation services and applications – bringing untold benefits to the American people. The record conclusively demonstrates that New T-Mobile's 5G network will be capable of using the combined low-band and mid-band spectrum of T-Mobile and Sprint to provide virtually ubiquitous and deep 5G coverage across the country, including in rural areas. Within three years of the merger's close, this unique combination of complementary spectrum will enable New T-Mobile to provide fiber-like speeds to hundreds of millions of Americans¹ and deliver average speeds of over 150 Mbps and peak speeds of 1.6 Gbps.² Within six years of the merger's close, average and peak speeds will have surged to 450 Mbps and 4.2 Gbps, respectively.³

Applicants are confident in their 5G network plan. Accordingly, they are willing to back it up with firm commitments, set forth in Attachment 1 at Section I, that include a detailed network build schedule with hard deadlines for providing coverage of the country based on population covered and deploying 5G spectrum and sites. The firm commitments also include speed

¹ *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Joint Opposition of T-Mobile US, Inc. and Sprint Corporation (“Joint Opposition”), Appx. B, Declaration of Neville Ray, Executive Vice President and Chief Technology Officer, T-Mobile US, Inc. at 15 (Sept. 17, 2018).

² Joint Opposition at 42.

³ *Id.*

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commitments verified by nationwide drive tests. The Applicants commit that within three years of the merger's closing, New T-Mobile will blanket three-fourths of the country's population with mid-band spectrum and cover 97 percent of the country's population with low-band spectrum. This broad and deep spectrum deployment will result in almost two-thirds of Americans receiving speeds in excess of 100 Mbps within three years of closing. Within six years of the merger's close, the Applicants commit to deploy a 5G network with: low-band coverage of at least 99 percent of the population; mid-band coverage of at least 88 percent of the population; [REDACTED] 5G sites nationwide; an average of [REDACTED] megahertz of low-band and mid-band 5G spectrum deployed across the 5G sites; 99 percent of the population experiencing download speeds equal to, or greater than, 50 Mbps; and 90 percent of the population experiencing download speeds equal to, or greater than, 100 Mbps. New T-Mobile's 5G network will be able to achieve these exceptional performance targets through the combined capabilities of T-Mobile's low-band and Sprint's mid-band spectrum, and, in doing so, help lead the U.S. to victory in the global race to 5G.

Commitment to Provide High-Speed 5G Services for Rural America

Applicants' plan of record for rural 5G deployment recognizes that consumers in many rural areas have limited choices for wireless service and that entrenched rural incumbents have failed to deliver the quality of service that consumers in rural America deserve. Applicants' filings detailed how rural America represents an untapped business opportunity for New T-Mobile to create much-needed competition, seize customers from unchallenged incumbents, and deliver a new and higher standard of service for rural customers by expanding outdoor 5G coverage to 59.4 million rural residents, and indoor 5G coverage to 31 million rural residents.⁴

The Applicants detailed their plan for New T-Mobile to become an aggressive new competitor in rural America by taking advantage of merger synergies and leveraging its low-band (600 MHz) rural deployment to simultaneously deploy mid-band (2.5 GHz and/or PCS/AWS) radios in rural areas at a very low incremental cost.⁵ The deployment of mid-band spectrum in rural America means that New T-Mobile's broad and deep 5G coverage will not be reserved for urban areas only, but will create tremendous benefits in rural areas as well. Building on this aggressive planned rural deployment, the Applicants now propose to expand and accelerate their rural deployment plans and back it up with a strong commitment, ensuring that even more rural Americans receive the same world-class speed and service from New T-Mobile's mid-band coverage as the rest of the country.

⁴ See *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of the Licenses and Authorizations*, WT Docket No. 18-197, Description of Transaction, Public Interest Statement, and Related Demonstrations at 65-66 (filed June 18, 2018) ("Public Interest Statement"); see also Joint Opposition at 94.

⁵ Joint Opposition at 96-97.

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Applicants' rural service commitment set forth in Attachment 1 at Section II, accelerates and increases the Applicants' previously submitted 5G broadband coverage plan for rural Americans – by going further than any company has before to help bridge the rural Digital Divide. Specifically, New T-Mobile will accelerate the deployment of approximately [REDACTED] mid-band sites in rural America, deploying them within three years of closing – years sooner than previously planned. New T-Mobile will also add 5G mid-band to approximately [REDACTED] additional low-band sites within six years of closing to further accelerate rural 5G deployment.

This rural mid-band acceleration will mean that the advantages of high-capacity mid-band spectrum will be extended to 6.5 million more rural Americans in the first three years of deployment – faster than originally planned. Further, by year six, New T-Mobile will increase its mid-band coverage of rural America by an additional 6.1 million rural Americans who would not have been covered with 5G mid-band spectrum in the original plan. As a result, within three years of closing, New T-Mobile will deliver 50 Mbps or higher to two-thirds of the rural population and 100 Mbps or higher to over half the rural population.

Within six years of the merger's close, New T-Mobile will deploy a 5G network with low-band coverage of at least 90 percent of the rural population; mid-band coverage of at least 66.7 percent of the rural population; [REDACTED] 5G sites in rural areas; an average of [REDACTED] megahertz of low-band and mid-band 5G spectrum deployed per 5G site; 90 percent of the rural population experiencing download speeds equal to, or greater, than 50 Mbps; and 66.7 percent of the rural population experiencing download speeds equal to, or greater than, 100 Mbps. No other company has rural 5G deployment plans even remotely as aggressive as New T-Mobile, and New T-Mobile is the only company that will bring the benefits of 5G mid-band spectrum to millions of rural Americans. Again, New T-Mobile will lead the way for the U.S. to be the global champion for 5G.

Commitment for In-Home Broadband

Applicants have detailed thoroughly their plan to leverage the unprecedented coverage, capacity, and speed of New T-Mobile's 5G network to offer a groundbreaking in-home broadband service, ("New T-Mobile Home Internet") covering over half the country's households at a low price to consumers and a low incremental cost to New T-Mobile.⁶ Applicants have demonstrated how this new service will create direct benefits for all in-home broadband consumers, regardless of whether they subscribe to New T-Mobile, by forcing incumbent broadband providers to lower prices and improve services to respond to an aggressive new broadband competitor.

Applicants' plans for New T-Mobile Home Internet will break the mold for in-home broadband. As described in Applicants' filings, New T-Mobile Home Internet will: provide minimum

⁶ See generally Letter from Nancy J. Victory, Counsel to T-Mobile US, Inc., to Marlene T. Dortch, Secretary, Federal Communications Commission, WT Docket No. 18-197 (Mar. 6, 2019) ("In-home Broadband Ex Parte").

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speeds of 25 Mbps downlink and 3 Mbps uplink (more than fast enough for streaming 4K Ultra HD video); provide average speeds above 100 Mbps downlink; be priced significantly [REDACTED] per month) below incumbent provider prices for service with comparable speeds; have no extra charge for the router; have no installation charge; have no contract; and provide customer care from T-Mobile's award-winning Magenta Glove Team.⁷ Indeed, New T-Mobile Home Internet is poised to fundamentally shift the competitive landscape of one of the least-competitive industry segments in America.

Rural Americans who want and need access or choice for in-home broadband will benefit from the newly accelerated and increased rural deployment of the 5G network described above. Indeed, the in-home broadband service deployment in rural areas also will be accelerated and increased. The number of supported rural households will be approximately 300,000 more within three years and approximately 400,000 more within six years from the closing than originally planned. Here again, rural Americans will be big beneficiaries of the commitments.

Applicants stand behind their representations in the record about their incentive and ability to deliver in-home broadband to millions, including in rural areas. As set forth in Attachment 1 at Section III, Applicants commit that, within three years of closing, New T-Mobile will market the in-home service to 9.6 million eligible households, of which at least 2.6 million are rural households and will have at least [REDACTED] million supported households, of which at least [REDACTED] million are rural households. In addition, within six years of closing, New T-Mobile will market its in-home broadband service to at least 28 million eligible households, of which 5.6 million are rural, and will have at least [REDACTED] million supported households, of which at least [REDACTED] million are rural households.

Commitment for Divestiture of Boost Mobile

Applicants' original business plan involved incorporating the Sprint prepaid brands, including Boost Mobile ("Boost"), into a diverse portfolio of prepaid options that could leverage the powerful New T-Mobile 5G network to provide a high-quality, 5G prepaid service at a low price. While Applicants had planned that Boost would continue to be an effective and meaningful competitor as part of the New T-Mobile portfolio of brands, Applicants now commit to divest and sell the Boost business to remove any remaining doubts regarding the impact of the merger on prepaid wireless customers and competition.

Therefore, as described in Attachment 2, Applicants will divest Boost through a market-based process to a serious and credible buyer. New T-Mobile will offer the Boost buyer terms for a six-year wholesale MVNO agreement that will include wholesale rates that will meaningfully improve upon the commercial terms reflected in the most favorable of T-Mobile's and Sprint's three largest MVNO agreements. The wholesale network arrangement will also ensure that New T-Mobile and New Boost retain strong incentives to compete against each other for customers.

⁷ See *id.*

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The Applicants further commit that the MVNO arrangement will prevent New T-Mobile from treating New Boost in a discriminatory or anticompetitive manner relative to Metro, such as through unwanted discriminatory throttling, de-prioritization, or limitations on access to new network technologies. New T-Mobile will also offer other standard commercial support arrangements to the buyer, including a transition services agreement that is customary for a transaction of this nature. This will ensure that New Boost will be an aggressive competitor to New T-Mobile and other facilities-based, and non-facilities-based operators going forward.

New T-Mobile commits to identify the buyer of Boost and submit the negotiated MVNO agreement to the FCC within 120 days of closing the merger (subject to two 30-day extensions). The divestiture process implemented by New T-Mobile will result in the orderly transfer of Boost customers to the Boost buyer. It will also ensure the continued and seamless operation of Boost during the pendency of the divestiture. New T-Mobile commits to make significant voluntary contributions to the U.S. Treasury should it fail to timely negotiate and submit to the Commission an MVNO agreement that adheres to the principles in its commitment or maintain the competitiveness of Boost during the divestiture process.

Pricing Commitment

Applicants demonstrated through business and economic evidence that wireless consumers will pay less for 5G service and get far better service and more data as a result of the merger. However, on February 4, 2019, to enhance the public interest benefits of the merger and simplify the Commission's expeditious review, the Applicants submitted a firm commitment that "New T-Mobile will make available the same or better rate plans as those offered by T-Mobile or Sprint as of today's date for three years following the merger."⁸

The Applicants once again take this opportunity to unequivocally reaffirm the February 4, 2019, pricing commitment and include it for convenience as Attachment 3. As previously stated, this commitment not only ensures that prices cannot go up, but that 5G comes at no extra cost – in contrast to surcharges imposed by Verizon and planned by AT&T. In light of the proposed Boost divestiture, the commitment will cover the Boost plans only until Boost is divested.

Commitments Regarding Altice

As Applicants have demonstrated in the record, the same economic principles that will drive lower prices for retail consumers will also apply to wholesale prices and MVNOs, creating a unique value proposition for New T-Mobile's MVNOs.⁹ New T-Mobile's additional network

⁸ See Letter from Nancy J. Victory, Counsel for T-Mobile US, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 18-197 (Feb. 4, 2019) ("Pricing Commitment Letter").

⁹ Joint Opposition at 88-91.

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capacity and lower per unit costs will create an incentive for the combined company to lower wholesale prices to MVNOs in order to ensure that the new network capacity is not wasted by sitting idle.¹⁰ MVNOs will benefit not only from the capabilities of the New T-Mobile network, but also the unprecedented capacity and lower cost per GB, which will translate into lower wholesale costs, and, ultimately, lower prices for MVNO subscribers.¹¹ In addition to these competitive incentives, T-Mobile has publicly represented that New T-Mobile will honor the terms of existing Sprint and T-Mobile MVNO agreements, including Sprint's agreement with Altice.¹²

As described in Attachment 4, Applicants now commit that New T-Mobile will not exercise any termination rights under Altice's MVNO agreement with Sprint that might be triggered by the merger. In addition, New T-Mobile commits to engage in good faith negotiations to expand the existing Sprint/Altice agreement to the New T-Mobile 5G network.

Verification and Enforcement

Applicants take these commitments seriously, expect to be held to their word, and they are prepared for financial consequences if they fail to do so. Accordingly, Applicants commit to a verification and enforcement regime of unprecedented rigor. Failure to meet New T-Mobile's obligations will trigger severe, increasing, and continuing voluntary contributions that will make failure prohibitively expensive and incentivize New T-Mobile to meet its commitments.

At the same time, New T-Mobile's commitments will set a new standard for regulatory transparency, providing regular and robust information in annual reports regarding its progress in meeting its nationwide 5G, rural 5G, and in-home commitments. For New T-Mobile's three-year and six-year commitment dates, the company will provide a comprehensive report that includes data from drive tests, polygon coverage shapefiles, population and household coverage figures, site lists, marketing figures, and executive certifications.

Applicants' rigorous verification processes will be accompanied by an even more exacting enforcement structure. Voluntary contributions will be calculated separately for each missed commitment. Furthermore, each of New T-Mobile's six-year commitments will continue until satisfied and, accordingly, their respective voluntary contributions will continue to accrue and increase during their pendency. This enforcement standard is unprecedented in its strength.

The Applicants are prepared to submit to the substantial financial consequences of missed deadlines or obligations because all of the deadlines and obligations are consistent with the New T-Mobile plan. They simply ensure that New T-Mobile does post-merger what the Applicants

¹⁰ *Id.* at 88.

¹¹ *Id.*

¹² *Id.* at 89.

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have described will happen in their Public Interest Statement and subsequent filings, as well as the accelerated and expanded deployment of the 5G network to rural America included in the merger commitments the Applicants make today.

Commission Grant of the Transfer of Control Applications

In view of the record in this merger proceeding and the commitments submitted herewith, the Applicants request prompt grant of their applications for transfer of control as serving the public interest.

Please direct any questions regarding the foregoing to the undersigned counsel for the Applicants.

Respectfully submitted,

SPRINT CORPORATION

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ATTACHMENT 1

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NETWORK AND IN-HOME COMMITMENTS

I. Nationwide 5G Network Deployment. T-Mobile and Sprint commit that:

(A) within three (3) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will deploy a 5G network with:

1. a Low-band 5G Coverage Area covering at least 97% of the U.S. Population;
2. a Mid-band 5G Coverage Area covering at least 75% of the U.S. Population;
3. ██████████ 5G Sites nationwide;
4. ██████████ MHz of low-band and mid-band 5G Spectrum averaged over all 5G Sites deployed nationwide (the sites described in Section I.A.3 above);
5. 75% of the U.S. Population having access to download speeds equal to or greater than 50 Mbps, as verified by a drive test;¹ and
6. 63% of the U.S. Population having access to download speeds equal to or greater than 100 Mbps,² as verified by a drive test.

(B) within six (6) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will deploy a 5G network with:

1. a Low-band 5G Coverage Area covering at least 99% of the U.S. Population;
2. a Mid-band 5G Coverage Area covering at least 88% of the U.S. Population;
3. ██████████ 5G Sites nationwide;
4. ██████████ MHz of low-band and mid-band 5G Spectrum averaged over all 5G Sites deployed nationwide (the sites described in Section I.B.3 above);
5. 99% of the U.S. Population having access to download speeds equal to or greater than 50 Mbps, as verified by a drive test; and
6. 90% of the U.S. Population having access to download speeds equal to or greater than 100 Mbps,³ as verified by a drive test.

II. Rural 5G Network Deployment. With regard to the nationwide 5G network deployment described above, T-Mobile and Sprint further commit that:

¹ New T-Mobile will fund the drive tests to take place at the end of years 3 and 6. The drive tests will utilize a methodology mutually agreed to by New T-Mobile and the Wireless Telecommunications Bureau ("Bureau") within 60 days of the closing of the T-Mobile/Sprint merger. The goal of the drive testing is to reflect actual user experience under ordinary utilization and compare them to the speed and coverage commitments stated in Sections I and II. The drive testing will involve oversight by an independent third party, but may be conducted by T-Mobile personnel. The drive testing will commence at the three (3) and six (6) year anniversary of the close of the transaction and be completed within nine (9) months thereafter in each case. The drive test would make use of T-Mobile-Certified 5G Devices.

² While not a part of the formal commitment, the 63% of the U.S. Population having access to download speeds equal to or greater than 100 Mbps are expected to experience average upload speeds of 15-20 Mbps.

³ The 90% of the U.S. Population having access to download speeds equal to or greater than 100 Mbps are expected to experience average upload speeds of 15-20 Mbps. See n.2.

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(A) within three (3) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will deploy a 5G network with:

1. a Low-band 5G Coverage Area covering at least 85% of the Rural Population;
2. a Mid-band 5G Coverage Area covering at least 55% of the Rural Population;
3. [REDACTED] 5G Sites Deployed in Rural Areas;
4. [REDACTED] MHz of low-band and mid-band 5G Spectrum averaged over 5G Sites deployed in Rural Areas (the sites described in Section II.A.3 above);
5. 66.7% of the Rural Population having access to download speeds equal to or greater than 50 Mbps, as verified by a drive test; and
6. 55% of the Rural Population having access to download speeds equal to or greater than 100 Mbps,⁴ as verified by a drive test.

(B) within six (6) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will deploy a 5G network with:

1. a Low-band 5G Coverage Area covering at least 90% of the Rural Population;
2. a Mid-band 5G Coverage Area covering at least 66.7% of the Rural Population;
3. [REDACTED] 5G Sites Deployed in Rural Areas;
4. [REDACTED] MHz of low-band and mid-band 5G Spectrum averaged over 5G Sites deployed in Rural Areas (the sites described in Section II.B.3 above);
5. 90% of the Rural Population having access to download speeds equal to or greater than 50 Mbps, as verified by a drive test; and
6. 66.7% of the Rural Population having access to download speeds equal to or greater than 100 Mbps,⁵ as verified by a drive test.

III. In-Home Broadband. T-Mobile and Sprint commit that:

(A) within three (3) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will:

1. Market its In-home Broadband Service product to at least 9.6 million Eligible Households, of which at least 2.6 million are Rural Households; and
2. have at least [REDACTED] million Supported Households, of which at least [REDACTED] million are Rural Households.

(B) within six (6) years of the closing date of the T-Mobile/Sprint merger, New T-Mobile will:

1. Market its In-home Broadband Service product to at least 28.0 million Eligible Households, of which 5.6 million are Rural Households; and
2. have at least [REDACTED] million Supported Households, of which at least [REDACTED] million are

⁴ The 55% of the Rural Population having access to download speeds equal to or greater than 100 Mbps are expected to experience upload speeds of 15-20 Mbps. See n.2.

⁵ The 66.7% of the Rural Population having access to download speeds equal to or greater than 100 Mbps are expected to experience upload speeds of 15-20 Mbps. See n.2.

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Rural Households.

Provided, however, that the requirements of Sections III.A.1 and III.B.1 will terminate once New T-Mobile has 9.5 million simultaneous In-home Broadband Service subscribers.

IV. Verification. T-Mobile and Sprint commit that:

(A) Within 60 days following each of the first, second, fourth and fifth annual anniversaries of the closing date of the T-Mobile/Sprint merger, New T-Mobile will submit to the Bureau a report that details the progress the company is making toward meeting the site and spectrum deployment and other commitments described in Sections I-II and the In-home Broadband commitments described in Section III (including the number of subscribers) as of the corresponding anniversary date.

(B) Within 9 months following each of the third and sixth annual anniversaries of the closing date of the T-Mobile/Sprint merger, New T-Mobile will submit to the Bureau a report that will include:

1. drive test results;
2. polygon shapefiles showing New T-Mobile's Low-band 5G Coverage Area and Mid-band 5G Coverage Area as of the 3-year or 6-year date (whichever is applicable);
3. a statement quantifying the U.S. Population and Rural Population covered by each of the Low-band 5G Coverage Area and Mid-band 5G Coverage Area as of the 3-year or 6-year date (whichever is applicable);
4. a list of 5G Sites (including information identifying individual sites, e.g., latitude and longitude) and spectrum deployed, broken into rural and non-rural categories;
5. a certification from New T-Mobile's Chief Technology Officer that the representations in the shapefiles, population coverage numbers, site and spectrum deployment numbers, and speeds are true and correct;
6. a statement describing the means by which New T-Mobile has Marketed its In-home Broadband Service product to date;
7. the number of households, with reasonable precision, that received or were covered by each form of In-home Broadband Service Marketing as of the 3-year or 6-year date (whichever is applicable);
8. the number of Supported Households, and of those the number of Rural Households;
9. the number of subscribers of New T-Mobile's In-home Broadband Service as of the 3-year or 6-year date (whichever is applicable); and
10. a certification from New T-Mobile's executive in charge of the In-home Broadband Service business that the representations in the report regarding In-home Broadband Service Marketing, Supported Households and number of subscribers are true and correct.

V. Enforcement. T-Mobile and Sprint agree that, in the event that the Bureau determines that New T-Mobile has failed to meet any of the commitments described in Sections I-III

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above, New T-Mobile will make a voluntary contribution to the U.S. Treasury in the manner directed by the Bureau within 60 days of such determination. This voluntary contribution will be in lieu of the Commission taking any action under its forfeiture authority for failure to meet the commitments described in Sections I-III above. The amount of the voluntary contribution will be calculated in accordance with this section:

(A) In the event that the Bureau determines that New T-Mobile has failed to meet any of the 3-year commitments, the applicable voluntary contribution shall be calculated as follows:

1. The amount of the voluntary contribution shall be cumulative, calculated separately for each missed commitment (Sections I(A), II(A), and III(A) each constituting an individual commitment) commensurate with the percentage by which New T-Mobile missed the commitment. The total amount of the voluntary contribution shall be the sum of the amounts assessed for each missed commitment;
2. Where a commitment has multiple elements (as in Sections I(A), II(A), and III(A)), the Bureau shall determine the percentage by which New T-Mobile has fallen short under each element⁶ and calculate the voluntary contribution for the particular missed commitment based on the highest calculated percentage missed of any element;
3. Each 1% of shortfall with respect to the commitment in Sections I.A.5 and II.A.5 shall constitute 0.5% for purposes of the calculation in 2; and
4. The following contribution scale will apply:

Missed Percentage	Voluntary Contribution
>0%-5%	\$10,000,000
>5%-10%	\$25,000,000
>10%-25%	\$50,000,000
>25%-50%	\$100,000,000
>50%	\$250,000,000

(B) In the event that the Bureau determines that New T-Mobile has failed to meet any of the 6-year commitments, the applicable voluntary contribution shall be calculated as

⁶ For example, if there is a commitment to serve 55% of the population (180.1M people out of a total population of 327.48M) and New T-Mobile is able to serve only 160.3M by the deadline, the company would fall short by 19.8M people, which would be a percentage missed of 11% (19.8M ÷ 180.1M X 100 = 11%).

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follows (with a maximum contribution for such a determination of \$2.4 billion repeatable as described in Section V.C.):

1. The amount of the voluntary contribution shall be cumulative, calculated separately for each missed commitment (Sections I(B), II(B), and III(B) each constituting an individual commitment) commensurate with the percentage by which New T-Mobile missed the commitment. The total amount of the voluntary contribution shall be the sum of the amounts assessed for each missed commitment;
 2. Where a commitment has multiple elements (as in Sections I(B), II(B), and III(B)), the Bureau shall determine the percentage by which New T-Mobile has fallen short under each element and calculate the voluntary contribution based on the highest calculated percentage missed of any element;
 3. Each 1% of shortfall with respect to the commitment in Sections I.B.5 and II.B.5 shall constitute 0.5% for purposes of the calculation in 2;
 4. The voluntary contribution for each 1% (rounded to the nearest tenth of a percent) up to 20% that a commitment is missed shall be \$10,000,000, and \$5,000,000 for each 1% thereafter; however, the minimum contribution amount shall be \$25,000,000; and
 5. The voluntary contribution calculated for failure to meet the commitment described in Section II shall be doubled.⁷
- (C) New T-Mobile's obligation to fulfill the commitments in Sections I(B), II(B), and III(B) remains until satisfied. Within one year after a Bureau determination that New T-Mobile was deficient with respect to any element of these commitments, New T-Mobile shall submit to the Bureau a report demonstrating whether it has satisfied any remaining deficient element(s). A determination by the Bureau that New T-Mobile has failed to meet any of the remaining deficient elements shall be subject to the same voluntary contribution amounts described in Section V(B) and the process described in this section V(C) until satisfied.
- (D) In making a determination regarding New T-Mobile's compliance under Sections IV(A)-(C) above, the Bureau shall take into account and, in its reasonable discretion, appropriately reduce the metric, extend the deadline or reduce the contribution amount associated with commitments missed due to unanticipated circumstances beyond the company's control (*e.g.*, acts of God, such as fire, flood, earthquake, or other natural disasters; terrorist events, riots, insurrections, war, strikes or national emergencies; law or order of any government body; or significant interruptions in the supply chain).

VI. **Definitions.** The following terms are used in this document:

- (A) "5G" is defined as the 5G New Radio air interface standard as described in 3GPP Release 15. Available at <https://www.3gpp.org/release-15>.

⁷ For example, a 20% shortfall on each of the commitments in Sections I(B), II(B) and III(B) would translate into a combined \$800M voluntary contribution ($\$200M + (2 \times \$200M) + \$200M = \$800M$).

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- (B) “5G Sites” is defined as macro sites on which 5G radios are deployed.
- (C) “5G Sites Deployed in Rural Areas” means 5G Sites that are physically located within a Rural Area.
- (D) “5G Spectrum” is defined as dedicated licensed spectrum used for downlink or uplink with 5G radios and does not include spectrum shared dynamically with LTE.
- (E) “Access” to specified speeds means that users of T-Mobile-Certified 5G Devices will experience the specified download speeds on average (mean) across actual utilization.
- (F) “Eligible Household” is defined as a household located in a geography: (A) over which New T-Mobile’s network will provide signal quality suitable to support the In-home Broadband Service; and (B) in which New T-Mobile’s network has sufficient capacity to serve one or more households with In-home Broadband Service, as shown in the polygon shapefile submitted to the Bureau.
- (G) “In-home Broadband Service” is defined as a residential broadband service with minimum speeds of 25 Mbps downlink and 3 Mbps uplink.
- (H) “Low-band 5G Coverage Area” is defined as that area included within the bounds of the polygon shapefile submitted to the Bureau representing geographic coverage for 5G service using Low-band Frequencies with coverage based on T-Mobile’s ordinary course coverage analysis. The coverage shapefiles used to calculate covered pops will be verified by a drive test at the 3 and 6 year intervals. *See* n.1.
- (I) “Low-band Frequencies” is defined as those radiowave frequencies below 1 GHz including, but not limited to, frequencies in the 600 MHz, 700 MHz, and 800 MHz bands.
- (J) “Market” is defined as to advertise and offer a product or service for sale including, but not limited to, through TV, radio, Internet, digital, electronic, voice, print, mail, or in-person channels.
- (K) “Mid-band 5G Coverage Area” is defined as that area included within the bounds of the polygon shapefile submitted to the Bureau representing geographic coverage for 5G service using Mid-band Frequencies with coverage based on T-Mobile’s ordinary course coverage analysis. The coverage shapefiles used to calculate covered pops will be verified by a drive test at the 3 and 6 year intervals. *See* n.1.
- (L) “Mid-band Frequencies” is defined as those radiowave frequencies above 1 GHz and below 6 GHz including, but not limited to, the AWS, PCS, and 2.5 GHz bands.
- (M) “Rural Area” is as defined by the 2010 U.S. Census.
- (N) “Rural Households” is defined as households located within a Rural Area.
- (O) “Rural Population” is defined as the population within Rural Areas derived from the population data licensed through the 2016 Pitney Bowles study, which provides population at the census block level. The 2016 Pitney Bowles study is based on the

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2010 U.S. Census, but then updated based on more recent information. According to the 2016 Pitney Bowles study, the Rural Population is 61.98M. That population number is fixed for purposes of calculating compliance with these commitments as is the population per census block through which covered pops will be determined.

- (P) “Supported Households” is defined as those Eligible Households that New T-Mobile will have the capacity to serve with its In-home Broadband Service at any given time (based upon an average usage across the sector of [REDACTED] GB per month per household as of 3 years following the close of the T-Mobile/Sprint merger and an average usage across the sector of [REDACTED] GB per month per household as of 6 years following the merger closing). Supported Households will be calculated according to the methodology set out in T-Mobile’s *ex parte* filing detailing its In-Home Broadband plans. See Letter from Nancy Victory, Counsel for T-Mobile, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 18-197 (Mar. 6, 2019). Within 60 days of the closing of the T-Mobile/Sprint merger, New T-Mobile and the Bureau will work in good faith to refine this methodology to utilize actual deployment numbers.
- (Q) “T-Mobile-Certified 5G Device” means a device that T-Mobile or New T-Mobile has certified as compatible with its 5G network (it is expected that all 5G devices available through New T-Mobile retail will be T-Mobile-Certified 5G Devices).
- (R) “U.S. Population” is defined as the population of the United States (including the 50 states, Puerto Rico and the U.S. territories) as derived from population data licensed through the 2016 Pitney Bowles study, which provides population at the census block level. The 2016 Pitney Bowles study is based on the 2010 U.S. Census, but then updated based on more recent information. According to the 2016 Pitney Bowles study, the U.S. Population is 327.48M. That population number is fixed for purposes of calculating compliance with these commitments as is the population per census block through which covered pops will be determined.

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ATTACHMENT 2

HIGHLY CONFIDENTIAL TEXT HIGHLIGHTED

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BOOST MOBILE DIVESTITURE

T-Mobile and Sprint commit to divest the Boost Mobile business. The market-based process implemented by the Applicants will ensure that New T-Mobile will divest Boost Mobile to a serious and credible buyer (“Buyer”) and receive fair value for the assets. As part of the process contemplated in this commitment, the Applicants and Buyer will be free to agree to commercial terms of their choosing, subject only to the limitations set out below:

I. Overview of Divested Business. The Boost Mobile assets and operations to be divested (the “Divested Business” or “New Boost”) include:

- A. Boost Mobile-branded customers with an “active” Boost Mobile account;¹ and
- B. “Dedicated” Boost Mobile assets, properties, systems, management team and employees that are necessary to operate the Boost Mobile business as it is conducted as of the merger closing date.² The Divested Business will include all ownership interests in, and rights to use, the Boost Mobile brand and its associated brands and trademarks.³

II. Obligation to Maintain Divested Business Prior to Divestiture. New T-Mobile must undertake commercially reasonable efforts to maintain Boost’s competitiveness prior to completion of the divestiture.

III. Commercial Arrangements with Buyer. To allow for the continued operation and growth of New Boost, New T-Mobile will offer two principal support arrangements to the Buyer:

A. *Wholesale MVNO Agreement*. The terms of the wholesale MVNO agreement will be consistent with the following principles:

- 1. Wholesale Network Pricing
 - a. New Boost’s wholesale network pricing will create a strong incentive and ability for New T-Mobile to compete against New Boost for customers, and vice versa, similar to their respective competitive incentives and capabilities

¹ For purposes of this submission, an “active” Boost Mobile account includes any account that (i) has had a positive account balance at any time during the 120 days immediately prior to the Boost Mobile divestiture closing date, and (ii) has not been suspended, cancelled or otherwise terminated during such 120-day period. Divested customers do not include Boost Mobile customers of third parties who are not controlled by Sprint and offer wireless service under the Boost brand.

² For purposes of this submission, “dedicated” means any asset, property, system or employee that is solely and exclusively allocated for use by Boost Mobile.

³ The divestiture of the Boost Mobile business will ensure all third parties who have rights to utilize the Boost brand and marks shall retain such rights.

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- today. For clarity, the pricing will not prevent New T-Mobile from recouping its full network costs associated with serving New Boost customers.
- b. New Boost's wholesale network pricing will allow it to benefit from the long-run network cost efficiencies of New T-Mobile's 5G network deployment.
 - c. New Boost's wholesale network pricing will meaningfully improve upon the commercial terms reflected in T-Mobile's and Sprint's 3 largest MVNO agreements based on 1Q 2019 wholesale revenues. For clarity, the commercial terms will meaningfully improve on those reflected in each of the 6 agreements, taking each as an entire agreement.
2. Discrimination and Competitive Constraints
 - a. New Boost's agreements will prevent New T-Mobile from treating New Boost in a discriminatory or anticompetitive manner as compared to Metro or any successor to Metro as New T-Mobile's leading low cost brand, such as through unwanted discriminatory throttling, de-prioritization, or limitations on access to new network technologies. For the avoidance of doubt, reducing Metro's rates to win subscribers from New Boost would not constitute anticompetitive treatment.
 - b. New Boost's agreements will not constrain how it prices or packages its retail services.
 3. Long-Term Competition and Facilities Deployment
 - a. New Boost's agreements will permit it to deploy and utilize its own spectrum, systems, network infrastructure, and other facilities if it chooses, and enjoy reasonable cost benefits of doing so.
 - b. New Boost's agreements will permit it to compete effectively on a long-term basis, with a minimum wholesale agreement term of six years, and New T-Mobile will not unreasonably withhold consent to changes in New Boost ownership (for example, it would not be unreasonable for New T-Mobile to withhold consent to a change of control to a facilities-based provider who refuses to provide New T-Mobile with reciprocal access to the provider's facilities on reasonable terms; it would be unreasonable to withhold consent to a sale with the objective of keeping New Boost in the hands of an unsuccessful owner).
 4. Stable Transition of New Boost's Operations
 - a. New T-Mobile will maintain Boost's competitiveness through its transition to independent ownership.
 - b. New Boost's agreements will provide New Boost with access to the New T-Mobile network on the same timeline as Sprint, the ability to activate on the

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New T-Mobile network on a nondiscriminatory basis, and reasonable advance notice of network transition plans that could affect New Boost customers.

- B. *Transition Services Agreement.* The Transition Services Agreement offered to the Buyer will include up to a two-year term (as required by Buyer) with customary transition services offered at cost to the Buyer. The terms of the Transition Services Agreement (or any other related agreement) shall be consistent with, and not undercut, the principles in Section III.A., to the extent they are applicable.
- IV. Commission Review of Buyer and New Boost Wholesale MVNO Agreement. New T-Mobile must submit the wholesale MVNO agreement negotiated with the Buyer to the Wireless Telecommunications Bureau (“Bureau”) for review prior to consummating the divestiture.
- A. The Buyer must be a “serious and credible third-party buyer,” which will be an entity that:
1. has, or has access to, the financial resources to acquire, maintain and expand the Divested Business, and
 2. is unrelated to either of the Applicants.
- B. A New Boost wholesale MVNO agreement, consistent with the principles in Section III.A., must be submitted to the Bureau for review within 120 days after closing of the T-Mobile/Sprint merger.
1. No later than seven (7) days prior to the deadline, New T-Mobile may request from the Bureau a thirty-day extension of the deadline. To obtain an extension from the Bureau, New T-Mobile would have to provide a status report and certify that it is both undertaking commercially reasonable efforts to reach a final agreement as quickly as practicable and to meet its obligation in Section II. Under this process, New T-Mobile may request, and the Bureau may grant, up to two thirty-day extensions.
 2. Once the New Boost wholesale MVNO agreement is submitted, the Bureau will have 30 days to make a decision as to whether the agreement is consistent with the principles set forth in Section III.A. and whether New T-Mobile has fulfilled its obligation in Section II. This 30-day review timeline can be extended only with the consent of New T-Mobile.
- V. Enforcement. In the event that the Bureau determines that New T-Mobile has failed to meet the requirements in Sections II and/or IV, New T-Mobile shall make a voluntary contribution to the U.S. Treasury in the manner directed by the Bureau within 60 days of such determination. This voluntary contribution will be in lieu of the Commission taking any

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action under its forfeiture authority for failure to meet the commitments in Sections II and IV. The voluntary contribution shall be assessed and calculated in accordance with this section:

- A. If New T-Mobile fails to submit to the Bureau a wholesale MVNO agreement with the Buyer of the Divested Business (or in the case of a submitted agreement that has been rejected, a revised agreement) by the deadline set forth in Section IV.B., New T-Mobile shall owe a voluntary contribution of \$3.5 million per day until a new agreement is submitted.
- B. If the Bureau decides that the submitted wholesale MVNO agreement is not consistent with the principles set forth in Section III.A., then the clock (if not yet expired) will continue without pause or, if the clock (and any extensions) has expired, a \$3.5 million per day voluntary contribution will begin to accumulate immediately and continue until a revised wholesale MVNO agreement is submitted to the Bureau.
- C. If the Bureau finds that New T-Mobile did not have a good faith and reasonable belief that the wholesale MVNO agreement was consistent with the principles set forth in Section III.A., New T-Mobile shall owe a voluntary contribution of \$3.5 million per day for the period during which the Bureau was reviewing the agreement.
- D. If the Bureau decides that the wholesale MVNO agreement is consistent with the principles set forth in Section III.A., but that New T-Mobile has not met the obligation in Section II, then New T-Mobile must take appropriate steps to restore Boost's competitiveness to the Bureau's satisfaction and shall make a voluntary contribution of \$3.5 million per day starting from the date that the wholesale MVNO agreement was submitted until those steps are complete.
- E. If the Bureau decides both that the agreement was not consistent with the principles set forth in Section III.A. and that New T-Mobile has not met the obligation in Section II, then New T-Mobile shall make a voluntary contribution of \$3.5 million per day from the date that the wholesale MVNO agreement was submitted until both of these problems have been remedied and the divestiture is complete.

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ATTACHMENT 3

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February 4, 2019

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

**Re: Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer
Control of Licenses and Authorizations; WT Docket No. 18-197**

Dear Ms. Dortch:

Pursuant to Section 1.1206(b) of the Commission's Rules, 47 C.F.R. § 1.1206(b), notice is hereby provided of a written *ex parte* presentation in the above-referenced docket. T-Mobile US, Inc. ("T-Mobile") and Sprint Corporation ("Sprint", and collectively with T-Mobile, "Applicants") have stated in the Public Interest Statement, and reiterated repeatedly since, that the merger will ensure that "American consumers will pay less and get more".¹ Our merger will enable the deployment of a world-class nationwide 5G network with massive capacity and lower marginal costs per customer, with the result that customers get better service and more data at the same or lower prices.² The Applicants' representation that consumers will pay less as a result of the merger is supported by the New T-Mobile business plan,³ declarations from T-Mobile

¹ See, e.g., *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of the Licenses and Authorizations*, WT Docket No. 18-197, Description of Transaction, Public Interest Statement, and Related Demonstrations at i (June 18, 2018) ("Public Interest Statement"); *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations*, WT Docket No. 18-197, Joint Opposition of T-Mobile US, Inc. and Sprint Corporation at i (Sept. 17, 2018) ("Joint Opposition").

² Public Interest Statement at 51.

³ *Id.*

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executives,⁴ merger simulations focused on New T-Mobile prices,⁵ and economic work showing all wireless consumers will benefit from a decrease in price per GB due to competitive responses from AT&T and Verizon.⁶

The Public Interest Statement also provided further assurances to existing customers of T-Mobile and Sprint that prices will not go up following the close of the merger. Specifically, the Applicants stated that “New T-Mobile will guarantee each [Sprint] customer a rate plan that is equal or better than the plans they currently enjoy with Sprint.”⁷ The Applicants also noted the T-Mobile Un-contract rate promise to their customers and that it would be extended to Sprint customers post-closing.⁸ These assurances were intended to address any concerns about post-closing price increases and they are fully consistent with the New T-Mobile business plan.

Despite all this, merger opponents tried to raise questions about New T-Mobile’s pricing incentives during the three-year period from merger closing until completion of the network combination and customer migration. The Applicants believe that the myriad showings on the record fully answer those questions. However, to remove all doubt and simplify the Commission’s review of the merger, the Applicants are providing the following statement to remove any doubts, concerns or ambiguity:

New T-Mobile will make available the same or better rate plans as those offered by T-Mobile or Sprint as of today’s date for three years following the merger.

T-Mobile and Sprint legacy rate plans will continue as New T-Mobile plans for three years after the merger or until better plans that offer a lower price or more data are made available,

⁴ Public Interest Statement, Appx C, Declaration of G. Michael Sievert, President and Chief Operating Officer, T-Mobile US, Inc. at ¶21; Public Interest Statement, Appx. D, Declaration of Peter Ewens, Executive Vice President, Corporate Strategy, T-Mobile US, Inc. at ¶8 (“Ewens Decl.”).

⁵ Joint Opposition, Appx. F, Declaration of Compass Lexecon, Mark Israel, Michael Katz, and Bryan Keating at ¶6; John Asker, Timothy F. Bresnahan, and Kostis Hatzitaskos, *Economic Analysis of the Proposed T-Mobile/Sprint Merger*, Cornerstone Research at 1-6 (Nov. 6, 2018).

⁶ Public Interest Statement, Appx. G, Declaration of David S. Evans, Market Platform Dynamics, “Economic Analysis of the Impact of the Proposed Merger of T-Mobile and Sprint on the Deployment of 5G Cellular Technologies, the 5G App Ecosystem, and Consumers, Enterprises, and the Economy,” at ¶¶220-44.

⁷ Ewens Decl. at ¶8.

⁸ *Id.*

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whichever occurs first.⁹ The retained legacy rate plans may be adjusted to pass through cost increases in taxes, fees and surcharges as well as services from third party partners that are included in the rate plans, as these increased costs are not within the control of New T-Mobile. The legacy plans may also be adjusted to modify or discontinue third party partner benefits based on changes in the terms of the offering initiated by the third party partner, as this is also not within the control of New T-Mobile.¹⁰

As New T-Mobile CEO John Legere has said, we would be pleased to discuss the details of this commitment with the Chairman, Commissioners and Transaction Team. As noted, this representation is fully consistent with the New T-Mobile business plan and responsive to merger-specific questions that have been raised. For those reasons, the Applicants have no objection to this representation being included as a formal merger condition in the order approving the transaction.

Please direct any questions regarding the foregoing to the undersigned counsel for Deutsche Telekom and T-Mobile.

Respectfully submitted,

DLA Piper LLP (US)

/s/ Nancy Victory

Nancy Victory
Partner

cc: Chairman Ajit Pai
Commissioner Michael O'Rielly
Commissioner Brendan Carr
Commissioner Jessica Rosenworcel
Commissioner Geoffrey Starks
David Lawrence
Kathy Harris
Linda Ray
Kate Matraves

⁹ When a better post-merger plan is offered, New T-Mobile may discontinue a less appealing legacy plan.

¹⁰ Device/handset offerings are not included in this pricing commitment.

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Jim Bird
David Krech

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ATTACHMENT 4

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ALTICE MVNO COMMITMENT

T-Mobile and Sprint commit that:

- (A) Sprint Spectrum L.P. (“Sprint”) will not exercise any termination right set forth in the Master Wireless Wholesale Agreement by and between Sprint and Altice USA, Inc. (“Altice”) dated November 5, 2017 (the “Altice MVNO Agreement”), or in any other existing agreement between Sprint and Altice, that arises from consummation of the merger between T-Mobile and Sprint Corporation; and
- (B) New T-Mobile will negotiate in good faith an amendment of the Altice MVNO Agreement to include the networks, including 5G network, operated by New T-Mobile.

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APPENDIX H
DISH Buildout Commitments



Jeffrey H. Blum
Senior Vice President, Public Policy &
Government Affairs
Jeffrey.Blum@dish.com
(202) 463-3703

July 26, 2019

VIA ULS

Donald Stockdale
Chief, Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: DBSD Corporation, AWS-4, Lead Call Sign T070272001; Gamma Acquisition L.L.C., AWS-4, Lead Call Sign T060430001; Manifest Wireless L.L.C., Lower 700 MHz E Block, Lead Call Sign WQJY944; American H Block Wireless L.L.C., H Block, Lead Call Sign WQTX200; ParkerB.com Wireless L.L.C., 600 MHz, Lead Call Sign WQZM232

Dear Mr. Stockdale:

The Commission has called on government and industry to work together to promote American leadership in 5G. We share the Commission's 5G goals. DISH has a long history as a market disruptor and low-cost provider, particularly for customers in rural America. In the 1990s, we introduced competition against cable providers by offering disruptive pricing and packaging and innovative consumer technology, which helped us quickly gain market share. In 2015, DISH launched the first live-streaming over-the-top service, Sling TV. Sling TV has been a market leader, providing consumer choice and additional competition in the pay-TV market. As we have described previously, DISH plans to enter the wireless market as a new nationwide facilities-based provider.¹ We believe our deployment will promote U.S. leadership in 5G through an American company with a proven track record of disrupting the communications industry.

We also see a path to accelerate DISH's competitive entry into the wireless market. In addition to our anticipated acquisition of Boost Mobile and other assets, the modified deadlines, commitments, and conditions set forth in Attachment A align our deployment plans with the

¹ See DBSD Services Limited, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C.'s Consolidated Interim Construction Notification for AWS-4 and Lower 700 MHz E Block Licenses, ULS Lead File No. 0007690535 (Mar. 7, 2017); American H Block Wireless L.L.C. Interim Construction Notification for H Block Licenses, ULS Lead File No. 0008210492 (May 14, 2018); Letter from Jeffrey H. Blum, Senior Vice President, Public Policy & Government Affairs, DISH Network Corporation, to Donald Stockdale, Chief, Wireless Telecommunications Bureau, attached to license record for AWS-4 call sign T070272001 (Sept. 21, 2018).

expected finalization of 5G standards and equipment, and will facilitate and expedite DISH's entry into the wireless market as a nationwide facilities-based competitor.

DISH therefore requests that the Commission extend the construction deadlines associated with its AWS-4, 700 MHz E Block, and AWS H Block licenses as enumerated in Section I (C), (E), and (G) of Attachment A, pursuant to its authority under 47 U.S.C. § 308.² As conditions of the grant of the requested extensions, DISH is willing to accept the terms of Attachment A, including the significant voluntary contributions (up to \$2.2 billion) and potential license forfeitures for failure to meet certain commitments. DISH will also consent to the Commission including a "5G Broadband Service"³ obligation as a special condition of its 600 MHz, AWS-4, 700 MHz E Block, and AWS H Block licenses. Further, DISH will consent to the sale and leasing restrictions described in Attachment A for its 600 MHz and AWS-4 spectrum licenses.

Grant of the requested extensions and adopting the terms set out in Attachment A will promote the Commission's public interest objectives by enabling and accelerating DISH's facilities-based wireless deployment. DISH's entry will pressure incumbent carriers to expand their own 5G plans and inject disruptive pricing and packaging in the wireless market, all to the benefit of the American public. In addition, the modified deadlines reflected in Attachment A will align DISH's construction milestones with our deployment goals, leading to a more efficient network build.

These commitments will ensure that (1) DISH's nationwide 5G deployment meets certain specifications; (2) DISH deploys a 5G Broadband Service on its AWS-4, 700 MHz E Block, and AWS H Block spectrum licenses on an aggressive schedule; (3) DISH deploys a 5G Broadband Service on its 600 MHz spectrum licenses on an accelerated timeline; and (4) DISH adheres to certain restrictions on its ability to sell or lease network capacity on its AWS-4 and 600 MHz spectrum. These commitments will be enforced through strong verification measures, including significant voluntary contributions and potential license forfeitures for missed commitments. Moreover, aligning the milestones for DISH's spectrum bands is in the public interest because doing so will enable DISH to deploy its spectrum at the same time to provide a better overall 5G service, at lower cost, and on a more efficient deployment schedule.

Nationwide 5G Broadband Commitment

DISH plans to deploy a first-of-its-kind 5G network built from the ground up with an architecture that can take full advantage of expected 5G functionality. In furtherance of this goal, DISH will commit to concrete milestones related to its 5G deployment. In particular, DISH

² DISH recognizes that some of the terms of Attachment A may require modifications under 47 U.S.C. § 316. If the requested extensions are granted, DISH will not protest the modifications the Commission makes to its licenses in order to effectuate the terms of Attachment A.

³ "5G Broadband Service" is defined as at least 3GPP Release 15 capable of providing Enhanced Mobile Broadband (eMBB) functionality.

will commit that by **June 14, 2023**, it will deploy a nationwide 5G network using DISH's spectrum with:

- At least 70% of the U.S. population having access to download speeds equal to or greater than 35 Mbps, as verified by a drive test;
- At least 15,000 5G sites deployed; and
- At least 30 MHz of DISH's downlink 5G spectrum averaged over all DISH 5G sites deployed nationwide.

By meeting these commitments, DISH will become a nationwide facilities-based wireless competitor deploying next-generation technology to benefit the public and U.S. leadership in 5G.

Commitment to Deploy 5G Broadband Service on AWS-4, 700 MHz E Block, and AWS H Block Spectrum Licenses

DISH's AWS-4, 700 MHz E Block, and AWS H Block spectrum licenses are currently subject to construction deadlines of March 7, 2020 (for AWS-4 and 700 MHz E Block) and April 29, 2022 (for AWS H Block). Absent the conditions DISH is prepared to accept if granted the requested extensions, the licenses would be subject to the Commission's "flexible use" policies, which allow licensees to deploy any lawful technology to meet their construction milestones. To promote the Commission's broadband deployment goals and further U.S. leadership in 5G, DISH will voluntarily waive its flexible use rights, and commit to deploy 5G Broadband Service using its AWS-4, 700 MHz E Block, and AWS H Block spectrum licenses. Specifically, DISH will consent to include a 5G Broadband Service obligation as a special condition of each such license.

DISH will further commit to deploy 5G Broadband Service by the following deadlines:

- **DISH 5G Broadband Service to At Least 20% of U.S. Population by 2022:**
With respect to the AWS-4, 700 MHz E Block and AWS H Block licenses, DISH commits to offer 5G Broadband Service to at least 20% of the U.S. population and to have deployed a core network no later than June 14, 2022.
- **DISH 5G Broadband Service to At Least 70% of U.S. Population by 2023:**
With respect to the AWS-4, 700 MHz E Block and AWS H Block licenses, DISH commits to offer 5G Broadband Service to at least 70% of the U.S. population no later than June 14, 2023.

Commitment to Deploy 5G Broadband Service on 600 MHz Spectrum Licenses on an Accelerated Timeline

As a successful participant in the broadcast incentive auction, DISH holds 486 licenses in the 600 MHz band, with at least one license in each of the 416 Partial Economic Areas (PEAs) in the U.S. The 600 MHz spectrum licenses are subject to the Commission's flexible use policies, and have construction deadlines that do not come due until June 14, 2027 (interim construction milestone) and June 14, 2029 (final construction milestone). DISH will commit to deploy 5G

Broadband Service on each of its 600 MHz licenses *four years earlier* than required by the Commission's rules, and will consent to including a 5G Broadband Service obligation as a special condition of the licenses if granted the requested construction deadline extensions. Specifically, DISH will commit to meet the following accelerated deadlines:

- Using the 600 MHz licenses, offer 5G Broadband Service to at least 70% of the U.S. population no later than June 14, 2023.
- Using the 600 MHz licenses, offer 5G Broadband Service to at least 75% of the population in each PEA no later than June 14, 2025.

Through this substantial acceleration of the 600 MHz construction deadlines, DISH will put important low-band spectrum to use far sooner than originally required to offer 5G Broadband Service in all PEAs nationwide, to the benefit of Americans living in all parts of the country.

Restrictions on Sale of Licenses and Leasing Capacity

In furtherance of DISH's goals to provide both competitive retail and wholesale wireless services, DISH will consent not to sell its AWS-4 and 600 MHz spectrum for six years without prior DOJ and FCC approval. DISH will also consent, for six years, not to lease, directly or indirectly, to any of the three largest wireless providers, or any combination thereof, traffic accounting for more than 35% of the network capacity on its 5G network without prior FCC approval. These restrictions will become effective on the date of an FCC order effectuating Attachment A. Such terms ensure that key spectrum assets remain in DISH's hands to support DISH's deployment. Further, they demonstrate DISH's commitment to entering the market, becoming a viable competitor, and remaining a nationwide wireless carrier for the long term.

Verification and Enforcement

The commitments described above and enumerated in Attachment A will align DISH's deployment plans with the availability of 5G standards and the associated ecosystem, while accelerating our transformation to a next-generation communications company. DISH retains powerful business incentives to meet these obligations on time. But, to demonstrate our commitment to these terms, DISH will consent to rigorous verification and enforcement procedures, with severe financial contributions and potential license forfeitures for failure to meet the commitments.

Among other provisions, DISH will be required to file detailed status reports with the Commission, above and beyond what is required of licensees today. DISH will also be subject to verification using drive tests to ensure download speeds comply with the 35 Mbps metric, and will be required to submit to the Commission a number of detailed coverage maps and related data to demonstrate compliance with the June 2023 milestones.

Failure by DISH to meet these commitments will subject the company to up to \$2.2 billion in voluntary contributions and potential license forfeitures, with the contributions calculated separately for each commitment that is not met. For example, DISH's voluntary

contribution for failing to meet its 2022 commitments with respect to its AWS-4, 700 MHz E Block, and AWS H Block licenses will be calculated cumulatively by band, for a maximum voluntary contribution of \$200,000,000. DISH will also be subject to voluntary contributions if it fails to meet the 2023 Nationwide 5G Broadband commitment, based on the single highest missed percentage of any missed element. This contribution will be calculated by multiplying each percentage missed, rounded up to the nearest decimal, by \$10,000,000, for a maximum voluntary contribution of \$1 billion. In the event that DISH fails to meet the 2023 milestones related to its AWS-4, 700 MHz E Block, and AWS H Block licenses, the voluntary contributions will be calculated based on the missed percentage, with maximum voluntary contributions ranging from \$200,000,000 to \$600,000,000 per band.

This verification and enforcement structure provides powerful additional incentives for DISH to meet its 5G commitments, which substantially advance the public interest.

* * *

The framework set out in Attachment A will facilitate and accelerate DISH's entry as a new nationwide facilities-based wireless provider, promote competition, and help ensure America's leadership in 5G, all to the benefit of American consumers and industry. For these reasons, among others, DISH and its wireless license-holding subsidiaries⁴ hereby request, pursuant to the Commission's authority under 47 U.S.C. § 308, the construction deadline extensions set forth in Section I (C), (E), and (G) of Attachment A. We are willing to accept the conditions as set forth in Attachment A to the grant of our request for extensions of the construction deadlines. We recognize that some of the conditions may require modification of our licenses under 47 U.S.C. § 316 and we do not object to those modifications.

/s/ Jeffrey H. Blum

Jeffrey H. Blum

Enclosure (Attachment A)

cc: David Lawrence

⁴ DISH's wireless licenses are held in indirect, wholly-owned subsidiaries as follows: ParkerB.com Wireless L.L.C. (holder of licenses in the 600 MHz band); Gamma Acquisition L.L.C. (holder of licenses in the AWS-4 band); DBSD Corporation (holder of licenses in the AWS-4 band); American H Block Wireless L.L.C. (holder of licenses in the AWS H Block); and Manifest Wireless L.L.C. (holder of licenses in the Lower 700 MHz E Block).

ATTACHMENT ADISH NETWORK 5G BUILDOUT COMMITMENTS AND RELATED PENALTIES**I. LICENSE MODIFICATIONS/EXTENSIONS**

- (A) DISH's existing Final 600 MHz Construction Milestone is accelerated to **6/14/2025**.
- (B) DISH's existing Interim 600 MHz Construction Milestone is suspended.
- (C) DISH's existing Final AWS-4 Construction Milestone is extended to **6/14/2023**.
- (D) DISH's AWS-4 Licenses are extended from **3/7/2023** to **6/14/2023**.
- (E) DISH's existing Final 700 MHz E Block Construction Milestone is extended to **6/14/2023**.
- (F) DISH's Lower 700 MHz E Block Licenses are extended from **3/7/2020** to **6/14/2023**.
- (G) DISH's existing Final AWS H Block Construction Milestone is extended to **6/14/2023**.
- (H) DISH's AWS H Block Licenses are extended from **4/29/2022** to **6/14/2023**.

II. WAIVER OF FLEXIBLE USE RIGHTS

With respect to the 600 MHz Licenses, the AWS-4 Licenses, the 700 MHz E Block Licenses, and the AWS H Block Licenses, DISH voluntarily waives its right to use the licenses under the FCC's "flexible use" policies. Specifically, DISH voluntarily consents to the FCC conditioning each of the 600 MHz Licenses, the AWS-4 Licenses, the 700 MHz E Block Licenses, and the AWS H Block Licenses to include a 5G Broadband Service obligation as a special condition of the licenses.

III. 5G BUILDOUT COMMITMENTS**Nationwide 5G Deployment Commitment:**

DISH commits that by **6/14/2023**, DISH will deploy a nationwide 5G network using DISH's spectrum with:

- (A) At least 70% of the U.S. population having access to download speeds equal to or greater than 35 Mbps, as verified by a drive test;¹

¹ DISH will fund the drive tests to commence after June 14, 2023. The drive tests will utilize devices and an industry-standard methodology mutually agreed to by DISH and the Federal Communications Commission's Wireless Telecommunications Bureau (the "Bureau") within 180 days. The parties agree to revisit the methodology at least 3 months before the drive tests begin. The goal of the testing is to reflect the actual user experience under ordinary utilization and compare them to the stated speed commitment. The drive testing will involve oversight by an independent third party, but may be conducted by DISH personnel. The drive

(B) At least 15,000 5G Sites deployed; and

(C) At least 30 MHz of DISH's downlink 5G spectrum averaged over all DISH 5G Sites deployed nationwide (in the event that DISH has more than 15,000 5G Sites, DISH may choose the 15,000 sites that will be used to calculate its compliance with this commitment).

Band-Specific 5G Deployment Commitments:

Commitment #1: With respect to the 600 MHz Licenses, DISH commits to offer 5G Broadband Service to at least **70%** of the U.S. population and to have deployed a core network no later than **6/14/2023**.

Commitment #2: With respect to the 600 MHz Licenses, DISH commits to offer 5G Broadband Service to at least **75%** of the population in each PEA no later than **6/14/2025**.

Commitment #3: With respect to the AWS-4 Licenses, DISH commits to offer 5G Broadband Service to at least **20%** of the U.S. population and to have deployed a core network no later than **6/14/2022**.

Commitment #4: With respect to the AWS-4 Licenses, DISH commits to offer 5G Broadband Service to at least **70%** of the U.S. population no later than **6/14/2023**.

Commitment #5: With respect to the Lower 700 MHz E Block Licenses, DISH commits to offer 5G Broadband Service to at least **20%** of the U.S. population who are covered by DISH's Lower 700 MHz E Block Licenses and to have deployed a core network no later than **6/14/2022**.

Commitment #6: With respect to the Lower 700 MHz E Block Licenses, DISH commits to offer 5G Broadband Service to at least **70%** of the U.S. population who are covered by DISH's Lower 700 MHz E Block Licenses no later than **6/14/2023**.

Commitment #7: With respect to the AWS H Block Licenses, DISH commits to offer 5G Broadband Service to at least **20%** of the U.S. population and to have deployed a core network no later than **6/14/2022**.

Commitment #8: With respect to the AWS H Block Licenses, DISH commits to offer 5G Broadband Service to at least **70%** of the U.S. population no later than **6/14/2023**.

testing will commence at the final commitment deadlines and will be completed within six (6) months thereafter. Only DISH 5G subscriber traffic using DISH's spectrum routed through the DISH core network may satisfy DISH's coverage and speed requirements.

IV. RESTRICTIONS ON SALE AND OTHER COMMITMENTS

- (A) DISH agrees not to sell its 600 MHz Licenses for a period of six years without prior FCC and DOJ approval (unless such sale is part of DISH selling itself; in that case, the purchaser shall be subject to the commitments and penalties herein unless the FCC and DOJ decide otherwise). For purposes of this commitment, to “sell” means (i) to transfer, assign, or dispose of the 600 MHz Licenses in any manner, either directly or indirectly; (ii) to transfer control of an entity holding the 600 MHz Licenses; or (iii) to enter into a lease arrangement or any other arrangement that results in the transfer of *de jure* or *de facto* control of the 600 MHz Licenses.
- (B) For a period of six years, DISH agrees not to provide, in any Partial Economic Area for its 600 MHz Licenses, in any rolling 12-month period (as determined at the end of every calendar quarter), directly or indirectly, via its 5G network, to any of the three largest wireless providers, or any combination thereof, traffic accounting for more than 35% of the network capacity on its 5G network, without prior FCC approval.
- (C) DISH agrees not to sell its AWS-4 Licenses for a period of six years without prior FCC and DOJ approval (unless such sale is part of DISH selling itself; in that case, the purchaser shall be subject to the commitments and penalties herein unless the FCC and DOJ decide otherwise). For purposes of this commitment, “sell” mean (i) to transfer, assign, or dispose of the AWS-4 Licenses in any manner, either directly or indirectly; (ii) to transfer control of an entity holding the AWS-4 Licenses; or (iii) to enter into a lease arrangement or any other arrangement that results in the transfer of *de jure* or *de facto* control of the AWS-4 Licenses.
- (D) For a period of six years, DISH agrees not to provide, in any Economic Area for its AWS-4 Licenses, in any rolling 12-month period (as determined at the end of every calendar quarter), directly or indirectly, via its 5G network, to any of the three largest wireless providers, or any combination thereof, traffic accounting for more than 35% of the network capacity on its 5G network, without prior FCC approval.

V. CONTINGENT EXTENSIONS

- (A) If DISH is offering 5G Broadband Service with respect to the AWS-4 Licenses to less than **50%** of the U.S. population by **6/14/2023**, DISH’s AWS-4 Licenses are subject to automatic termination in any EA where DISH is offering 5G Broadband Service with respect to the AWS-4 Licenses to less than **70%** of the population in such EA. If DISH is offering 5G Broadband Service with respect to the AWS-4 Licenses to greater than **50%** of the U.S. population by **6/14/2023**, then DISH’s Final AWS-4 Construction Milestone shall be automatically extended to **6/14/2025**.
- (B) If DISH is offering 5G Broadband Service with respect to the Lower 700 MHz E Block Licenses to less than **50%** of the total U.S. population covered by DISH’s Lower 700 MHz E Block Licenses by **6/14/2023**, then DISH’s Lower 700 MHz E Block Licenses are subject to automatic termination in any EA where DISH is offering 5G Broadband Service with respect to the Lower 700 MHz E Block Licenses to less than **70%** of the population in such EA. If DISH is offering 5G Broadband Service with respect to the Lower 700 MHz E Block Licenses to greater than **50%** of the total U.S. population covered by DISH’s Lower 700 MHz E Block

Licenses by **6/14/2023**, then DISH's Final 700 MHz E Block Construction Milestone shall be automatically extended to **6/14/2025**.

- (C) If DISH is offering 5G Broadband Service with respect to the AWS H Block Licenses to less than **50%** of the U.S. population by **6/14/2023**, DISH's AWS H Block Licenses are subject to automatic termination in any EA where DISH is offering 5G Broadband Service with respect to the AWS H Block Licenses to less than **75%** of the population in such EA. If DISH is offering 5G Broadband Service with respect to the AWS H Block Licenses to greater than **50%** of the U.S. population by **6/14/2023**, then DISH's Final H Block Construction Milestone shall be automatically extended to **6/14/2025**.

VI. STATUS REPORTS

Within 30 days of the date of each commitment set forth in Section III, DISH shall file with the Bureau a report that includes information concerning the status of DISH's efforts to meet the terms of the commitments. See 47 C.F.R. § 27.14(l). The status report shall include the following information for each commitment:

- (A) Polygon shapefiles showing DISH's 5G Coverage Area for the applicable commitment;
- (B) A statement quantifying the U.S. Population covered by DISH's 5G Coverage Area as of the applicable commitment deadline;
- (C) A list of 5G Sites (including information identifying individual sites, *e.g.*, latitude and longitude), spectrum deployed by band per sector, and antenna details; and
- (D) A certification from a DISH engineering executive that the representations in the shapefiles, population coverage numbers, and site and spectrum deployment numbers are true and correct.

VII. ENFORCEMENT

In the event that the Bureau determines that DISH has failed to meet any of the commitments related to nationwide 5G deployment and/or its AWS-4, 700 MHz and H Block holdings, DISH will make a voluntary contribution to the U.S. Treasury in the manner directed by the Bureau within 60 days of such determination of up to a total of \$2.2 billion.²

² The total contribution could be as high as \$2.2 billion, calculated as \$200 million for the Interim Commitments, plus \$1 billion for the Nationwide 5G Deployment Commitment, plus \$600 million for Commitment #4, plus \$200 million for Commitment #6, plus \$200 million for Commitment #8. For the avoidance of doubt, license termination or forfeiture, if applicable, may impose additional costs and obligations over and above the \$2.2 billion in contributions pursuant to this section.

Interim Commitments:

In the event that the Bureau determines that DISH has failed to meet Commitment #3, Commitment #5, or Commitment #7, the applicable voluntary contribution shall be calculated as follows for each commitment that is not met, cumulative by band:

Missed Population Percentage	Voluntary Contribution
>0-25%	\$16,000,000
>25-50%	\$32,000,000
>50-75%	\$48,000,000
>75-100%	\$66,000,000

In the event DISH fails to deploy a core network by **6/14/22**, DISH shall pay a voluntary contribution of \$200,000,000, regardless of shortfalls in the population coverage commitment. However, the maximum voluntary contribution for all failures to meet Commitments #3, #5, or #7 shall not exceed \$200,000,000.

Final Nationwide 5G Deployment Commitment:

In the event the Bureau determines that DISH has failed to meet the Nationwide 5G Deployment Commitment (see Section III), the applicable voluntary contribution for missing that commitment shall be calculated as follows:

- (A) The Bureau shall determine the percentage by which DISH has fallen short under each element. The voluntary contribution will be based on the single highest missed percentage of any missed element.
- (B) The following contribution scale will apply: the applicable voluntary contribution shall be calculated by multiplying each percentage missed, rounded to the nearest decimal, by \$10,000,000. For example, if DISH deploys only 7,500 5G Sites (thus missing the applicable buildout element by 50%), and if 50% is the highest percentage missed of any element, DISH's voluntary contribution would be \$500,000,000. The maximum possible total voluntary contribution for the Nationwide 5G Deployment Commitment would be \$1 billion.

Final Band-Specific 5G Deployment Commitments:

In the event that the Bureau determines that DISH has failed to meet Commitment #4 (AWS-4), the applicable voluntary contribution shall be calculated by multiplying each percentage missed, rounded to the nearest decimal by \$6,000,000. For example, if DISH offers 5G Broadband Service to 63% of the U.S. Population (thus, missing the applicable buildout by 10%),³ DISH's voluntary contribution would be \$60,000,000, corresponding to a 10% miss, times \$6,000,000. The maximum possible voluntary

³ If there is a commitment to serve 70% of the U.S. Population (218,992,544 out of 312,846,492), and DISH is able to serve only 197,093,290 (63% of the U.S. Population), the company would fall short by 21,899,254, which would be a percentage missed of 10% ($21,899,254/218,992,544 \times 100 = 10\%$).

contribution for covering zero percent of the U.S. Population for Commitment #4 would be \$600,000,000.

In the event that the Bureau determines that DISH has failed to meet Commitment #6 (Lower 700 MHz E Block), the applicable voluntary contribution shall be calculated by multiplying each percentage missed, rounded to the nearest decimal by \$2,000,000. For example, if DISH offers 5G Broadband Service to 63% of the U.S. Population (thus, missing the applicable buildout by 10%), DISH's voluntary contribution would be \$20,000,000, corresponding to a 10% miss, times \$2,000,000. The maximum possible voluntary contribution for covering zero percent of the U.S. Population for Commitment #6 would be \$200,000,000.

In the event that the Bureau determines that DISH has failed to meet Commitment #8 (AWS H Block), the applicable voluntary contribution shall be calculated by multiplying each percentage missed, rounded to the nearest decimal by \$2,000,000. For example, if DISH offers 5G Broadband Service to 63% of the U.S. Population (thus, missing the applicable buildout by 10%), DISH's voluntary contribution would be \$20,000,000, corresponding to a 10% miss, times \$2,000,000. The maximum possible voluntary contribution for covering zero percent of the U.S. Population for Commitment #8 would be \$200,000,000.

Verification Metrics:

- (A) Within six months of June 14, 2023, DISH will submit to the Bureau a report that will include:
- a. Drive test results;⁴
 - b. Polygon shapefiles showing DISH's 5G Coverage Area as of June 14, 2023;
 - c. A statement quantifying the U.S. Population covered by DISH's 5G Coverage Area as of June 14, 2023;
 - d. A list of 5G Sites (including information identifying individual sites, *e.g.*, latitude and longitude), spectrum deployed by band per sector, and antenna details; and
 - e. A certification from a DISH engineering executive that the representations in the shapefiles, population coverage numbers, site and spectrum deployment numbers, and speeds are true and correct.
- (B) In making a determination regarding DISH's compliance with any of the commitments, the Bureau shall take into account and, in its reasonable discretion, appropriately reduce the metric, extend the deadline or reduce the contribution amount associated with commitments missed due to unanticipated circumstances beyond the company's control (*e.g.*, 600 MHz broadcaster transition for 600 MHz spectrum,⁵ acts of God, such as fire, flood, earthquake, or other natural disasters; terrorist events, riots, insurrections, war, strikes or national emergencies; law or order of any government body; or significant interruptions in the supply chain). For clarity, "unanticipated circumstances" would not include anticipated supply chain or standards process

⁴ See Note 1.

⁵ A delay in the relocation in a particular PEA will result in a commensurate extension of the deadline for that market. For example, if the broadcaster relocation is delayed by 3 months in a PEA, the final buildout deadline for that PEA will be extended by 3 months.

delays, or Commission action or inaction on requests by DISH to waive or change regulatory requirements.

VIII. EFFECTIVE DATE

The existing Final AWS-4 Construction Milestone, the existing Final 700 MHz E Block Construction Milestone, and the existing March 7, 2020 expiration of the Lower 700 MHz E Block Licenses shall be tolled, effective upon the date of a release of an Order adopting these 5G Buildout Commitments and Related Penalties, until the earliest of the following: (1) Sprint and T-Mobile cease to have a pending agreement to merge; (2) a final judgment blocking the merger from any Federal U.S. District Court; (3) or any other circumstance or event that effectively eliminates the ability of Sprint and T-Mobile to effectuate their merger agreement.

IX. DEFINITIONS

“**5G**” is defined as the 5G New Radio air interface standard as described in 3GPP Release 15, *available at* <https://www.3gpp.org/release-15>, or 3GPP Release 16 within 3 years of 3GPP final approval.

“**5G Broadband Service**” means at least 3GPP Release 15 capable of providing Enhanced Mobile Broadband (eMBB) functionality.

“**5G Coverage Area**” is defined as that area included within the bounds of the polygon shapefile representing geographic coverage for 5G service with coverage based on DISH’s ordinary course coverage analysis.

“**5G Sites**” is defined as macro sites on which 5G radios are deployed.

“**5G Spectrum**” is defined as dedicated licensed spectrum used for 5G radios.

“**600 MHz Licenses**” means all authorizations in the 600 MHz band (ULS Service Code WT) licensed to ParkerB.com Wireless L.L.C.

“**Access**” to specified speeds means that users of DISH-Certified 5G Devices will experience the specified download speeds on average (mean) across actual utilization.

“**AWS-4 Licenses**” means all authorizations in the AWS-4 band (ULS Service Code AD) licensed to Gamma Acquisition L.L.C and DBSD Corporation.

“**AWS H Block Licenses**” means all authorizations in the AWS H Block (ULS Service Code AH) licensed to American H Block Wireless L.L.C.

“**DISH-Certified 5G Device**” means a device that DISH has certified as compatible with its 5G network (it is anticipated that all 5G devices available from DISH will be DISH-Certified 5G Devices).

“**Final 600 MHz Construction Milestone**” means 47 C.F.R. § 27.14(t)(2).

“**Final 700 MHz E Block Construction Milestone**” means 47 C.F.R. § 27.14(g)(2) as subsequently waived by the Commission. *See Promoting Interoperability in the 700 MHz Commercial Spectrum, Report and Order and Order of Proposed Modification*, 28 FCC Red. 15122, 15148 ¶¶ 56-57 (2013).

“Final AWS-4 Construction Milestone” means 47 C.F.R. § 27.14(q)(2), as subsequently waived by the Commission. See DISH Network Corporation, Petition for Waiver of Sections 27.5(j) and 27.53(h)(2)(ii) of the Commission’s Rules and Request for Extension of Time, *Memorandum Opinion and Order*, 28 FCC Rcd. 16787, 16787-78 ¶ 1, 16804-05 ¶ 43 (2013).

“Final H Block Construction Milestone” means 47 C.F.R. § 27.14(r)(2).

“Interim 600 MHz Construction Milestone” means 47 C.F.R. § 27.14(t)(1).

“Lower 700 MHz E Block Licenses” means all authorizations in the Lower 700 MHz E Block (ULS Service Code WY) licensed to Manifest Wireless L.L.C.

“U.S. Population” is defined as the population of the United States (including the 50 states, Puerto Rico and the U.S. territories) reported in either the 2010 U.S. Census (312,846,492) or the 2020 U.S. Census (which is expected to be reported in 2021). In its sole discretion, DISH may choose whether to utilize the 2010 or 2020 versions of the U.S. Census in calculating its compliance with its commitments, but DISH must apply the same population total and population distributions to all calculations uniformly.

**STATEMENT OF
CHAIRMAN AJIT PAI**

Re: *Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations; Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time, WT Docket No. 18-197*

After a lengthy and painstaking review process, the Commission has correctly concluded that this transaction is in the public interest. In particular, the transaction will help secure United States leadership in 5G, close the digital divide in rural America, and enhance competition in the broadband market.

I'll start with 5G, the next generation of wireless connectivity. This transaction will provide New T-Mobile with the scale and spectrum resources necessary to deploy a robust 5G network across the United States. Specifically, its 5G network will cover 97% of our nation's population within three years of the closing of the merger and 99% of Americans within six years. What does this mean for American consumers? With New T-Mobile's network, 90% of Americans would have access to mobile broadband service at speeds of at least 100 Mbps, and 99% would have access to speeds of at least 50 Mbps.

In particular, this merger will put critical mid-band spectrum to much more productive use for 5G deployment. New T-Mobile will be far better positioned to deploy Sprint's extensive 2.5 GHz spectrum holdings than would Sprint standing alone, given that company's financial situation. Indeed, New T-Mobile's network will cover at least 88% of Americans with mid-band 5G within six years, a far wider deployment than either Sprint or T-Mobile would be able to accomplish on their own. So let's be clear: A vote against this transaction is a vote against strong, swift mid-band 5G deployment.

Turning to rural America: This transaction will also help close the digital divide. New T-Mobile's 5G network will reach deep into rural areas, with 85% of rural Americans covered within three years and 90% covered within six years. Moreover, its network will cover at least two-thirds of our nation's rural population with high-speed, mid-band 5G, which would strengthen our overall economy and improve the quality of life in many small towns across the country. This Commission is committed to ensuring that all Americans benefit from the transformative impact of 5G, not just those living in big cities like New York City and Los Angeles. And this transaction is an important step toward accomplishing that goal. So let's be clear: A vote against this transaction is a vote against ensuring that rural Americans are beneficiaries, as opposed to spectators, of the 5G innovation to come.

And finally, this transaction will enhance competition in a number of ways. New T-Mobile will make the mobile broadband market more competitive in large swaths of rural America where neither Sprint nor T-Mobile is currently a strong competitor to AT&T and Verizon. New T-Mobile will make more competitive the enterprise wireless market, where neither Sprint nor T-Mobile is currently a strong competitor to AT&T and Verizon. And it will provide more competition in the home broadband market, by allowing New T-Mobile to offer widely an in-home broadband product that would give many Americans another option for residential broadband service.

To be sure, there are some who have claimed that this transaction would be harm competition, arguing that it would reduce the number of national wireless carriers from four to three. But the record makes clear that is a simplistic, backward-looking claim that doesn't capture the reality of today or tomorrow. For example, as described above, in many rural parts of our country, this transaction would actually increase the number of meaningful competitors in the market from two to three. Across the United States, this transaction would increase the number of strong competitors for many quality-conscious consumers from two to three. And again, as we emerge into a 5G environment, this transaction would ensure a strong third competitor with the resources necessary to develop spectrum and

infrastructure assets needed for a robust nationwide 5G network (remember: the two largest companies in this space together have over 90% of the free cash flow in the entire industry). So let's be clear: A vote against this transaction is a vote against the creation of a strong 5G competitor.

I do agree that for price-conscious consumers in urban areas, this transaction, had it been approved without conditions, would have run the serious risk of harming competition. And that is why I insisted that T-Mobile and Sprint divest Boost Mobile, Sprint's largest pre-paid brand, and agree to a series of conditions to ensure that Boost would remain a strong and independent competitor in the wireless marketplace following the transaction. With this structural remedy, we have eliminated the potential for competitive harm while preserving the transaction's many benefits.

As we analyze the competitive effects of this transaction, it is also important to recognize that the wireless marketplace is quite dynamic. It is a significant mistake to adopt a backward-looking view and assume that the marketplace will be the same tomorrow as it is today. For example, while Sprint is not on the brink of financial collapse, there are serious questions about how strong a competitor it can be in the years to come on a standalone basis.

For all of these reasons, this transaction is in the public interest. It would bring the benefits of the next generation of wireless technology to American consumers and advance American leadership in 5G. It would help millions in rural America benefit from high-speed 5G mobile broadband service. And it would promote competition. That's why both the FCC and the Department of Justice have approved this transaction, and that's why I hope that it is consummated soon.

Finally, I want to thank the amazing staff of the Federal Communications Commission (as well as those detailed from the Department of Justice) who put in countless hours reviewing the extensive record and bringing this proceeding to the right conclusion for the American public: Jim Bird, Ashley Boizelle, Babette Boliek, Jonathan Campbell, Steven Carpenter, Saurbh Chhabra, Matthew J. Collins, Kimberly Cook, Nicholas Copeland, Patrick DeGraba, Monica DeLong, Judith Dempsey, William Dever, Connie Diaz, Stacy Ferraro, Ben Freeman, Chris Gao, Garnet Hanly, Kathy Harris, Jonathan Henly, Pramesh Jobanputra, Eugene Kiselev, David Krech, Paul Lafontaine, David Lawrence, Katherine LoPiccolo, Marcus Maher, Charles Mathias, Kate Matraves, Sara Mechanic, Murtaza Nasafi, Susan OConnell, Robert Pavlak, Joel Rabinovitz, Linda Ray, Ronald Repasi, Jim Schlichting, Dana Shaffer, Sharif Shahrier, David Sieradzki, Ziad Sleem, Chris Smeenck, Michael C. Smith, Max Staloff, Donald Stockdale, Cecilia Sulhoff, Sean Sullivan, Patrick Sun, Thuy Tran, Brenda Villanueva, Weiren Wang, Ramon Williams, Aleks Yankelevich, and Morasha Younger.

**STATEMENT OF
COMMISSIONER MICHAEL O'RIELLY**

Re: Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations, Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time, WT Docket No. 18-197

Most rational market onlookers, from the Wall Street experts to individual users to the casual observer, will agree that some type of major transaction involving Sprint was inevitable. For a multitude of reasons, Sprint has struggled to keep pace with its competitors, and the record contains strong evidence that, going forward, Sprint would have been extremely unlikely to be able to compete on its own. While some will surely argue that the company is still making capital expenditures, its network has fallen behind others and the evidence suggests it is struggling to maintain its customer base, even while slashing prices. The application may not have been officially based on a failing firm defense, but the company's position suggests that would not be far from reality. And, the challenges – and expenses – for Sprint were only going to increase dramatically with the advent of 5G. In fact, Sprint admits that it is “unlikely to play a meaningful competitive role as a standalone company in the years to come” and that “[its] network is deficient, it is losing customers, and it cannot generate enough cash to invest in its network, pay its debt obligation, and compete effectively.”¹ I am amazed by how people speculate about the health and viability of a company for years, but, when an actual transaction comes to fruition, the company is suddenly made out to be some sort of industry juggernaut without which the vibrant and competitive marketplace as we know it will cease to exist.

Therefore, only after thoroughly reviewing the draft order, the docket materials, and considering the views of a wide range of participants, do I vote in support of the merger of T-Mobile and Sprint, as it is in the public interest, consistent with the provisions of the statute, and will result in a more competitive and dynamic marketplace. Contrary to some accusations, I did not vote or indicate my vote without doing the accompanying, and necessary, review. Substantively, combining spectrum holdings and networks, along with the efficiencies resulting from the combined company, will lead to improved quality, faster deployment of 5G and other new, innovative offerings, and cost savings that will benefit American consumers through greater choice, better service, and lower prices. It will also lead to a less leveraged company, which is an important factor from my viewpoint. Because of all of this, I am at a loss to see any merit in the collection of states challenging the transaction or to see their efforts as more than an influence campaign being driven by larger political motives.

While I am supportive of this transaction, there are portions of today's item and our merger reviews, in general, that are woefully out of date and need to be improved. That said, I acknowledge that these issues arise because of Commission precedent and policy that predate the current administration.

In particular, it's important to recognize that the communications sector has changed remarkably in the last few years. Discrete industry segments are now converging: mobile and fixed wireless are providing broadband speeds; video and audio content are carried over the Internet using various distribution paths; and satellite offerings have also improved, providing a viable alternative to traditional offerings. Americans have more options for receiving information and communicating than ever before. And, this is just the tip of the iceberg, the promise of 5G could revolutionize the role of wireless networks, making them truly indistinguishable from their wired cousins, or perhaps even launching them well beyond traditional networks.

¹ Ex Parte Letter from Regina M. Keeney, Lawler, Metzger, Keeney & Logan, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission 2-3 (Apr. 19, 2019).

But, nonetheless, the Commission's merger review process still takes a very siloed view of competition. I frequently raise that the Commission and others, including the Department of Justice (DOJ), need to update and modernize their requisite market definitions. Even if you look solely at the myopic and out-of-date mobile broadband and telephony market used in this item, there isn't much consideration given to the cable offerings, unlicensed systems, or satellite services, among others. To act as if these services are not substitutes for one another is turning a blind eye to reality.

Unfortunately, this view permeates much of our merger analysis. It undergirds both our initial spectrum and competition, or HHI, screens. Although these metrics were initially set up as transaction tools to provide clarity to parties about those markets where the Commission would take a closer look and those that were presumed to have no competitive effect,² these artificial limits have instead been used to demarcate where the Commission will start imposing conditions or, worse yet, signal that a merger cannot be approved. These should be, at best, eliminated or, at a minimum, seriously reconsidered and modified accordingly.

Even more egregious is the seriously flawed enhanced factor review for transactions involving frequencies under 1 GHz, which was formally added to our spectrum screen, prior to the Broadcast Incentive Auction in 2014.³ This more stringent look at low-band spectrum aggregation has never had any effect whatsoever on the Commission's analysis, and it is still unclear exactly what it entails. I am pleased that others are now seeing its futility and requesting that the Commission reevaluate this extra hurdle, whatever it may be. There may be some merit in reviewing the competitive effects of a transaction and ensuring that it is in the public interest, but a loosey-goosey standard with no defined parameters is not transparent, leads to uncertainty, and can result in arbitrary and capricious findings.

Further, this item contains a lot of back and forth about the pros and cons of various economic models, and, in the record, interested parties spend a lot of time and effort ripping apart different submissions. Each and every model appears to have a flaw of some kind, and each and every input seems to be debated. In the end, determining the true effects of a merger is not an exact science. These models are informative, not determinative; we cannot predict the future. There is no model or metric that will take into account the benefits of upgraded 5G networks and new service offerings, greater capacity and lower costs, and the overall expense and resources that it takes to compete in the mobile sector.

Having a third, strong nationwide wireless competitor that is capable of more effectively competing with the two market leaders is in the public interest. For this reason and others, I am skeptical about whether the conditions imposed are absolutely necessary. The presence of AT&T and Verizon will act as a constraint on T-Mobile's ability to change its rates drastically. Further, there are other offerings, including other MVNOs and the entry of cable companies into the wireless space, that will also constrain pricing in urban markets. To the extent the merged company steps away from what the market will support, it merely invites new and expanded competitors to out-maverick it.

I am also concerned any time I see conditions that appear to be an attempt to resolve larger policy issues of general applicability better suited for a Commission proceeding, such as requiring heightened construction requirements. Additionally, in response to critics, T-Mobile has made a three-year pricing commitment that they will maintain or offer better rate plans. During this three-year period, T-Mobile

² *Applications of AT&T Wireless Inc. and Cingular Wireless Corporation For Consent To Transfer of Control of Licenses and Authorizations*, Memorandum Opinion & Order, 19 FCC Rcd 21522, ¶¶ 108-109 (2004).

³ *Policies Regarding Mobile Spectrum Holdings; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, WT Docket Nos. 12-269, 12-268, Report and Order, 29 FCC Rcd 6133, 6237-6240 ¶¶ 279-289 (2014).

will experience huge cash outlays as it seeks to deploy 5G. I will be watching to see if this commitment hinders T-Mobile's upgrade or expansion plans. These various conditions were offered by the parties to ease an approval, so, while I don't think they are necessary, I will not object to them. As I have stated before, I cannot stop a company from stabbing itself in the foot.

As for the DOJ conditions and process, which I was not privy to, I am concerned about the precedent set when another agency takes an action that forces the Commission's hands. Unfortunately, these conditions are necessary to get another agency's approval and, as I am in favor of the overall merger, I am not in a position to realistically reject them. But, I worry that the applicant is divesting more than needed to mitigate the imaginary concerns of some other regulators. All told, however, that is not to suggest that I don't see the possibilities of DISH's expansive entry into the market as intriguing.

In closing, I fervently believe that there is no magical number of entities that make a marketplace competitive. It would be nice if it were that simple, but you also need to take into consideration the strength of the participants, the structure of the market, and the future demands placed on networks and providers as they seek to respond to consumer demand. Those who solely look at a number are taking the easy way out. This merger will lead to a more competitive marketplace, hasten the delivery of next-generation services, and improve the combined company's service quality and network reach beyond what either company can do on its own. Thus, I look forward to the new company meeting its commitments and bringing its fervent competitive style to bear on the market for the betterment of the American consumer.

I thank Chairman Pai for his work to bring the transaction to a conclusion at the Commission, his willingness to accommodate my edit suggestions, and his overall leadership on the matter. I approve.

**STATEMENT OF
COMMISSIONER BRENDAN CARR**

Re: *Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations, Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time,* WT Docket No. 18-197

Advancing 5G in the United States has been a leading focus of this Commission. In our monthly Commission meetings in the past year alone, the FCC has approved more than 10 major items aimed at providing more spectrum, modernized infrastructure rules, and greater flexibility so that providers can connect Americans to 5G.¹

We have made 5G our priority for at least two reasons.

First, robust 5G networks will be the platforms upon which the next wave of our economy's jobs and services will be created. All of the life-changing technologies we hear about—from autonomous cars to smart cities, from remote surgery to virtual reality—won't work or won't work well without 5G. The truth is that as impactful as this first wave of inventions built on 5G will be, they only scratch the surface of what is to come for American families. When the U.S. upgraded from 3G to 4G, few predicted the rise of Uber, Airbnb, or Venmo. Entrepreneurs and inventors created trillions of dollars of value on America's world-leading 4G networks. With 5G's capabilities, we expect the resulting economic growth to surpass the previous generations of wireless. 5G therefore is a national priority beyond mere communications. If it is deployed quickly and robustly it promises to give the U.S. an edge in economics, security, education, and other dimensions that are vital to Americans' lives.

Second, 5G accelerates competition in the communications marketplace. As regulators bent on realizing more choice for the Americans we serve, we delight in competition between previously siloed industries. Deregulation and technological progress brought down long-distance phone rates to a point where today many young people never have heard of such charges. Cable companies first provided quality and competitive video alternatives to broadcast, they were later challenged by satellite providers, and they all now face myriad competitors that deliver video over-the-top of Internet connections. Wireless companies are battling cable companies and others to provide Americans broadband access. Indeed, cable companies now are adding more wireless subscribers each quarter than some of the largest wireless companies.²

¹ *Auction of Priority Access Licenses for the 3550-3650 MHz Band*, AU Docket No. 19-244, Public Notice, 2019 WL 4785555 (2019); *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Report and Order, 34 FCC Rcd 5446 (2019); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services*, AU Docket No. 19-59, Public Notice, 34 FCC Rcd 5532 (2019); *Allocation and Service Rules for the 1675-1680 MHz Band*, WT Docket No. 19-116, Notice of Proposed Rulemaking and Order, 34 FCC Rcd 3552 (2019); *Incentive Auction of Upper Microwave Flexible Use Service Licenses in the Upper 37 GHz, 39 GHz, and 47 GHz Bands for Next-Generation Wireless Services*, AU Docket No. 19-59, Public Notice, 34 FCC Rcd 2656 (2019); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Fifth Report and Order, 34 FCC Rcd 2556 (2019); *Updating the Commission's Rule for Over-the-Air Reception Devices*, WT Docket No. 19-71, Notice of Proposed Rulemaking, 34 FCC Rcd 2695 (2019); *FCC Opens Spectrum Horizons for New Services & Technologies*, ET Docket No. 18-21, First Report and Order, 34 FCC Rcd 1605 (2019); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177, Fourth Report and Order, 33 FCC Rcd 12168 (2018); *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295, GN Docket No. 17-183, Notice of Proposed Rulemaking, 33 FCC Rcd 10496 (2018); *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Report and Order, 33 FCC Rcd 10598 (2018).

² See News Release, Comcast, Comcast Reports 3rd Quarter 2019 Results, (Oct. 24, 2019), <https://www.cmcsa.com/news-releases/news-release-details/comcast-reports-3rd-quarter-2019-results> (announcing (continued....))

5G's performance characteristics will greatly expand the head-to-head competition for Americans' broadband dollars. If an operator can offer fast Internet access ubiquitously, it does not matter to the consumer whether the operator calls itself a cable company or a wireless company. As to investment and network engineering, it does not matter much whether the operator places itself into the cable silo, the wireless silo, or neither—it will have to build small cells connected to fiber, regardless. What does matter to consumers and companies alike is the disruptive competition that we are about to witness. For consumers, next-gen connectivity will mean more choice, which we know will decrease prices and improve quality. For companies, it will mean new markets to address—and greater pressure on resources, performance, and agility.

The merger of T-Mobile and Sprint, our country's smallest nationwide wireless providers, comes to us at this moment of immense transition. To judge whether the transaction is in the public interest then, the Commission must rely on our experience with regulating not only the wireless industry but other industries that will compete against wireless companies for Americans' broadband dollars.

The analysis begins with 5G's impact on demand for data and services. It turns to understanding how our wireless providers are positioned to meet that demand based on the detailed engineering and financial models we have studied over the last year. Finally, to keep pace with the industries we regulate, we must pull back from a cramped, backward-looking view of wireless and take account of the way 5G will rearrange the field of competition.

I. The 5G Data Demand Boom

We know from our experience with regulating wireless carriers in the 4G era that demand for data will surge with 5G. As more bandwidth is available to content creators and app makers, more bandwidth will be used. And as these data-rich services proliferate, consumers' hunger for data tends to increase. We observed this trend in the upgrade from 3G to 4G.³ One measurement of users who have upgraded from 4G to 5G thus far shows an immediate 260 percent spike in data consumption to 24 GB per user per month.⁴ Early indicators suggest that the capacity pressure from the 5G upgrade will dwarf the upgrade from 3G to 4G.

In conducting our demand analysis, the Commission obtained data forecasts from T-Mobile, Sprint, and other wireless providers, as well as those that are publicly available. We display the range of forecasts in the Technical Appendix at Fig. A16.

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that Comcast added 204,000 wireless lines in the third quarter of 2019); Earnings Release, Charter Communications, Charter Announces Third Quarter 2019 Results (Oct. 25, 2019), <https://ir.charter.com/static-files/76cf320f-4610-448b-9768-c1a27f2d2c2e> (announcing that Charter added 276,000 mobile lines in the third quarter of 2019).

³ See Calum Dewar, *4G driving data usage but not all markets are reaping the rewards*, GSMA INTELLIGENCE (Jan. 20, 2014), <https://www.gsmainelligence.com/research/2014/01/4g-driving-data-usage-but-not-all-markets-reaping-the-rewards/412/> (reporting in the early adoption of 4G that “4G users typically consum[ed] twice as much data per month as other users”).

⁴ See Philip Kendall, *5G Data Use Surges in South Korea*, STRATEGY ANALYTICS (Aug. 1, 2019), <https://www.strategyanalytics.com/strategy-analytics/blogs/service-providers/mobile-operators/service-providers/2019/08/01/5g-data-use-surges-in-south-korea>; Mike Dano, *Early Usage of 5G Off the Charts, but Profits May Not Be*, LIGHT READING (Oct. 25, 2019), <https://www.lightreading.com/mobile/5g/early-usage-of-5g-off-the-charts-but-profits-may-not-be/a/d-id/755136> (explaining that Sprint's 5G customers “are consuming three to five times more data than its 4G LTE customers”).

Several common features emerge from the forecasts. They all show data growth accelerating from 4G to 5G; not only does the quantity of data increase, but the rate of the increase increases. Among the 5G networks and the networks with a mix of standards, the forecasts have remarkably similar growth rates. With the exceptions of the low forecast [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.] and the high forecast [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.], the forecasts show compound annual growth rates of between [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] percent and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] percent, with the majority in the low [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]. The forecasts produce different projected data demands in the out years less because of differing views on growth rates than because they make different assumptions about base year demand.

Our record strongly indicates that actual demand in the out years will be on the high end of the Technical Appendix's forecasts. The base year figures from [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.], Cisco, and Ericsson are estimates of the usage on various networks in 2016 or 2017. We need not rely on base year estimates, however, because we know what T-Mobile and Sprint customers actually used. In 2017, Sprint customers used an average of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB of data per month, and the average was [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB for T-Mobile customers. [BEGIN HIGHLY CONF. INFO.]

[END HIGHLY CONF. INFO.]. Forecasting off of the companies' actual usage—as opposed to an estimate or an average of other networks' usages—produces striking results. If we take 2017 as our base year, assume usage to be the average between T-Mobile and Sprint's actual usage in that year ([BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB), and apply the median compound annual growth rate of the 5G and mixed network forecasts ([BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] percent), we come to a forecast of [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB in 2024. That is [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB higher than the demand we used to model marginal cost savings in Figs. 3a and 3b and more than [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] the demand used to model Fig. 3c.

II. The Wireless Industry's Options to Meet Demand

Americans' immense 5G data demand is a critical challenge to the wireless industry, and it is the core of the present transaction. For the wireless industry, the status quo is not an option. The assets and business plans that carriers have used to meet 4G data demand will not be enough in this new 5G era.

Wireless providers have a few options to cope with consumers' inexorable demand for more and more data. They could cap customers' data consumption. This is, in fact, what providers experimented with when 4G was nascent and data use skyrocketed under preexisting unlimited plans. Consumers hated caps, and T-Mobile capitalized on their distaste by being among the first to reintroduce unlimited data plans.⁵ If we want 5G to hasten the breakdown of old industry silos and challenge traditionally wired services, it will have to do so with data offerings on par with those services.

Another route is to allow quality to dip during busy hours. Wireless networks are built to peak usage—to provide at least a minimum level of service during data's rush hour. A provider could

⁵ See Richard Feloni, *The T-Mobile CEO who calls his competition 'dumb and dumber' explains how he doubled customers in 4 years, and how a group of employees made him cry*, BUS. INSIDER (Oct. 7, 2016, 8:30 AM), <https://www.businessinsider.com/t-mobile-ceo-john-legere-interview-2016-10> (“The biggest pain point that a million customers told me about is that they hate data buckets. And we . . . wanted to turn our company into somebody that's selling a monthly subscription to the internet, all in, unlimited.”).

underinvest for a time, thinking that customers would accept degraded service during busy hours. But some argue that a strategy of underinvestment is what led to Sprint's subscriber losses and other business challenges, and few would claim that underinvestment in infrastructure is a public interest benefit.

Providers' other solution to their 5G data demand problem—and the one that yields the greatest quality and choice for consumers—is to expand their networks' capacity. For the most part, this has been the providers' strategy in the lead up to 5G. In the last year, the industry made capital investments of over \$27 billion, bringing the total private sector investment since the advent of 4G to an astounding quarter trillion dollars.⁶ And yet while investment has increased, prices have decreased. “Subscriber saturation and increasing commoditization have limited market growth despite a significant increase in data demand,” according to an international consulting firm.⁷ In the last four years, the key average revenue metrics have fallen at all of the nationwide providers: by 15 percent at Verizon,⁸ 9.1 percent at AT&T,⁹ 4.3 percent at T-Mobile,¹⁰ and 10.1 percent at Sprint.¹¹

III. T-Mobile and Sprint Cannot Meet Demand like the Market Leaders

To build out enough capacity to meet Americans' needs, T-Mobile and Sprint each bring some strengths and some weaknesses relative to the two largest nationwide providers, Verizon and AT&T. T-Mobile has executed a high-data, low-cost strategy that has been popular with consumers. In the last four years, T-Mobile added more than 24 million customers, at a time when the rest of the industry experienced moderate growth.¹² Sprint has rights to about 160 MHz of 2.5 GHz spectrum in the top 100 markets,¹³ which is extremely useful for deploying mobile 5G.¹⁴ This national asset, however, has not

⁶ 2019 Annual Survey Highlights, CTIA (June 20, 2019), <https://www.ctia.org/news/2019-annual-survey-highlights>.

⁷ RAWIA ABDEL SAMAD, FLORIAN GRÖNE & UDAYAN GUPT, GRASPING AT DIFFERENTIATED STRAWS: COMMODITIZATION IN THE WIRELESS TELECOM INDUSTRY 39 (2018) (calculating a -2.7% compound annual growth rate in U.S. wireless revenue from 2011 to 2016).

⁸ VERIZON COMMUNICATIONS INC., CONDENSED CONSOLIDATED STATEMENTS OF INCOME 5 (2015), https://www.verizon.com/about/file/7833/download?token=9F_EILJS; VERIZON COMMUNICATIONS INC., CONDENSED CONSOLIDATED STATEMENTS OF INCOME 5 (2019), <https://www.verizon.com/about/file/36119/download?token=WXIhckLH>.

⁹ Phil Goldstein, *AT&T adds fewer postpaid subs in Q2 than expected as it loses 322K postpaid phone customers*, FIERCEWIRELESS (July 23, 2015, 5:37 PM), <https://www.fiercewireless.com/wireless/at-t-adds-fewer-postpaid-subs-q2-than-expected-as-it-loses-322k-postpaid-phone-customers>; AT&T INC., AT&T 2Q19 HIGHLIGHTS 2 (2019), https://investors.att.com/~media/Files/A/ATT-IR/financial-reports/quarterly-earnings/2019/2q-2019/2Q19_Highlights.pdf.

¹⁰ *T-Mobile Reports Double-Digit Revenue Growth and Strong Profitability in Q2*, T-MOBILE (July 29, 2015), <https://www.t-mobile.com/news/q2-earnings-2015>; T-MOBILE US, INC., T-MOBILE SETS MORE RECORDS IN Q2: STRONGEST Q2 CUSTOMER GROWTH IN YEARS, RECORD-LOW CHURN AND RECORD FINANCIAL RESULTS 3 (2019), https://s22.q4cdn.com/194431217/files/doc_financials/2019/Q2/TMUS-06_30_2019-Earnings-release.pdf.

¹¹ News Release, Sprint Corp., Sprint Reports Continued Progress in its Turnaround During the First Fiscal Quarter of 2015 (Aug. 4, 2015), https://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2015/1500074514.PDF; News Release, Sprint Corp., Sprint Reports Fiscal Year 2019 First Quarter Results (Aug. 2, 2019), https://s21.q4cdn.com/487940486/files/doc_financials/quarterly/2019/q1/01_Fiscal-1Q19-Earnings-Release-FINAL.pdf.

¹² T-MOBILE US, INC., 2ND QUARTER 2015 FINANCIAL RESULTS, SUPPLEMENTARY DATA AND NON-GAAP RECONCILIATIONS 3 (2015), https://s22.q4cdn.com/194431217/files/doc_financials/2015/q2/1500074333.pdf; T-MOBILE US, INC., Q2 2019: FINANCIAL RESULTS, SUPPLEMENTARY DATA, NON-GAAP RECONCILIATIONS, RECONCILIATION OF OPERATING MEASURES 5 (2019), https://s22.q4cdn.com/194431217/files/doc_financials/2019/Q2/Financial-Results-PDF.pdf.

¹³ See Technical Appendix, para. 35.

been very widely deployed because of Sprint’s precarious financial position. There are so many signs of this stress: the company’s inability to turn a consistent profit, its more than \$30 billion of net liabilities, its repeated goodwill impairments that value the company at little more than parts plus debt.¹⁵ Sprint simply does not have the resources to build the physical infrastructure necessary to provide robust 2.5 GHz coverage, and “our technical analysis predicts that on a standalone basis it would fail to cover nearly half of the country with 5G services on its 2.5 GHz spectrum, even assuming it has the financial ability to reach its previously planned deployment level.”¹⁶

T-Mobile, on the other hand, lacks the assets to continue its aggressive growth trajectory into 5G. Verizon and AT&T have larger infrastructure builds, stronger balance sheets, deeper spectrum portfolios, and greater scale. These advantages position the market leaders to serve 5G demand in ways stand-alone T-Mobile cannot. T-Mobile’s Network Build Model attests to this disadvantage. As demand increases, stand-alone T-Mobile has to squeeze more data capacity out of its limited spectrum portfolio. The more data it needs to deliver, the more costly the physical infrastructure becomes, until ultimately the company is forced to build numerous new towers at [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] a piece.¹⁷ Our staff’s marginal cost savings runs shed some light on how this would impair stand-alone T-Mobile. At [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB of usage in 2024, the cost of adding a post-paid customer to stand-alone T-Mobile would be [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] higher per month than the new company’s cost.¹⁸

There are two key insights we gained from the complex engineering and cost calculations that produced this figure. First, data demand greatly affects costs and stand-alone T-Mobile’s ability to remain competitive. The huge difference in cost efficiencies between Fig. 3a and Fig. 3c ([BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] versus [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] per additional user) is entirely the result of different assumptions in data demand—[BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB and [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB, respectively. If our [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB data demand assumption in Fig. 3a is too low—and there is overwhelming evidence that it is, based on early 5G customers’ usage as well as the consensus of industry estimates—the cost for stand-alone T-Mobile to serve customers will skyrocket.¹⁹ These costs would have to be passed on to customers through increased prices, countering T-

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¹⁴ See, e.g., *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, Order and Notice of Proposed Rulemaking, 33 FCC Rcd at 6915, para. 5 (“Mid-band spectrum is well-suited for next generation wireless broadband services due to the combination of favorable propagation characteristics (compared to high bands) and the opportunity for additional channel re-use (as compared to low bands).”).

¹⁵ See, e.g., Michael Hodel, *Sprint Will Continue to Struggle As It Waits on the States’ T-Mobile Challenge*, MORNINGSTAR (Oct. 1, 2019) (“Sprint simply doesn’t have the scale or financial resources to overcome the disadvantages it faces Sprint’s competitive disadvantages are legion. Its unconventional technology choices and unusual spectrum portfolio have limited its ability to serve customers well over the years, causing its market share to shrink. Small scale compared with Verizon, AT&T, and even T-Mobile leaves it with a relatively weak cost structure. Finally, a stretched balance sheet has forced it to undertake complex financing transactions to refinance debt, limiting its strategic flexibility and ability to aggressively attack operational problems.”).

¹⁶ *Infra* para. 98.

¹⁷ See Technical Appendix, Fig. A15.

¹⁸ *Infra* Fig. 3a.

¹⁹ The [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB model run does not reflect the Commission’s view as to consumers’ actual data demand in the out years. Instead, it results from Applicants’ cost constraint: that is, Applicants’ view as to what costs consumers would be willing to bear. Applicants calculate that consumers actually will demand around [BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.]

(continued....)

Mobile's popular strategy of high data at low prices, which has resulted in consumer welfare gains across the industry. Second, Sprint's 2.5 GHz spectrum theoretically allows it to respond more cost-effectively to demand increases than T-Mobile, as is seen in the small Sprint marginal cost savings due to the transaction relative to T-Mobile's cost savings in Fig. 3a. However, Sprint lacks the financial wherewithal and scale to put that 2.5 GHz spectrum to use, precisely at the moment when Americans need that additional capacity.

Combining the two companies allows them to leverage the strengths and address the weaknesses of each. T-Mobile contributes high and low-band spectrum for performance and coverage plus management capabilities and strategy that have changed the industry. Sprint contributes mid-band spectrum that is critical to mobile 5G, and it enables the combined company to compete for the first time at the same scale as Verizon and AT&T.

IV. Market Segment Benefits

Even if we focused solely on the wireless industry as constituted today, providing a strong third competitor provides obvious benefits to a number of market segments. Indeed the benefits to rural America and to every customer who demands quality, including enterprises, are not strongly challenged in our record. New T-Mobile will cover 99 percent of Americans with 5G, an enforceable condition of this transaction. T-Mobile and Sprint today do not compete meaningfully for profitable enterprise accounts, and injecting choice into that market should have downstream economic benefits.

But what about price-conscious, urban consumers? This Commission is well-aware of the economics of building networks in dense urban areas versus rural communities. We collect around \$10 billion per year in Universal Service Fund fees, and we spend the lion's share of that money on supporting rural service. Urban networks are cheaper per capita to build, and our wireless carriers use profits from urban centers to help pay for coverage outside of cities. Treating urban users as their own market undermines the way carriers finance network coverage and is blind to the market's demand for national pricing plans and free roaming.

Nonetheless, the record shows that this transaction will not lead to small but significant price increases even for the price-conscious, urban sub-market. The foundation of our belief rests in the capacity increases in combining the two networks. The complementarity of T-Mobile's and Sprint's networks results in about a doubling of capacity compared to the stand-alone networks.²⁰ Wireless networks entail high fixed costs and low marginal costs. Because the cost of a network is disproportionately in building it, once built, the incentive is to sell all of the network's capacity. After integrating the networks over the next two years, the new firm will be faced with a problem: It will have double the capacity of the stand-alone companies and yet about the same number of customers as before. All of that excess capacity will make onboarding each additional customer cheap, since the capacity already will be paid for and will represent wasted investment if not used. Doubling the "production" of 5G data that can be delivered on new T-Mobile compared to stand-alone T-Mobile and Sprint will put strong downward pressure on prices.

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GB of data per month in 2024, but the cost of providing the data given the companies' assets and high marginal costs would be unaffordable. If we disregarded the cost constraint and modeled what it would cost the stand-alone firms to deliver what consumers want ([BEGIN HIGHLY CONF. INFO.] [END HIGHLY CONF. INFO.] GB per month), the marginal costs of adding users would increase sharply and the cost savings of the merger—the benefit to Americans in the form of lower prices—would be much higher. Due to limitations in the model provided to the Commission, we were unable technically to model the marginal costs at that heightened level of usage.

²⁰ See Technical Appendix, Fig. A4.

To confirm the protection against higher prices that I view as inherent in new T-Mobile's surplus capacity, we now require certain actions from the combined company. We require the combined company to divest Boost, which has focused on serving price-conscious consumers. Aside from the name, however, there won't be much in common between new and old Boost. The new company will have best-in-class access to new T-Mobile's network—a far improved experience over Boost's current access to Sprint's network. With DISH's acquisition, it also would increase the overall wireless industry's data production. DISH has a deep spectrum portfolio that lies fallow, and its plan absent the Boost transaction was to use a small fraction of its capacity, in what some criticized as a “save build” aimed only at trying to preserve its licenses. DISH's more robust build commitments made as a condition of the transaction would put more spectrum to work, increase capacity, and put additional downward pressure on wireless prices. We also require that new T-Mobile keep the existing companies' rate plans for three years. That period is significant because it spans the time it will take the new company to integrate the networks and realize the major capacity expansion that will naturally push down prices.

V. A More Accurate View of 5G Competition

The foregoing analysis should leave no doubt that our decision promotes the public interest and encourages greater competition for the benefit of all Americans.

And yet the Order represents a missed opportunity for the Commission. Instead of formally updating our view of competition to reflect 5G, we conduct our initial screen using the market definition of “mobile telephony/broadband services.”²¹ The Commission created that market definition in November 2008—more than two years before any of the nationwide wireless providers had deployed 4G LTE. Even at that time, we saw how faster wireless service would combine the markets for talk, text, and low-data uses on phones with the market for high-data uses on computers and non-voice devices. The new market definition recognized how “mobile broadband services” (enabled by upgraded 3G and 4G networks) would break down previously siloed industries. And so when we reviewed a transaction between wireless companies in 2008, we took the opportunity to update our market definition, “conclud[ing] that there are risks associated with defining product markets too narrowly, since doing so may thwart this and future pro-competitive deals that take place in the context of rapidly evolving markets and services.”²²

The Commission shows no such prescience in defining the relevant market here. Rather, it applies the same definition that both the FCC and antitrust authorities have been using for a decade. By sticking with a pre-4G market definition, we miss an essential feature of 5G: the blurring of wired and wireless networks and the enhanced competition that results. While our legacy market definition may track FCCs and antitrust authorities past, it prevents the expert agency Congress created to regulate telecommunications from helping our sister agencies modernize their approach to this technology.²³ That's a shame, because it forces us to understate the benefits of this transaction to the Americans we serve.

This overly constrained view distorts the Order's treatment of in-home broadband, for example. We discuss the new competition for Internet access within the Order's public interest benefits section. While providing a choice for home Internet access to at least 28 million families is undoubtedly a

²¹ *Infra* para. 60.

²² Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC For Consent to Transfer Control Licenses, WT Docket No. 08-95, Memorandum Opinion and Order, 23 FCC Rcd 17444, 17470 (Nov. 10, 2008).

²³ See generally Advanced Communications Law & Policy Institute at New York Law School, Comments, WT Docket No. 18-197 (Sept. 17, 2018), <https://go.usa.gov/xp4D9>.

significant public interest benefit, a modern approach would consider in-home broadband in the basket of services offered by new T-Mobile, “wireless” companies, “cable” companies, and others. As the connections become increasingly fast and mobile, all of the connection companies begin competing against each other, injecting competitive pressure into services that increasingly look substitutable.

We don’t have to rely on predictions of coming convergence because we see it already. Verizon’s first 5G offering is for in-home broadband, taking on cable. Cable is offering wireless service even on an unbundled, stand-alone basis—and buying spectrum and building small cells in the process. Wireless, cable, and satellite companies are offering next-gen smart city and IoT applications. We risk making ourselves a restraint on competition if we don’t pay adequate attention to how connectivity businesses are changing all around us.

* * *

But let’s step back from the minutiae of competition analysis, transaction conditions, spectrum bands, and engineering models. Fundamentally, our job at the FCC is to see clearly the generational upgrade in communications that is taking place before us. We have to grasp how 5G will challenge every part of the communications industry, how it will reshape competition. It would be unwise for the expert agency created to regulate telecommunications to blinker ourselves to the coming 5G convergence and what that means for everyday Americans. Analysis that looks backwards to the age of talk-and-text may prolong those dying use cases, but it lacks relevance to how consumers use high-speed connections today and, certainly, tomorrow. Put simply, our decision must understand and encourage 5G competition.

Verizon and AT&T have built the leading national wireless networks. They have dominant coverage and capacity in many rural and urban markets; they generate almost all of the industry’s profits. In the coming converged market for 5G connectivity, they are well positioned to take on new competitors from cable and elsewhere, and they are most able to meet 5G’s data demand. T-Mobile has been successful in a 4G industry but is running out of room to grow and is impaired by structural disadvantages to the market leaders. Sprint is a flailing firm whose future is in doubt absent this merger. What Sprint does have is a trove of mid-band spectrum that is extraordinarily useful for 5G, but no ability to put it to use outside a handful of cities.

By approving this merger, a true third national competitor can be created, pressing the two market leaders in wireless like they have not been pressed before. And it prepares the wireless industry to advance not two but three contenders in the battle with other companies from other industries to serve Americans’ connectivity needs.

That is the intense competition that best serves the public interest. And so I strongly support this Order’s approval of the transaction.

**STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL
DISSENTING**

Re: *Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations, Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time,*
WT Docket No. 18-197

Our economy thrives on competition. Over history, it has inspired innovation, increased choice, and improved our resourcefulness and efficiency. It is the reason the United States has birthed some of the most dynamic companies in the world.

The proposed tie-up of T-Mobile and Sprint will reduce competition. This merger will combine two of the four nationwide competitors in the wireless industry in the United States. As a result, three companies will control 99 percent of the wireless market. By any metric, this transaction will raise prices, lower quality, and slow innovation, just as we start to deploy the next-generation of wireless technology.

We've all seen what happens when market concentration increases following a merger. A condensed airline industry brought us baggage fees and smaller seats, even as the price of fuel fell. A condensed pharmaceutical industry has led to a handful of drug companies raising the prices of lifesaving medications, taking advantage of those struggling with illness.

There's no reason to think the mobile-phone industry will be different. Shrinking the number of national providers from four to three will hurt consumers, harm competition, and eliminate thousands of jobs. In deciding to overlook these harms, the Federal Communications Commission and the Department of Justice have been wooed by a few unenforceable concessions and hollow promises from the two companies involved.

The T-Mobile-Sprint merger will end a golden age in wireless that helped bring to market lower prices and more innovative services. It will mean an end to the competitive rivalry that reduced prices by 28 percent during the last decade. Similarly, the pressure to support unlimited data plans and free international roaming will fade. Offers to pay early termination fees to help families switch to plans that fit their lives will fall by the wayside. And the network improvements that will bring us the next generation of wireless service, known as 5G, will proceed more slowly and yield fewer jobs without the fuel of competitive pressure.

In short, our existing wireless market will devolve into a cozy oligopoly dominated by just three carriers. This will do nothing to make it easier for Americans to stay connected. After all, our wireless phones are how we communicate, pay for all kinds of services, seek out jobs, keep up on the news, and stay in touch with the world around us. Arguably, no service is now more central to our daily lives. But for all this connectivity, we pay a price. Most households now spend over \$1,000 a year on wireless service. Moreover, that figure probably understates the true cost because it does not include the expanding range of devices, applications, and content we use with this service. So it's no small problem that, according to the Department of Justice's complaint and the FCC's own analysis, this merger is likely to raise consumer rates.

Why are the two agencies so eager to approve this blatantly anticompetitive deal? T-Mobile and Sprint have promised that if they are allowed to merge, they will hold off on raising prices for three years. They have committed to deploying 5G networks nationwide within six years. In addition, they have agreed to divest some assets to help prop up Dish Network as a new wireless competitor to replace Sprint.

But as I discuss below, these promises do little more than camouflage the competitive problems with this transaction. They do nothing to reign in the merged company's market power, which is what really counts. The Editorial Board at the New York Times likens the parties' promises to "pay[ing] the government what amounts to a minor toll on the road to bigger profits."

Moreover, the remedies the FCC and the Department of Justice design around these promises betray the free-market principles that for decades have made us the world's leader in wireless. Instead of promoting vigorous competition among providers, today's order justifies increased concentration by jerry-rigging a new provider dependent on the government dictating who sells what to whom and when. In addition, the agency retreats from nimbler and more decentralized approaches to spectrum management—like flexible use licenses and technology-neutral rules—that have served us so well in the past. To add insult to injury, it made these choices behind closed doors with a remarkable lack of transparency.

Both the FCC and Department of Justice should know better than to think that tinkering around the edges of this deal can save it. Across our economy and across our geography, we are already struggling with the consequences of a seemingly never-ending wave of mergers and lax enforcement. So many of America's most pressing economic and political problems can be traced back to this kind of market consolidation. This includes dwindling opportunity in rural America as farmers struggle against agriculture conglomerates. It includes plunging rates of entrepreneurship as concentrated markets choke off small businesses. It includes falling wages as mergers reduce the need for employers to compete to keep their workers. And it includes income and wealth inequality that are higher than they've been in a hundred years.

The FCC and the Department of Justice should know what is fundamental: with less competition, rates rise and innovation falls. All the evidence demonstrates this is true here, too, and consumers will pay the price. In fact, with 5G on the horizon, our dependence on wireless connectivity is bound to grow. It will extend beyond our phones, creating new opportunities with wearables, video, and more in sectors like healthcare, transportation, and manufacturing. It's not the time to count on higher prices and less vigorous competition to help the benefit of this new technology reach us all.

So I dissent to the FCC's decision to consolidate the wireless market in the hands of three companies. I dissent to the process the agency used to reach this result, which hid too much of the negotiations and this decision out of view from the public. And I dissent to the remedies the FCC adopts that gamble our 5G future on a new wireless entrant and put all the risk of this merger on the backs of American consumers.

I address these aspects of today's decision below.

I.

So many people already think that Washington is rigged against them. It saddens me when on too many occasions this agency proved them right. At every twist and turn in the FCC's year-long review of the T-Mobile-Sprint merger, this agency's decision-making overlooked the work of expert staff, undermined other agencies with oversight authority like the Department of Justice, and deprived the public a meaningful opportunity to participate. Rather than inspire confidence that our laws were being scrupulously administered, the agency's brazenness throughout this proceeding was Kafka-esque: "[t]he law is whatever the nobles do."

Three of my colleagues agreed to this transaction months ago without having any legal, engineering, or economic analysis from the agency before us. They agreed to this transaction before the Department of Justice could finish its review, ending a longstanding practice of coordinating efforts

between the agencies. Consumers deserve better from Washington authorities charged with reviewing this transaction.

But that was only the first troubling sign in the review process. On July 26, 2019, the Department of Justice announced that it reached a settlement with T-Mobile and Sprint that fundamentally changed the underlying transaction as originally proposed. The settlement raised substantial new issues involving the state of competition and the public interest, including the waiver of Dish's build-out obligations, new license and deployment conditions, and significant transfers of spectrum and other assets. These new facts were central to the agency's analysis of the public interest benefits of the merger. As such, the FCC should have sought public comment on what was fundamentally a new transaction. In fact, more than seven groups representing a mix of rural, labor, and other interests asked this agency for an opportunity to participate in the FCC's review. But they were all shut out.

Then, on September 24, 2019, the FCC announced that Sprint may have fraudulently received tens of millions of dollars in federal subsidies by falsely claiming it provided Lifeline service to 885,000 inactive subscribers. This represents nearly one-third of Sprint's Lifeline subscriber base and nearly 10 percent of the entire Lifeline program. Given the seriousness of the allegation and the importance of making the Lifeline program whole, the FCC should have paused its review of the merger while it investigated Sprint's alleged fraud. Nine organizations filed a petition asking for exactly that. That request also fell on deaf ears.

Once the agency finally had legal, engineering, and economic analysis produced by expert staff, key parts of it were rewritten by the FCC's political leadership behind closed doors. While it is not unusual for a draft document to change once it is circulated for review, this effort went far beyond what is routine. Significant parts of the initial draft decision were rewritten in the eleventh hour and behind closed doors to suggest less harm to competition and prices than initially found; adopt the merging companies' arguments in place of more balanced discussion about where those arguments were unconvincing; and even replace the underlying data used to analyze marginal cost efficiencies with more merger-friendly data supplied by T-Mobile.

What is most troubling is that these changes were made after no less than nine *ex parte* meetings between FCC leadership and the merging companies that took place after the agency denied other parties a further public comment period and after the Department of Justice expert that had been tapped to lead our review had left the building. Moreover, Nine organizations filed a petition with this agency pointing out that these meetings were not sufficiently disclosed on the record pursuant to the FCC's rules. Yet no effort was made to fix this problem.

Sunlight is the best disinfectant. That is why I think the FCC should make public the initial draft of this decision that was prepared by our expert staff and circulated for review in the agency in addition to the decision we release today. Congress, the courts, and the public should know what was changed and why.

Finally, in June, nine states filed a lawsuit to block the merger of T-Mobile and Sprint after finding that the merger would reduce competition and drive up the cost of cellphone service. Since then, the list of states suing to block this deal has grown to fifteen plus the District of Columbia. The discovery being undertaken for this litigation has revealed that the merging companies may have improperly withheld thousands of pages of responsive, non-privileged documents from the FCC's review. Specifically, the states found that the companies withheld 38 percent of more than 25,000 documents that were produced as privileged. In fact, the companies now are turning over some these documents to the states after acknowledging that they may have been improperly withheld.

We should have these documents too. In fact, I don't think our review is complete without them. We also need to investigate whether the companies' failure to turn over these documents to the FCC

violated our rules. Otherwise, we are simply rubber stamping this deal without the oversight the public deserves.

Ensuring that the public has a say in what happens in Washington matters, because trust in public institutions matters. Expert agencies like the FCC are duty bound to hear from everyone, not just the merging parties that have applications pending before us. Our merger reviews should be transparent and participatory and in critical respects this one was not.

II.

There is widespread consensus that the merger of T-Mobile and Sprint will substantially reduce competition. This will mean higher prices for consumers, as confirmed by economic analysis and empirical evidence. While the FCC tries to soften these competitive harms in today's decision in order to justify blessing this transaction, its efforts ultimately prove unavailing.

The Department of Justice acknowledged the serious harm this merger would cause to competition in the United States in its complaint to block the merger as it was originally proposed. According to the Department of Justice, "by combining two of the only four national mobile facilities-based wireless carriers . . . the merger of T-Mobile and Sprint would extinguish substantial competition." This would "cause the merged T-Mobile and Sprint . . . to compete less aggressively." Additionally, it would "make it easier for the three remaining national facilities-based mobile wireless carriers to coordinate their pricing, promotions, and service offerings." For American consumers, this means "increased prices and less attractive service offerings."

Another lawsuit filed by a bipartisan group of attorneys general from 15 states and the District of Columbia recognizes that the merger, even as conditioned, will eliminate direct, head-to-head competition between T-Mobile and Sprint "that has led to lower prices, higher quality service, and more features for consumers." According to the states' case, "[p]reliminary estimates based on the submissions made by economists for Sprint and T-Mobile show that the merger could cost Sprint and T-Mobile subscribers at least \$4.5 billion annually and the harm to all retail mobile wireless telecommunications subscribers could be even larger."

Similarly, in today's decision even the FCC concedes—using the merging parties' own data—that this four-to-three merger "would likely lead to significant price increases." How much? Well, regrettably the agency keeps that information highly confidential. I don't think that's fair to consumers. After all, they bear the burden of the higher prices that will result from this decision. They should know what they are in for.

The experience in other countries is a helpful guide. A 2016 study of mobile prices in 25 countries by the United Kingdom's communications regulator found that removing a carrier in a four-competitor market could raise prices by 17.2 percent to 20.5 percent, on average. Another study by the Centre on Regulation in Europe Market Consolidation in Mobile Communications that looked at 33 countries found that an average four-to-three merger would lead to an increase in the bill of end users by 16.3 percent. This study further found that countries with four or more mobile operators generally see better service, quality, and price discipline than countries with three mobile operators. Canada, too, offers a cautionary tale. A study commissioned by the Canadian government found that Canada's three-carrier wireless market had some of the highest mobile prices anywhere in the world. Today's decision does not address any of this literature.

In addition, four-to-three mergers create the potential for collusion and price signaling—which happens when a carrier raises its prices and it serves as a signal for others to do the same. We know from the past, for instance, that when traditional long distance phone services were dominated by three players,

the price leader would set rates that the remaining two providers would simply match. But today's decision does not address this history either.

The FCC tries—unconvincingly—to soften some of these competitive harms in today's decision. In doing so, the agency finds itself at odds with the expert findings of the Department of Justice. I think it is worth highlighting where the FCC and the Department of Justice disagree—even after examining nearly the same record—and why.

First, the Department of Justice's complaint plainly asserts that the wireless market in the United States must have four competitors to ensure effective competition. The FCC's decision does not reach this same conclusion.

Rather, the FCC suggests that, while the competitive harms of a four-to-three merger are real, they might be offset by dynamic competition. Dynamic competition entails the prediction of future competitive outcomes, such as considerations of entry, investment, innovation, price, output, and quality. In this case, the FCC suggests that a bigger T-Mobile would engender bigger competitive responses from AT&T and Verizon Wireless—including in network investment and capacity growth. The FCC tries to fall back on dynamic (future) competition because the static (immediate) competition model shows clear harm to consumers.

So how much weight should we afford the FCC's argument? It bears noting at the outset that the static model of competition dominates modern antitrust analysis. This is for good reason. Agencies do not have anything like a reliable and consistent process for predictive fact finding. That's in large part because the complex relationship between static product market competition and the incentive to innovate is not well understood. One view suggests innovation stimulates competition. Another suggests that vigorous market competition is a precondition for innovation. In sum, nothing supports a confident conclusion as to which policies will elicit a higher rate of innovation or dynamic competition.

The reality is that T-Mobile already engenders the kind of competitive responses from AT&T and Verizon Wireless that the FCC now touts as a benefit of the merger—as demonstrated by its successful “Uncarrier” campaign. Moreover, there is overwhelming evidence that T-Mobile would have less incentive to actually act competitively against AT&T and Verizon Wireless in the first place in a three-carrier market. Perhaps this explains why even the FCC ultimately concedes that “it cannot confidently conclude” that new dynamic competition “will entirely outweigh the competitive harms . . . particularly for price sensitive customers in densely populated areas.”

Second, the Department of Justice's complaint concludes that this merger would facilitate anticompetitive coordination among the three remaining wireless carriers. Meanwhile, the FCC decides that it cannot conclude that this deal would make coordination more likely—even though the agency previously found in its order denying the proposed AT&T-T-Mobile merger that the wireless market already was conducive to coordinated action.

So who is right? The FCC's decision acknowledges that several factors make the wireless market more vulnerable to price-based coordination. After all, prices are set nationwide, can be readily monitored, and are easily changed. Plus, as a related matter the Department of Justice already is investigating alleged collusion in the industry relating to eSIM technology and customer switching.

Then, the FCC throws cold water on all of this evidence by blindly suggesting that local network quality could mitigate concerns about this kind of coordination. There is no evidence to support this claim. The reality is that the merger of T-Mobile and Sprint would leave three roughly equal-size firms in the wireless market. In such an environment, the three remaining companies would have stronger incentives to fix prices or to follow each other on pricing—either explicitly or implicitly. They also could decide to act together to get rid of certain types of plans, like unlimited data plans, or to avoid bringing to

market new and better service plans. In sum, the merged company might simply find that it is more profitable to settle in with its equals rather than compete aggressively on price or other metrics. All of this suggests more coordination, not less.

Third, the Department of Justice’s complaint finds unmistakable harm to the wholesale market, asserting that “the merger’s elimination of [wholesale] competition likely would reduce future innovation.” But in this decision, the FCC concludes that the merger will not harm the wholesale market.

Again, the Department of Justice gets it right. T-Mobile and Sprint are the two largest companies in the wholesale market, accounting for nearly 70 percent of all wholesale connections. The record also shows that these companies are more willing to enter into wholesale agreements for a variety of competitive reasons—not the least of which is they have less risk of losing share to a resale competitor. The merger would change these dynamics.

Finally, it bears noting that both the FCC’s Order and the Department of Justice ignores the harm that this merger poses to our already squeezed 5G supply chain. We face enormous challenges with network security, and with supply chain security in particular. The number of vendors supporting the wireless ecosystem has shrunk. Consider that at the turn of the century, there were 13 equipment vendors vying to serve carriers. In the run up to 4G, that number was down to seven. And now as we embark on 5G, it looks more and more like we could move to a world where there might be only one option for some 5G equipment—and that option could expose our networks to undue foreign influence. Further consolidating the wireless market means limiting the number of prospective purchasers. This will not make it any easier to induce new entrants into the equipment market—which we sorely need in order to build a more diverse market for more secure 5G equipment.

Ultimately, the procedural irregularities that have plagued the FCC’s review of this transaction make it difficult to ensure this agency’s findings are credible—especially when in so many key respects they are at odds with the findings of the Department of Justice. While the record evidence shows that the proposed merger of the nation’s third- and fourth-largest wireless providers will reduce competition, the FCC appears to have contorted facts and law to craft an approval where up is down, less is more, and bigger is better. As a result, this decision represents the end of a decade-long history of careful wireless merger review at this agency and the consumer benefits that have followed.

We deserve better and more accountable decision-making from our expert agencies. For this reason, I believe the FCC needs to develop a process for retrospective analysis of mergers of this magnitude. To this end, three years following this transaction the agency should assess whether or not the merger resulted in more competition and lower prices. This retrospective analysis also should assess just how the FCC’s predictions about dynamic competition—so fundamental to the approval of this merger—were borne out. We should deliver this report to Congress and make it publicly available. That way, we can form a stronger and more evidence-based foundation for our merger analyses going forward.

III.

While competition is at the core of the assessment of this transaction by authorities in Washington, under the Communications Act the FCC’s evaluation of this merger is broader. Under the law, the agency is charged with determining if this transaction is in the “public interest, convenience, and necessity.”

As a starting point, I do not believe that a transaction that so obviously violates the Clayton Act can be in the public interest. Nevertheless, the FCC tries to sell this merger as producing one primary public interest benefit: 5G deployment. This effort is unavailing for the simple reason that this merger is by no means the best path to achieving nationwide 5G service.

As the FCC has recognized on many occasions, all four nationwide carriers already are upgrading their networks to 5G, without the merger. All four carriers also have backed up their 5G deployments with aggressive and independent capital build out plans. In fact, T-Mobile has already announced plans to spend \$25.9 billion to deploy 5G services through 2022. At the same time, Sprint has indicated that it planned to spend a total of \$26 billion on 5G deployment during the same period. So as these very public statements suggest, this merger is not a necessary prerequisite for either company's 5G plans.

That said, there is a kernel of truth in this decision's skepticism about ongoing 5G efforts in the United States. To date, 5G deployments are generally limited to our most densely populated and urban areas. That's because as a result of FCC policy decisions nationwide we've prioritized bringing high-band, millimeter wave spectrum to market to support early 5G efforts. Yet recent commercial launches of 5G service in the United States are confirming what we already know—that commercializing the millimeter wave will not be easy, given its propagation challenges. The network densification these airwaves require is costly. This is especially true in rural America, where the challenging economics of service presently do not support the high cost of high-band infrastructure.

If we want to serve everywhere in this country—and not create communities of 5G haves and have-nots—we need a healthy mix of airwaves that provide coverage and capacity, and we require them now. That means we need mid-band spectrum.

It bears repeating that sixteen countries have already auctioned mid-band spectrum specifically for the provision of 5G wireless service. They include Australia, Finland, Germany, Italy, Ireland, Japan, Kuwait, Latvia, Mexico, Oman, Qatar, Saudi Arabia, South Korea, Spain, the United Arab Emirates, and the United Kingdom. In addition, China allocated mid-band spectrum for 5G use last year. In the United States, we have yet to auction a single swath of mid-band spectrum. We have brought exactly zero megahertz of mid-band airwaves to auction in the 5G age. Instead, this agency auctioned two millimeter wave bands earlier this year and has plans to auction another three millimeter wave bands later this year—a total of five different bands newly available for 5G service.

At its core, the proposed merger is the market's response to the mid-band problem in the United States. If you spend time combing through the Technical Appendix, one detail stands out: the role of the 2.5 GHz band. It is front and center in every discussion about merger efficiencies.

Given the dearth of mid-band spectrum available for 5G in the United States, the 2.5 GHz band is arguably the nation's most valuable spectrum asset at the moment. And the Technical Appendix demonstrates that, given Sprint's financial hardships, this merger may be the most expeditious path to putting this spectrum to use for American consumers.

But all that means is that the FCC believes that this merger is the logical answer to a policy failure it created. I disagree. The right answer is to fix our policies to support competitive, nationwide 5G service. We can do that by pivoting now and making it a priority to bring more mid-band spectrum to market. Merging T-Mobile and Sprint might result in more comprehensive use of the 2.5 GHz band, but it means we lose out on years of head-to-head competition between the companies and with their rivals that could produce even greater investment in next-generation technologies.

Worse, the FCC's plan could backfire. There is good reason to think that removing a competitor actually could lead to less 5G investment—not more. That's because evidence in the record demonstrates that a combined T-Mobile-Sprint may not have the incentive to actually build the 5G network that they are promising. Instead, additional capacity gained from the merger could incentivize the companies to extend the life of their 4G networks rather than invest considerable resources in building out a low- or mid-band 5G network that offers only marginal improvements in speed.

This is not just an abstract concern. It's the reason why the FCC is forced to condition this merger on the companies agreeing to actually build the network they promised, or pay hefty fines if they do not. But as I discuss below, those commitments are fraught with their own problems. Moreover, we should care that we are creating a market that no longer incentivizes investment absent government mandate. It will have consequences for the future of the industry beyond 5G.

The FCC's Order ultimately includes a lot of hand waving about 5G to distract from the competitive harms of this transaction. Don't be fooled by that effort. The FCC's decision makes it less likely that carriers will invest in 5G—especially in rural areas—because it takes away the fuel that fires competition and powers greater deployment. The FCC's commitments then try to fix the very problem it creates. The public interest would be better served if the FCC pursued alternative paths to enabling 5G without the merger—including making critical mid-band spectrum available in at auction, so that companies like T-Mobile are not forced to look for it only in the secondary market.

IV.

This merger is anticompetitive, and its public interest benefits do not outweigh the harms it will cause to the wireless market in the United States. Nonetheless, the FCC suggests that a series of commitments from T-Mobile and Sprint can replicate the competition that is lost as a result of this merger. In critical part, these commitments include three things: a commitment to freeze prices for three years; a commitment to deploy a 5G network nationwide within six years, and a commitment to divest some assets to help prop up Dish as a new wireless competitor to replace Sprint.

But the commitments that T-Mobile and Sprint are making do little more than camouflage the damage this transaction will do to competition. And as camouflage goes, it is not all that compelling. That's because it is dressed up in a fundamentally flawed premise: that thanks to a mishmash of merger-related mandates, Dish will seamlessly slide in the marketplace to take over the position currently occupied by Sprint.

A.

First, T-Mobile's answer to the overwhelming evidence that this merger will lead to higher prices is a promise to “freeze” prices for three years. Specifically, T-Mobile promises to: “continue T-Mobile and Sprint legacy rate plans for three years after the merger or until better plans that offer a lower price or more data are made available, whichever occurs first. The retained legacy rate plans may be adjusted to pass through cost increases in taxes, fees, and surcharges as well as services from third party partners that are included in the rate plans, as these increased costs are not within the control of New T-Mobile. The legacy plans may also be adjusted to modify or discontinue third party partner benefits based on changes in the terms of the offering initiated by the third party partner, as this is also not within the control of T-Mobile.”

Does that sound overly legalistic to you? It does to me. It is full of loopholes. It's a promise that is tantamount to saying we won't raise your prices unless we actually do.

This language provides the merged company with plenty of leeway to get out of its commitment to not raise prices. It could point to small improvements in network quality to get rid of cheaper rate plans. It could increase your bill through handset or device costs. It could also add fees and surcharges—and it has happened before, because not too long ago Sprint paid millions of dollars to settle allegations that it added bogus fees to customers' bills. Finally, T-Mobile can bundle offerings together in creative ways that ultimately mean you pay more for wireless service.

Even if the merged company keeps its promise, keeping rates constant is not an especially good deal for consumers when wireless prices have been falling. According to data compiled by the

Department of Labor, wireless prices in the United States fell by 28 percent over the last decade as consumers benefitted from intense price competition among the four nationwide carriers. According to data compiled by the FCC, the cost per megabyte of data declined even more dramatically over this time period—by between 72 and 83 percent. All indicators point to this trend continuing absent the merger. That means a price freeze meant to temporarily mask upward pricing pressure caused by industry consolidation isn't an especially good deal for consumers.

Nor does it bode well for what comes next. Once this promise expires in 36 months, customers will be left at the mercy of the merged company—assuming it even waits that long before using any one of the loopholes set out above to raise rates.

B.

Second, the merged company's commitment to serve rural and urban areas with next-generation 5G service may sound attractive for a nation struggling with the digital divide, but it ultimately falls flat. To gain the FCC's sign off, T-Mobile has promised to deploy a 5G network covering 97 percent of the United States population within three years, and 99 percent within six years.

However, both carriers have already pumped out a stream of press releases promising to build this network before the transaction. In fact, according to Sprint itself, far from failing, its 5G network today covers more Americans than any other carrier. This is important—but today's decision fails to make note of this fact. In addition, this decision ignores history because it was competition that spurred carriers to build 4G networks that today cover 99 percent of the population in the United States—and this competition would serve us best in the 5G era, too.

Moreover, if you scratch at the surface of this commitment, its 5G veneer is alarmingly thin. The 5G standard, as defined by the International Telecommunication Union, calls for gigabit speeds to start and gigabit-plus speeds in the future. But for much of the United States, the merging parties commit to speeds between 50 and 100 Mbps, with some portion of the country getting faster speeds. That is less than what is possible with today's 4G networks. Even at 100 Mbps, the merged company will offer only one-tenth of the speeds we were promised with 5G. The parties' commitments also do not offer anything regarding lower latency, another critical aspect of 5G capabilities.

On top of that, real questions remain about the willingness of the FCC to actually enforce these 5G build-out promises. In the year before last, the FCC let another company, Charter Communications, off the hook for new, competitive broadband networks that it agreed to deploy to get approval for its merger with Time Warner Cable. The facts aren't much different this time around. When it comes to holding companies accountable for their premerger promises to build new infrastructure, history suggests this FCC will look the other way.

C.

Third, the centerpiece of the promises T-Mobile has made to justify this transaction is the creation of a new fourth carrier to fill the void left by Sprint. Under the settlement agreement negotiated by the Department of Justice, Sprint will divest certain assets to Dish so that it can enter the wireless market as a fourth competitor—first as a mobile virtual network operator reselling T-Mobile's service and eventually as a national facilities-based wireless carrier. This is important because the Department of Justice freely admits that competition in the wireless market requires four carriers. But try as it might, these two things ultimately prove incompatible: approving a four-to-three merger while acknowledging the need for a fourth carrier to ensure competition.

Ultimately, the proposed remedy fails for at least three reasons: (i) it accepts significant harm to competition in the short and medium term while adopting an unreasonably optimistic view of possible

benefits in the long term; (ii) it requires ongoing entanglement between T-Mobile and Dish that undermines the notion that Dish will be a truly independent competitor; and (iii) it puts all the risk of failure on consumers if Dish is unable to build out a nationwide network and serve as a capable replacement for Sprint.

i.

At the outset, the proposed remedy fails because it accepts significant harm to competition in the near term while adopting an unreasonably optimistic view of competition in the long term.

Under the Department of Justice's Policy Guide to Merger Remedies, an effective merger remedy must quickly restore lost competition in the relevant market. In fact, according to remarks from the Assistant Attorney General for the Antitrust Division at the annual Antitrust Law Leaders Forum last year, the goal of a divestiture should be to preserve the status quo competitive dynamic in the market from "day one."

By any measure, the effort to replace Sprint with Dish in the marketplace fails that test.

The commitments secured by the Department of Justice and the FCC will not restore the status quo competitive dynamic for many years. Under the settlement agreement, Dish initially will enter the market only as a mobile virtual network operator reselling strictly prepaid wireless service. This means for the immediate future Dish will simply resell a rebranded version of T-Mobile's service using T-Mobile's facilities. As a result, when this transaction closes, even with the remedy in place, there will only be three facilities-based nationwide wireless competitors. During this time, the Department of Justice's concerns about a four-to-three merger will be realized.

Consequently, in the near term there is no way Dish can replace the competition lost as a result of this merger. In fact, both the Department of Justice and the FCC have long recognized that mobile virtual network operators do not meaningfully compete with facilities-based providers. To this end, in its wireless competition reports to Congress the FCC routinely excludes mobile virtual network operators from the same category as facilities-based providers and instead attributes their subscribers to their facilities-based hosts. This approach is entirely correct. Applied here, it means that for purposes of assessing wireless competition the FCC would continue to count Dish customers as T-Mobile customers. If that is not telling enough, the decision approving this transaction itself acknowledges that it "consider[s] only facilities-based entities" in its competitive analysis and that it will continue to exclude mobile virtual network operators from consideration of market concentration measures.

Furthermore, we know that mobile virtual network operators can never be truly disruptive because they rely on competitors for their success. As a mobile virtual network operator Dish will be completely dependent on T-Mobile. It will require wholesale inputs for service from its retail competition. This is not an easy path to market success. The ability Dish has to compete will depend entirely on the margin between the wholesale price T-Mobile charges for service and the retail price it can offer to consumers. So what is that margin? We don't know. At some point in the future, the parties will enter into a resale agreement that they will then submit to the FCC for approval. But that means we are being asked to vote this remedy without actual knowledge of the terms of the agreement that is supposed to protect Dish and protect competition. That not only makes no sense, it is irresponsible. If the companies fail to reach an agreement that passes muster, the harm to competition will already have been done.

On top of that, the FCC has no experience regulating wholesale rates in the modern and evolving wireless market. There's no guarantee that we will get it right during the next seven years. That's important, because the consequences of getting it wrong are tremendous for both companies and for consumers.

Then, within one year, Dish will start to provide a postpaid wireless service too, using cell sites and retail stores that are “decommissioned” by the merged company. This will mean that Dish will operate as an “infrastructure mobile virtual network operator.” The decommissioning of cell sites meant to support this limited facilities-based entry will take place gradually over five years. Meanwhile, the merged company will have to provide Dish with access to its cell sites.

Finally, if all goes as planned, Dish will emerge as a full-fledged facilities-based provider in seven years. At this point, Dish can start to replace the competition lost by the removal of Sprint from the marketplace.

Count me as skeptical. Seven years is an awfully long time to wait for full-fledged competition. It may never arrive. Moreover, in addition to the complexities of relying on wholesale inputs from T-Mobile in the short term, Dish has been provided with a limited set of assets from which to launch its entry into the wireless market. Specifically, Dish will acquire Sprint’s prepaid customers, retail locations, personnel, licenses, data, and other associated assets. As a result of these divestitures, Dish will have only 2.5 percent of all wireless subscribers in the United States. This set of subscribers is widely known to have one of the highest churn rates in the industry. Consequently, the subscribers Dish takes from Sprint could easily disappear long before the seven-year period in which the company launches its own network.

Finally, it is worth noting that a 2017 study of merger remedies by our colleagues at the Federal Trade Commission found that partial divestitures involving selected assets—like the prepaid divestiture here—pose greater risk of failure. The FTC found that in nine out of ten decisions where it required partial divestitures of key assets, the divestitures did not effectively maintain competition. The reasons why these divestitures failed vary. In some cases, the selected asset package was too limited, preventing buyers from competing with the merged company offering a wider range of products. In others, brand loyalty was greater than was anticipated and the divestiture of only selected assets was insufficient to persuade customers to switch. In one case, the buyer quickly exited the market. Finally, in another case, employees did not transfer with the selected assets, and the buyer was unable to hire the right employees under advantageous terms. What is striking is that every one of these risks is present here, too.

Ultimately, the parties’ own words are the best evidence that Dish will not remedy the competitive harm of this merger in the short or medium term. On an investor call right after the settlement with the Department of Justice was announced, T-Mobile leadership acknowledged that Dish’s entry would have no effect on the merged company’s profitability: “It’s important to point out that the target synergies, profitability and long-term cash generation have not changed for T-Mobile.” These are their own words, and we should believe them.

ii.

The proposed remedy also fails because it requires ongoing entanglement between T-Mobile and Dish that undermines the notion that Dish will be a truly independent competitor.

Under the commitments in the settlement agreement, Dish would need to enter into numerous support agreements with T-Mobile that would leave it dependent on one of its biggest competitors to operate successfully. This kind of ongoing entanglement between the merged company and a divestiture buyer does not meet the requirements of Horizontal Merger Guidelines developed by the Department of Justice and it is not consistent with judicial precedent. For that reason, we should reject it.

Under the proposed settlement, Sprint will identify all employees of its existing prepaid operations so that Dish can vet, interview, and negotiate with those employees for renewed employment with Dish. Sprint also will identify retail locations that the merged company plans to decommission, so

that Dish can inspect them, review environmental, zoning, or other permits, and begin the process of assignment. Over a period of five years, the merged company also is expected to provide Dish with access to its own cell sites while it undertakes the lengthy process of decommissioning redundant sites and making them available to Dish. The settlement also details a number of obligations that T-Mobile must observe in its resale agreement with Dish, including traffic and device non-discrimination. Finally, T-Mobile and Sprint must also provide certain “transition services” to Dish for three years, including billing, customer care, SIM card procurement, device positioning, and more.

When assessing a remedy, the Department of Justice’s Policy Guide on Merger Remedies requires the agency to consider whether the buyer will be independent of the merging parties. Similarly, courts that have reviewed merger remedies have expressed that it can be a problem to allow continuing relationships between the seller and buyer of divested assets after divestiture, such as a supply arrangement or technical assistance requirement, which may increase the new entrant’s vulnerability to the merged company’s behavior. (*See, e.g., FTC v. CCC Holdings, Inc.*, 605 F. Supp. 2d 26, 59 (D.D.C. 2009) (finding that “[i]n order to be accepted, curative divestitures must be made to . . . a willing, independent competitor capable of effective production”); *see also FTC v. Sysco Corp.*, 113 F. Supp. 3d 1 (D.D.C. 2015)). But that is exactly what the remedy here entails. At a minimum, for seven years, Dish will have the right to resell T-Mobile services under a resale agreement. On top of this, for three years, Dish will rely on the merged entity for a wide range of transition services. Dish, therefore, will not be a truly independent competitor for many years. That undermines the remedy proposed here and demonstrates its inadequacy under standards used by both the Department of Justice and the courts.

For its part, T-Mobile has no real incentive to help a competitor and will have opportunities to routinely handicap Dish’s competitive impact. The remedy depends on the FCC managing this tense relationship from afar—but nothing in the decision suggests that we will do that effectively. In past transactions, the agency has identified an ombudsman to oversee implementation and ensure that parties abide by their commitments. We don’t do that here, which brings into question our resolve to act as mediator. And while the Department of Justice at least creates a role for a trustee to manage its complex settlement with the parties, that person will be paid for by T-Mobile. In addition, he or she will be restricted from doing little more than certifying disputes for the Department of Justice, where they will undergo a long, bureaucratic resolution process. By then, any competitive harm to Dish may already have been accomplished.

iii.

Finally, the proposed remedy fails because it places all the risk of failure on consumers if Dish is unable to build out a nationwide network and serve as a capable, competitive replacement for Sprint.

The remedy proposed by the Department of Justice and FCC carries enormous execution risk. In particular, the divestiture of many of the assets at issue—like subscribers, employees, and stores—cannot be assigned without the consent of other parties that are not part of the settlement agreement. Meanwhile, Dish will try to enter a market in which it has never competed, transition to a brand-new back office operation, and re-brand T-Mobile wholesale service at its own while also trying to compete with the merged firm and build out a first-of-its-kind 5G network. These stumbling blocks are not insubstantial.

Moreover, the idea that Dish can enter the wireless market by building its own nationwide network also deserves special scrutiny. As one analyst noted, over its now forty-year history, the wireless industry has never generated a return on invested capital meaningfully in excess of its cost of capital. The idea that Dish can build a new network and then slug it out in a mature wireless market suggests in this decision that the Department of Justice and FCC have ignored the facts on the ground.

Consider that existing facilities-based carriers like AT&T and Verizon have spent over \$100 billion on building up their own networks in the past decade. Verizon spends \$15 billion annually just to

maintain a network they've already built. Given these facts, Dish's \$10 billion estimate for building its nationwide 5G wireless network does not seem serious. Like Sprint, Dish also is highly leveraged with significant debt maturing soon. Yet nothing in the FCC decision even discusses Dish's financial capability to build the network it has promised. This is an especially striking omission given the attention those who support this decision have given to noting Sprint's financial challenges.

Then, following the seven-year period in which Dish will rely on wholesale inputs from T-Mobile to provide service, should it emerge as a true facilities-based provider, Dish will be in a difficult competitive position. The company will lack important qualities that matter to wireless customers, such as nationwide coverage, a track record for effectively serving customers across the country, and the scale necessary to ensure a broad mix of services and devices. Even if the company is successful, under the proposed remedy, its plans call for covering only 70 percent of the population by 2023. That could leave 100 million Americans without a full range of competitive choice.

Given these challenges, as numerous parties have noted, Dish might be better off sticking to operation as a mobile virtual network operator. Under these circumstances the company would simply profit from whatever arbitrage opportunity is handed to them via a regulated resale agreement and then sell its spectrum at a later date instead of investing billions to compete with the largest operators and building a facilities-based 5G network from scratch. In fact, nothing prevents Dish from taking this route, save for a \$2.2 billion financial penalty that is laid out in a letter to the FCC. But that penalty may just be the cost of doing business. After all, the penalty sounds de minimis when compared to the upwards of \$10 billion Dish projects it will need to fully build out this network.

That's not fair. The risk of removing a competitor from the marketplace should not fall on consumers. That's fundamental. This is not just my opinion. It's one I share with the Assistant Attorney General for the Antitrust Division, who has said: "I believe the Division should fairly review offers to settle but also be skeptical of those consisting of behavioral remedies or divestitures that only partially remedy the likely harm. We should settle federal antitrust violations only where we have a high degree of confidence that the remedy does not usurp regulatory functions of law enforcement, and fully protects American consumers and the competitive process. Decrees should avoid taking pricing decisions away from the markets, and should be simple and administrable . . . [.] We have a duty to American consumers to preserve economic liberty and protect the competitive process, and we will not accept remedies that risk failing to do so."

Yet the remedy before us has all the hallmarks of a remedy that is interventionist, behavioral, and fails to fully protect competition or consumers. It should be rejected by the Department of Justice. It should be rejected by the FCC.

* * *

American consumers are savvy. They know what less competition looks like. This transaction makes the wireless market look more like the one they know with airlines and pharmaceuticals. When Washington blesses consolidation like this consumers routinely wind up with higher prices and lower quality services. It's not fair. Moreover, it's not smart. We are at an important point in the development of wireless technology, on the cusp of a new world of 5G wireless services connecting so much more in the world around us, and this decision denies that new world the powerful fire of competitive pressure to help ensure deployment to everyone, everywhere. This is a shame.

However, all is not lost. While Washington has failed to perform a fair review and stop this merger, states are stepping forward. A bipartisan group of attorneys general from 15 states and the District of Columbia are now suing to halt this transaction. They have determined that this merger results in an unacceptable loss of competition and that the remedies proposed fail to fix the harms that will befall wireless consumers. These state officials understand what Washington apparently does not: with less

competition rates rise and innovation falls. All the evidence demonstrates this is true. Consumers should hope these state officials succeed. Count me among them.

**STATEMENT OF
COMMISSIONER GEOFFREY STARKS
DISSENTING**

Re: *Applications of T-Mobile US, Inc., and Sprint Corporation For Consent To Transfer Control of Licenses and Authorizations, Applications of American H Block Wireless L.L.C., DBSD Corporation, Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time,* WT Docket No. 18-197

INTRODUCTION

T-Mobile and Sprint propose to merge their companies. They claim that New T-Mobile will invest nearly \$40 billion to combine the companies' spectrum, sites, and other assets to deliver a nationwide 5G network that will dwarf what the companies could do on their own, and that will force AT&T and Verizon to improve and accelerate their own 5G network investment and deployment plans. T-Mobile and Sprint present their proposed merger as a necessary step for the United States to accelerate deployment and "win" the race for 5G.

Our desire to lead on the world stage, however, must not distract us from the reality of the transaction before us – the proposed merger of the third and fourth largest players in an already highly concentrated mobile wireless telecom service market. T-Mobile and Sprint's promises of 5G leadership sound tempting but, as this order concedes, the facts tell a different story. The proposed transaction is exactly the type of merger that the Justice Department and the Commission have discouraged and rejected in the past: one that would harm competition and result in higher prices and poorer service, particularly for the most vulnerable consumers.

Moreover, this proceeding has been characterized by unprecedented procedural irregularities. We've departed from agency practice by failing to solicit public comment on two rounds of significant changes to one of the largest wireless transactions in FCC history. In addition, we proceed with today's decision even though we are currently investigating Sprint for possible violations that could pose hundreds of millions of dollars in liability and raise questions about the company's fitness to hold Commission authorizations.

Contrary to the conclusion in today's Order, the harm to competition caused by this transaction will not be cured by the parties' commitments of future performance. These commitments not only suffer from serious infirmities but will do little to preserve, let alone enhance, competition. Indeed, the Justice Department found that the parties' commitments to this agency fell so short of protecting competition that it negotiated its own, additional guarantees.¹ As the Assistant Attorney General for Antitrust recently observed: "We were prepared to sue to block that transaction had we not gotten the settlement we did."²

Based on my review of the record, I believe that T-Mobile and Sprint have failed to prove that their merger will benefit the public interest. While the parties promise their merger will accelerate the availability of some form of "5G" for some Americans, history teaches us that the most likely effect of

¹ See Proposed Final Judgment at 6-24, *United States v. Deutsche Telecom AG*, No. 19-cv-02232 (D.D.C. July 26, 2019), ECF No. 2-2 (*DOJ Proposed Final Judgment*) (requiring, *inter alia*, (a) divestiture of Sprint's prepaid assets to DISH Network; (b) transfer of certain spectrum licenses to DISH Network; and (c) entry into an MVNO agreement between DISH Network and New T-Mobile).

² Assistant Attorney General Makan Delrahim, Remarks Before Sen. Subcomm. on Antitrust, Competition Policy, and Consumer Rights (Sept. 17, 2019). Due to the manner in which this proposed transaction appears before the Commission, the DOJ negotiated remedies are not squarely before us in today's Order.

this merger will be higher prices and fewer options for all Americans. In the short term, this merger will result in the loss of potentially thousands of jobs. In the long term, it will establish a market of three giant wireless carriers with every incentive to divide up the market, increase prices, and compete only for the most lucrative customers. The merger will reduce competition, harm consumers, and exacerbate the digital divide between the broadband “haves” and “have-nots.”

The vague promise of 5G does not change what was true when this deal was first proposed and what remains true today—the benefits of this merger, if any, simply do not outweigh the harms. Accordingly, I dissent.

DISCUSSION

Before discussing the merits of the proposed transaction, we must begin with our standard of review. Under the Communications Act, before granting its approval, the Commission must determine whether a proposed transaction would serve “the public interest, convenience, and necessity.”³ Competition principles are a key element to this review, but other factors are also relevant. The Commission must find that a transaction affirmatively serves the public interest, and therefore must determine “whether a transaction would enhance, rather than merely preserve, existing competition.”⁴ Throughout the review, moreover, the applicants to any proposed transaction “bear the burden of proving, by a preponderance of the evidence, that their proposed transaction, on balance, will serve the public interest.”⁵

With this standard in mind, let’s turn to the specifics of the proposal. T-Mobile and Sprint describe themselves as “disruptors” of the mobile wireless telecommunications services market, and by any measure they have done so. These companies developed rollover minutes, competitive pricing, soft data caps, and unlimited plans, many of which have pressured Verizon and AT&T to adopt similar innovations. Additionally, competition has driven T-Mobile and Sprint to focus on many communities largely ceded by Verizon and AT&T, including low-income, minority, and rural consumers.⁶ By their merger, T-Mobile and Sprint propose to consolidate two disruptive carriers into a single large carrier. Ordinarily, reduction in the number of carriers would be considered a reduction in competition – where once four parties competed, only three remain.

But the parties allege that their merger will increase competition by combining two smaller carriers into a single carrier with the resources to compete nationwide with AT&T and Verizon in the delivery of 5G service. As T-Mobile’s CEO put it: “This isn’t a case of going from 4 to 3 wireless companies . . . [I]n 5G, we’ll go from 0 to 1. Only the New T-Mobile will have the capacity to deliver real, nationwide 5G.”⁷

³ 47 U.S.C. § 310(d).

⁴ *Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, Memorandum Opinion and Order, 31 FCC Rcd. 6327, 6338, para. 29 (2016).

⁵ *Applications of AT&T Inc. and Cellco Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations and Modify a Spectrum Leasing Agreement*, WT Docket No. 09-104, Memorandum Opinion and Order, 25 FCC Rcd 8704, 8716, para. 22 (2010).

⁶ See Sheila Deng & Diane Bartz, *Poorest U.S. Consumers Seen Hit Hard by T-Mobile, Sprint Merger* (May 2, 2018), <https://www.reuters.com/article/us-sprint-corp-m-a-low-income/poorest-u-s-consumers-seen-hit-hard-by-t-mobile-sprint-merger-idUSKBN1I32VX>.

⁷ Press Release, T-Mobile, T-Mobile and Sprint to Combine, Accelerating 5G Innovation & Increasing Competition (Apr. 29, 2018), <https://www.t-mobile.com/news/5gforall>.

This counterintuitive conclusion is at odds with both FCC precedent and mainstream antitrust thought. Eight years ago, the Commission reviewed a very similar transaction with the proposed AT&T/T-Mobile merger, which was blocked by the Justice Department and the FCC. That transaction also promised technological benefits for consumers that would outweigh any potential harm to competition.⁸ But as the Justice Department complaint challenging the merger stated: “The substantial increase in concentration that would result from this merger, and the reduction in the number of nationwide providers from four to three, likely will lead to lessened competition due to an enhanced risk of anticompetitive coordination . . . Such harm would affect consumers all across the nation, including those in rural areas with limited T-Mobile presence.”⁹ Similarly, in 2014, the parties before us today called off a planned merger application after the Commission signaled its likely disapproval by blocking the carriers from making a joint bid in an upcoming wireless spectrum auction.¹⁰

These outcomes reflect how traditional antitrust analysis generally treats four-to-three mergers. As one commentator has said, “[t]he anticompetitive perils of 4-3 mergers feature prominently in the economic analysis of mergers and enforcement decisions.”¹¹ Other commentators have said, “[a] four-to-three merger is a natural break point for creating a presumption of harm to competition from coordinated effects based solely on the number of firms.”¹²

Consistent with this approach, antitrust enforcers have rejected similar four-to-three mergers in other industries. For example, in *Anthem/Cigna & Aetna/Humana*, the Justice Department sued to stop two proposed mergers in the health insurance industry that would otherwise have consolidated the “Big Five” health insurers in the United States to three.¹³ Similarly, in *Koninklijke Ahold/Delhaize Group*, the Federal Trade Commission found the proposed merger of two supermarket chains to be presumptively

⁸ See Press Release, AT&T, AT&T to Acquire T-Mobile USA from Deutsche Telekom (Mar. 20, 2011), <https://www.businesswire.com/news/home/20110320005040/en/ATT-Acquire-T-Mobile-USA-Deutsche-Telekom> (arguing that the transaction would “improve network quality” and would “bring advanced LTE capabilities to more than 294 million people”).

⁹ Complaint ¶ 36, *United States v. Deutsche Telekom AG*, No. 11-cv-01560 (D.D.C. Aug. 31, 2011), ECF No. 1 (DOJ Complaint); see also *Applications of AT&T Inc. and Deutsche Telekom AG*, WT Docket No. 11-65, Staff Analysis and Findings, 26 FCC Rcd 16184, 16227, para. 76 (WTB 2011) (*AT&T/T-Mobile Staff Report*) (“The retail mobile wireless services market would be more vulnerable to coordination post-transaction. Features of this market make it likely that the remaining three nationwide providers would be able to reach a consensus on the terms of coordination (by identifying a mutually agreeable coordinated price), deter cheating on that consensus (by undercutting the coordinated price to steal high-margin business from its rivals), and prevent new competition in this market. Because these providers offer the same plans and charge the same prices nationwide, increased coordination would most likely take the form of raising the level of prices.”).

¹⁰ See Michael J. De La Merced, *Sprint and Softbank End Their Pursuit of a T-Mobile Merger* (Aug. 5, 2014), <https://dealbook.nytimes.com/2014/08/05/sprint-and-softbank-said-to-abandon-bid-for-t-mobile-us/>.

¹¹ American Research Institute, *Why the Proposed Sprint-T-Mobile Merger Should be DOA at the DOJ*, at 7 (2018), https://www.antitrustinstitute.org/wp-content/uploads/2018/08/AAI_Sprint-T-Mobile_Comm_6.5.18.pdf.

¹² Jonathan Baker & Carl Shapiro, *Reinvigorating Horizontal Merger Enforcement*, in *How the Chicago School Overshot the Mark* 235, 262 nn.152-53 (Robert Pitofsky ed., 2008).

¹³ See U.S. Dep’t of Justice, *Attorney General Loretta E. Lynch Delivers Remarks a Press Conference Announcing the Justice Department’s Actions to Block Aetna’s Acquisition of Humana and Anthem’s Acquisition of Cigna* (July 21, 2016), <https://www.justice.gov/opa/speech/attorney-general-loretta-e-lynch-delivers-remarks-pressconference-announcing-justice>.

unlawful, where it would have reduced the number of meaningful competitors from four to three in 18 geographic markets.¹⁴

Nor is this approach unique to the United States. European regulators have repeatedly rejected four to three telecommunications mergers,¹⁵ and when they have permitted the transactions to proceed, have found that prices increase.¹⁶ This lesson is also borne out by the experience in Canada, which has only three major wireless carriers—Bell, Rogers, and Telus—and service plans that are priced similarly due to reduced competition.¹⁷

But each transaction deserves assessment on its own merits. This proceeding has been as active as any in recent memory, with nearly 40,000 submissions and 26 million pages of exhibits. T-Mobile, Sprint, and parties interested in this transaction have employed armies of lawyers and economists to argue about whether the Commission and the Justice Department should approve this deal. While I disagree with the conclusions of this Order, I recognize the outstanding job performed by the Commission's staff in reviewing this mountain of arguments and evidence.

And what does the Commission's expert staff conclude? Bottom line—that even after considering the parties' claims of merger-related cost savings, the transaction as proposed would almost certainly result in “price increases in each year modeled” both industry-wide and for the Applicants' brands from 2019 through 2024, particularly for “price-sensitive consumers” in urban areas.¹⁸

The reasons for this conclusion are clear. Anyone who has ever shopped for wireless service knows that the relevant market here — the mobile wireless industry — is already highly concentrated. According to the Order, this market is so dominated by the four largest carriers that T-Mobile and Sprint's merger would trigger the Herfindahl-Hirschman Index (HHI) market concentration screen based on the

¹⁴ *Koninklijke Ahold, N.V.*, 2016 WL 4010995 (2016).

¹⁵ See, e.g., Summary of Commission Decision 357/15 of 11 May 2016 Declaring a Concentration Incompatible with the Internal Market, 2016 O.J. (C 357) 15, https://ec.europa.eu/competition/mergers/cases/decisions/m7612_6555_3.pdf (rejecting a four-to-three merger of mobile operators in the United Kingdom); European Commission, *Statement by Commissioner Vestager on Announcement by Telenor and TeliaSonera to Withdraw from Proposed Merger* (Sept. 11, 2015), http://europa.eu/rapid/press-release_STATEMENT-15-5627_en.pdf (regarding the end of a proposed four-to-three merger of mobile carriers in Denmark).

¹⁶ See, e.g., Austrian Regulatory Authority for Broadcasting and Telecommunications, *Price Increases Caused by Mergers Were Followed by Price Decreases Due to Entry of New Mobile Operators* (Mar. 14, 2016), <https://www.rtr.at/en/pr/PI14032016TK> (concluding that a four-to-three merger among mobile virtual network operators led to “average [price] increases of 20-30% in the pre-paid segment and 13-17% in the post-paid segment.”).

¹⁷ See Luke Filipowicz & Daniel Bader, *Which Canadian iPhone Carrier and Plan Should You Get: Bell, Rogers, Telus, or Another Option?* (Oct. 19, 2018), <https://www.imore.com/which-canadian-iphone-carrier-should-you-get>. See also Chris Mills, *Canada's Embarrassingly Bad Data Plans Are Another Reason to Hate the T-Mobile-Sprint Merger* (May 2, 2018), <https://bgr.com/2018/05/02/t-mobile-sprint-merger-competition-regulation-canada-example/>; Chris Welch, *What a Combined T-Mobile and Sprint Would Look Like* (Apr. 30, 2018), <https://theverge.com/2018/4/30/17301392/t-mobile-sprint-merger-preview-phone-carrier>; Sabrina Wilkinson, *Canada's Wireless Sector Has a Competition Problem* (June 19, 2018), <https://blogs.lse.ac.uk/mediapolicyproject/2018/06/19/canadas-wireless-sector-has-a-competition-problem/>.

¹⁸ *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations; Applications of American H Block Wireless L.L.C., DBSD Corp., Gamma Acquisition L.L.C., and Manifest Wireless L.L.C. for Extension of Time*, WT Docket No. 18-197, Memorandum Opinion & Order, Declaratory Ruling, and Order of Proposed Modification, FCC 19-103, paras. 163, 175 (Oct. 16, 2019) (*Sprint/T-Mobile Order*).

number of connections throughout the country, creating a presumption that the merger is likely to increase market power and thereby reduce competition. Specifically, the order finds that the merger would trigger the HHI screen in 99 of the 100 most populous Cellular Market Areas (CMAs), including 362 CMAs constituting 82 percent of the U.S. population. This merger's impact will be felt in many large local markets, including both New York and Los Angeles, where New T-Mobile will have more than 50 percent of the retail mobile wireless telecommunications revenues.¹⁹ But this merger will not only affect large cities. Smaller cities and towns across America will experience even greater increases in market concentration.²⁰ For these towns, New T-Mobile may be the only practical option left for wireless service. Nationwide, New T-Mobile will control more than 31 percent of the wireless market on day one.²¹

But the problems don't stop there. Entry into the wireless industry is hard. You must spend literally billions of dollars on network infrastructure. Before you do that, you must obtain the spectrum to carry your customers' communications. But you can't do so if all the spectrum in that market has already been snapped up. And that's exactly the case in most of the markets in the United States.

This merger would make the spectrum crunch much worse. Specifically, the Order concludes that New T-Mobile would hold spectrum above the Commission's 240 megahertz "spectrum screen" in a whopping 356 CMAs covering about 82 percent of the U.S. population.²² By comparison, the rejected AT&T/T-Mobile deal would have exceeded the spectrum screen in "just" 274 CMAs.²³ The numbers get even more eye-popping at the individual market level. The Commission considers 715.5 megahertz of spectrum in each market to be "suitable" and "available" for mobile wireless service.²⁴ This merger would result in a single carrier—New T-Mobile—controlling more than half of that spectrum in nearly 150 CMAs. New T-Mobile would hold nearly three times as much spectrum per subscriber as Verizon and more than twice as much spectrum per subscriber as AT&T.²⁵

Given these outcomes, it's not surprising that the Order concludes that the proposed merger as originally structured would harm competition. Ordinarily, such a conclusion would mean the end of a proposed transaction. That's what happened with the AT&T/T-Mobile merger, where both the Justice Department and FCC staff reached a similar conclusion and the parties ultimately withdrew their application. It's also what happened when these same parties proposed to merge five years ago.

¹⁹ Third Amended Complaint ¶¶ 49, 51, *New York v. Deutsche Telekom AG*, No. 19-05434-VM (S.D.N.Y. Sept. 18, 2019), ECF No. 214 (State AG Complaint).

²⁰ See *Sprint/T-Mobile Order* at Appx C.

²¹ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Twentieth Report, 32 FCC Rcd 8968, 8982, Tbl. II.B.1. (2017) (*20th Mobile Wireless Competition Report*) (listing T-Mobile and Sprint as having 17.1% and 14.3%, respectively, of total mobile wireless connections).

²² See *Sprint/T-Mobile Order* at para. 97.

²³ *AT&T/T-Mobile Staff Report*, 26 FCC Rcd at 16211, para. 45.

²⁴ See *Sprint/T-Mobile Order* at para. 99.

²⁵ Letter from Allen P. Grunes, Counsel to Communications Workers of America, to Marlene H. Dortch, Secretary, FCC, Docket No. 18-197, at 11 (filed May 31, 2019) (CWA Commitments Response Letter). The Order turns the Commission's spectrum screen analysis on its head, suggesting that New T-Mobile's massive share of mobile wireless spectrum will actually benefit the public interest because it will allow the company to deploy a "highly robust nationwide 5G network." See *Sprint/T-Mobile Order* at para. 97.

In this case, however, the parties have made several commitments to the Commission. These commitments include the divestiture of Boost Mobile, Sprint's pre-paid mobile wireless brand; promises to deploy 5G service throughout the country, with particular emphasis on rural consumers; a three-year price freeze; guarantees to honor existing mobile virtual network operator (MVNO) agreements; and a pledge to market and provide an in-home broadband service, again with a nod towards rural consumers.²⁶ The Order concludes that these commitments, paired with a verification and compliance regime, remedy the potential harm to competition from the merger of Sprint and T-Mobile, as originally proposed. In addition, while ostensibly not relying on the commitments by the merging parties and DISH in the *DOJ Proposed Final Judgment*,²⁷ the Order repeatedly notes where those commitments will further strengthen the allegedly pro-competitive nature of this transaction.

As I outline below, however, I have little confidence that these commitments will protect competition and result in deployment of 5G services beyond what might have occurred in the absence of a merger. The Justice Department apparently shares my skepticism, given that it negotiated the additional requirements in the *DOJ Proposed Final Judgment* even after the parties had memorialized their promises to this agency. As the Justice Department's press release announcing those requirements states:

[W]ithout the divestiture, the proposed acquisition would eliminate competition between two of only four facilities-based suppliers of nationwide mobile wireless services The combination of T-Mobile and Sprint would eliminate head-to-head competition between the companies and threaten the benefits that customers have realized from that competition in the form of lower prices and better service.²⁸

This Decision Has Serious Procedural Issues. Before discussing my substantive concerns with the commitments, I must first review the procedural shortcomings of this proceeding. First, our review should have been held in abeyance following the Chairman's recent announcement of an investigation into Sprint's alleged misappropriation of Lifeline support for 885,000 ineligible accounts.²⁹ If substantiated, this would represent the misuse of nearly 10 percent of the funds for the entire program.³⁰

The fact that the Commission did not learn about potential violations of this gravity until the 11th hour of this proceeding raises serious questions about the accuracy and completeness of our merger review. Based solely on the information disclosed to date, Sprint may be responsible for the most egregious violations of our Lifeline rules in FCC history. Until that investigation is complete, we cannot fully evaluate the character and fitness of the applicants and exercise our statutorily defined obligation to

²⁶ Letter from Regina M. Keeney, Counsel to Sprint Corporation, and Nancy J. Victory, Counsel to T-Mobile US, Inc., to Marlene H. Dortch, Secretary, FCC, Docket No. WT 18-197, at 2-7 (filed May 20, 2019) (Sprint/T-Mobile Commitments Letter).

²⁷ See *Sprint/T-Mobile Order* at para. 36 n.110. (“[W]hile our conclusion that the transaction as conditioned serves the public interest does not depend on the *DOJ Proposed Final Judgment*, as discussed elsewhere in this MO&O, we find that the *DOJ Proposed Final Judgment* provides further confidence that the proposed transaction as conditioned is unlikely to cause public interest harms.”).

²⁸ Press Release, U.S. Dep't. of Justice, Justice Department Settles with T-Mobile and Sprint in Their Proposed Merger by Requiring a Package of Divestitures to Dish (July 26, 2019), <https://www.justice.gov/opa/pr/justice-department-settles-t-mobile-and-sprint-their-proposed-merger-requiring-package>.

²⁹ Press Release, FCC, FCC Learns that Sprint Received Tens of Millions in Lifeline Subsidies-But Provided No Service (Oct. 1, 2019), <https://docs.fcc.gov/public/attachments/DOC-359820A1.pdf>.

³⁰ *Id.*

grant only license transfers that serve the public interest.³¹ I therefore requested that we suspend our review of the merger application until completion of the investigation and any related enforcement action. Unfortunately, the majority rejected my request.

I similarly requested that the Commission seek public comment on the parties' commitments from the May 20, 2019 filing and the *DOJ Proposed Final Judgment*. Under the Administrative Procedure Act, agencies must provide "an adequate opportunity for comment" on Commission proceedings.³² Failure to seek comment on "an important aspect of the problem" before the Commission is deemed arbitrary and capricious.³³ Given that the Order concludes that the agency would otherwise deny this merger but for T-Mobile and Sprint's commitments, it is difficult to imagine a more important aspect of the "problem" at hand. Yet despite repeated calls to put both sets of commitments out for public comment, the agency has failed to do so.³⁴

Instead, the Order argues that a formal Public Notice and comment period is unnecessary because (1) it isn't required under the Administrative Procedure Act or Commission rules; (2) the Order adequately assesses the parties' commitments; and (3) interested parties have had an adequate opportunity to comment during the pendency of the transaction.³⁵ The Order also claims that it does not rely on the commitments in the *DOJ Proposed Final Judgment* to justify its approval³⁶ and that, in any event, the commitments relating to DISH will be subject to notice and comment as separate proceedings.³⁷

Regarding the first objection, public notice and comment are required as a practical matter under the Administrative Procedure Act for the reasons discussed above. As courts have observed, "[w]hen an agency departs from past practice, it 'must provide a reasoned analysis indicating that prior policies and standards are being deliberately changed, not casually ignored.' It must, in short, explain why it changed its policy."³⁸ To seek public notice and comment would be consistent with Commission precedent and practice both generally and in this proceeding.

³¹ See Supplement to Petition to Deny of Rural Wireless Association, Inc., et al., WT Docket No. 18-197, at 2-3 (filed Oct. 3, 2019) (arguing that the Commission's longstanding precedent makes clear that "a company cannot sell or transfer a license when the company's fitness to hold a license is at issue") (RWA Supplement). The majority dismisses this argument, claiming that the potential violations do not rise to the level of potential disqualification. See *Sprint/T-Mobile Order* at para. 45. Given the unknown scale, scope and duration of the potential violations, I believe that we should have completed our fact-finding before making this determination.

³² *United Keetoowah Band of Cherokee Indians in Oklahoma v. FCC*, 933 F.3d 728 (D.C. Cir. 2019).

³³ *Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983).

³⁴ See, e.g., Press Release, FCC, Commissioner Geoffrey Starks Calls for Withdrawal on Draft Sprint/T-Mobile Merger Order Based on Serious Misconduct Allegations (Sept. 24, 2019); RWA Supplement at 4-6 (calling the failure to consider the effects of both the *DOJ Proposed Final Judgment* and the DISH commitments through public comment "the epitome of arbitrary and capricious decision making").

³⁵ *Sprint/T-Mobile Order* at para. 36 n.110. Though the Order suggests that the pendency of the Tunney Act proceedings afforded parties two months to submit comments to the Commission, this ignores the fact that the district court's proceedings are separate from the Commission's review, do not direct comments to the Commission, and use a different standard of review. Further, the deadline to submit comment in the Tunney Act proceeding passed only five days before the Commission adopted the Order, and the Department of Justice did not publicly file the comments it received before the Commission acted. Thus, the Tunney Act proceedings can hardly be said to have benefitted the Commission's record.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *CBS Corp. v. FCC*, 785 F.3d 699, 708 (D.C. Cir. 2015).

For example, in the *Sinclair/Tribune* merger proceeding, the parties filed their original merger application, then nearly one year later, proposed to divest several more stations. Rather than immediately proceeding with a decision, the Commission issued a Public Notice asking for public comment on the revised deal and directing the parties to provide more details about the divestiture.³⁹ Nor is such treatment unique to broadcast divestitures. In the *USWest/Qwest Merger Order*, the Commission sought another round of public comment where divestitures materially changed the nature of the proposed transaction.⁴⁰ And it has done so in its review of other major transactions as well.⁴¹ Even in this proceeding, the Commission has twice sought public comment on new information in the record,⁴² and has recognized that it “has a strong interest in ensuring a full and complete record upon which to base its decision in this proceeding.”⁴³

The Order dismisses the need for formal public notice and comment on the parties’ commitments because the Order supposedly adequately discusses these issues. As the U.S. Court of Appeals for the D.C. Circuit has stated, however, notice and comment “reintroduce public participation and fairness to affected parties after governmental power has been delegated to unrepresentative agencies,” and “assure that the agency will have before it the facts and information relevant to a particular administrative problem, as well as suggestions for alternative solutions.”⁴⁴ By skipping formal notice and comment on critical changes to the original merger proposal – modifications that the Order itself states are dispositive to the outcome here – the majority ignores these important policy objectives.⁴⁵

³⁹ *Media Bureau Establishes Consolidated Pleading Cycle for Amendments to the June 26, 2017 Applications to Transfer Control of Tribune Media Co. to Sinclair Broadcasting Group, Inc. Related New Divestiture Applications and Top-Four Showings in Two Markets*, MB Docket No. 17-179, Public Notice, 33 FCC Rcd 4960 (MB 2018).

⁴⁰ See *Qwest Commc’ns Int’l Inc. and US WEST, Inc. Applications for Transfer of Control of Domestic and International Sections 214 and 310 Authorizations and Application to Transfer Control of a Submarine Cable Landing License*, CC Docket No. 99-272, Memorandum Opinion and Order, 15 FCC Rcd 53276, 53278, para. 3 (2000).

⁴¹ See, e.g., *Applications of Ameritech Corp. and SBC Communications Inc. for Consent to Transfer Control of Corporations Holding Commissions Licenses and Lines Pursuant to Sections 214 and 301(d) of the Communications Act and Parts 5, 22, 25, 25, 63, 90, 95, and 101 of the Commission’s Rules*, CC Docket No. 98-141, 14 FCC Rcd 14712, paras. 349, 351 (1999); *Commission Seeks Comment on Proposals Submitted by AT&T and BellSouth Corp.*, WC Docket No. 06-74, Public Notice, 21 FCC Rcd 11490 (WCB 2006).

⁴² *Commission Announces Receipt of Supplemental Analysis from T-Mobile; Establishes Comment Deadline*, WT Docket No. 18-197, Public Notice, 33 FCC Rcd 11157 (WTB 2018) (seeking public comment on the Applicants’ Cornerstone economic study); *Commission Announces Receipt of Additional Analysis and Information Requests from T-Mobile and Sprint; Establishes Comment Deadline*, WT Docket No. 18-197, Public Notice, 34 FCC Rcd 1122 (WTB 2019) (seeking comment on new economic simulations, engineering, and home broadband commitments).

⁴³ Letter from David B. Lawrence, Director, T-Mobile/Sprint Transaction Task Force, FCC, to Kathleen O’Brien Ham, T-Mobile US, Inc. and Vonya B. McCann, Spring Corporation (Sept. 11, 2018) (on file in 18-197), <https://docs.fcc.gov/public/attachments/DOC-354053A1.pdf>.

⁴⁴ *American Hosp. Ass’n v. Bowen*, 834 F.2d 1037, 1044 (D.C. Cir. 1987) (quoting *Batterton v. Marshall*, 648 F.2d 694, 703 (D.C. Cir. 1980) and *Guardian Federal Savings & Loan Insurance Corp.*, 589 F.2d. 658, 662 (D.C. Cir. 1978)).

⁴⁵ Moreover, it deprives the Commission of a complete record on which to premise its findings, a fact which has not gone unnoticed by the parties. For example, DISH has noted that the various economic analyses submitted into the record do not pertain to the current form of the transaction. See Letter from Jeffrey H. Blum, Senior Vice President, Public Policy & Government Affairs, DISH Network Corp. to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (Aug. 1, 2019).

Second, while the Order points out that the parties' commitments to both the Commission and the Justice Department have been publicly available in the record, such an argument undermines the point of public notice and comment in the first place. Simply having a document in the public record is not the same as a formal Public Notice describing the new information and identifying the questions on which the Commission is seeking public input. If this were the case, we could dispense with issuing Public Notices in the first place, and simply open a docket whenever we consider a policy issue. By their nature, Public Notices draw heightened attention from the media, Congress and other stakeholders and therefore are more likely to result in useful comments than no announcement at all. They focus attention on a given issue, and often describe the questions on which the Commission seeks feedback. Moreover, as noted above, any Public Notice could also direct the merging parties to provide additional information to clarify the nature of their commitments.⁴⁶ Instead, T-Mobile, Sprint and other interested parties simply engaged in the continued filing of *ex partes* without any guidance from the Commission.

Finally, these procedural problems are not cured by the Order's claim that its decision does not rely on the *DOJ Proposed Final Judgment* commitments and that the public will have adequate opportunity to comment on the license modifications and transfers of control reflected therein. Notwithstanding the Order's claims to the contrary, the decision repeatedly cites the *DOJ Proposed Final Judgment* commitments for support of its conclusion of the public interest benefits of the transaction.⁴⁷ And even if the public can someday comment on aspects of the DOJ commitments, that opportunity will come too late to prevent any public interest harm, as the transaction likely will have closed by the time the Commission issues its decision on the proposed license modifications and transfers of control.

The Sprint/T-Mobile Merger Will Harm Competition—Boost Mobile Divestiture. Turning to the substance of the commitments, the parties have agreed to divest Sprint's Boost Mobile business, including its stores, employees, and current subscribers, as well as to provide the buyer with a wholesale agreement containing rates and terms that "will ensure that New Boost will be an aggressive competitor."⁴⁸ The Order concludes that the Boost divestiture conditions will create a strong competitor that will address the potential competitive harms raised by the merger, "particularly in the densely-populated areas where the transaction raises the greatest risk of net competitive harm."⁴⁹

But this divestiture will do little to address the harmful effects of the proposed merger.⁵⁰ First, as the Order acknowledges, Boost will not be a wholly independent, facilities-based competitor. Instead, it will be an MVNO, wholly dependent on New T-Mobile's spectrum and network, making it a weak check on anticompetitive behavior. Non-facilities-based operators have no ability to create capacity, upgrade their networks, or extend their network coverage. Moreover, as industry observers have noted, even well-

⁴⁶ See, e.g., *infra* n.64.

⁴⁷ See, e.g., *Sprint/T-Mobile Order* at paras. 292, 374, 381 (referring approvingly to the commitments contained in the DOJ Proposed Final Judgment: "[w]e expect that combining DISH's 5G deployment commitments with the assets it is receiving from and agreements it has reached with T-Mobile and Sprint, pursuant to the *DOJ Proposed Final Judgment*, will advance the deployment of advanced 5G wireless services. We anticipate these arrangements will promote competition;" "the divestiture and wholesale-related provisions in the Applicants' commitments to the Commission, and in the *DOJ Proposed Final Judgment*, give us further confidence that the transaction is unlikely to cause competitive harm due to impacts on wholesale providers;" "in addition to our imposing DISH's commitments as conditions of our approval, we note that the *DOJ Proposed Final Judgment*, to which DISH has been joined as a defendant, would require DISH comply with these commitments, and provides for appointment of a monitoring trustee").

⁴⁸ *Sprint/T-Mobile Commitments Letter* at 5-6.

⁴⁹ *Sprint/T-Mobile Order* at para. 196.

⁵⁰ See CWA Commitments Response Letter at 3-5.

funded MVNOs from established telecom companies do not pose a competitive threat to facilities-based carriers in the same manner as AT&T and Verizon.⁵¹

Moreover, Boost Mobile will not even be a strong MVNO. At nine million customers, Boost Mobile is not even the largest pre-paid brand involved in this transaction—T-Mobile’s Metro business has more than twice as many customers.⁵² As internal Sprint documents from 2018 show, even Sprint executives have questioned Boost’s value and potential competitiveness.⁵³ Analysts claim that Boost Mobile has a churn rate of five percent per month, meaning that over the course of a year, it must replace 60 percent of its customers just to stay at existing subscriber levels.⁵⁴ Compare that to T-Mobile, which has a churn rate of about one percent for its post-paid service.⁵⁵ In addition, due to poor performance over the last year,⁵⁶ Sprint’s pre-paid business, including Boost Mobile, has lost about 3,000 retail outlets at Target,⁵⁷ Best Buy, and Meijer.⁵⁸

⁵¹ Susan Crawford, *Why an Army of Small Companies Is Defending the Sprint/T-Mobile Merger* (Sept. 11, 2018), <https://www.wired.com/story/sprint-t-mobile-merger-army-of-telecom-defenders/>.

⁵² John Legere, *Delivering on Our Promises: From MetroPCS to the New T-Mobile* (Apr. 24, 2019), <https://www.t-mobile.com/news/delivering-on-promises-metropcs>.

⁵³ See Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed May 23, 2019) (citing SPR-FCC-11655063 through SPR-FCC-11655069).

⁵⁴ Mark Davis, *Sprint Struggles in Prepaid Competition* (Jan. 27, 2016), <https://www.kansascity.com/news/business/technology/article56889863.html>.

⁵⁵ See, e.g., *Sprint/T-Mobile Order* at para. 86 n.273; T-Mobile, *T-Mobile Posts Its Best Customer Results Yet, Reports Lowest Ever Q4 Postpaid Phone Churn, Beats Customer Guidance for FY 2018* (Jan. 9, 2019), <https://www.t-mobile.com/news/t-mobile-customer-results-q4-2018>; Mike Farrell, *Dishing Sprint T-Mobile* (June 17, 2019), <https://www.multichannel.com/blog/dishing-sprint-t-mobile>; and Jon Tenebruso, *T-Mobile Earnings Jump on Subscriber Gains, Lower Churn* (May 1, 2019), <https://www.fool.com/investing/2019/05/01/t-mobile-earnings-jump-on-subscriber-gains-lower-c.aspx>.

⁵⁶ Roger Entner, *Industry Voices-Entner: The Skinny on the T-Mobile/Sprint/Dish Deal* (Aug. 2, 2019), <https://www.fiercewireless.com/wireless/industry-voices-entner-sorting-out-good-and-bad-t-mobile-sprint-DISH-deal>.

⁵⁷ See, e.g., Diana Goovaerts, *Sprint Checks Out of Target* (Mar. 28, 2019), <https://www.mobileworldlive.com/featured-content/top-three/sprint-checks-out-of-target/> (noting that Sprint pulled both Boost Mobile and Virgin Mobile brands from Target in mid-2018).

⁵⁸ The fact that the majority finds that the *DOJ Proposed Final Judgment* provides “further confidence” on top of their approval strikes me as topsy-turvy. See *Sprint/T-Mobile Order* at para. 36 n.110. To the contrary, the mere fact that the Justice Department sought further concessions from T-Mobile and Sprint despite their promise to divest Boost Mobile demonstrates DOJ’s judgment that the original divestiture plan did not adequately protect competition. It is not altogether clear to me that the current shortcomings in this transaction are remedied by DISH’s proposed acquisition of Boost Mobile and Sprint’s other pre-paid assets, i.e., Virgin Mobile and the Sprint-branded pre-paid business. Given Boost Mobile’s rapidly disappearing retail presence and its high churn rate (5.4 million customers per year for a company with only nine million subscribers), once its acquisition of the Sprint pre-paid businesses is complete, DISH will hit the starting line, in my opinion, at a significant disadvantage. The company will need to invest substantial resources simply to maintain its position and, according to press accounts, has nearly \$15 billion in debt today, is obligated under the *DOJ Proposed Final Judgment* to pay as much as \$5 billion for Sprint pre-paid and spectrum assets, and will invest another \$10 billion in building out a nationwide 5G network by 2023. See Motley Fool, *DISH Network Corp Q2 2019 Earnings Call Transcript* (July 29, 2019), <https://www.fool.com/earnings/call-transcripts/2019/07/30/dish-network-corp-dish-q2-2019-earnings-call-trans.aspx>; Nabila Ahmed et al., *DISH Agrees to \$5 billion Deal for Wireless Assets* (July 23, 2019), <https://www.bloomberg.com/news/articles/2019-07-24/dish-is-said-to-agree-to-5-billion-deal-to-buy-wireless-assets>; Simply Wall St., *Here’s Why DISH Network Has a Meaningful Debt Burden* (July 31, 2019), <https://finance.yahoo.com/news/heres-why-dish-network-nasdaq-120652551.html>.

(continued....)

The Order Overstates the Public Interest Benefits of the 5G Deployment Commitments, Particularly for Rural America. The Order also places tremendous importance on another major component of T-Mobile and Sprint’s commitments—buildout of a nationwide 5G network.⁵⁹ The record is replete with upbeat statements by T-Mobile and Sprint executives about the companies’ plans to deploy 5G in the absence of a merger.⁶⁰ But the Commission’s Network Build Model suggests that the merger isn’t necessary to fuel 5G deployment or U.S. leadership on 5G,⁶¹ and the Order admits that it can neither quantify nor verify various network efficiency and complementarity claims from T-Mobile and Sprint.⁶² Notwithstanding this evidence, however, the Order concludes that this merger “will enable deployment of a more robust, nationwide 5G network than either standalone company could deploy on its own.”⁶³ Once again, the Order bases this conclusion largely on the strength of the commitments from the parties, pointing to the buildout commitments, which lay out the timetable and scope of a nationwide 5G buildout.

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DISH will need to make those investments as well as those required for building out a retail presence (estimated at \$2-3 billion, *see* Roger Entner, *supra* note 56) and maintaining and improving its network year-to-year, given that the existing facilities-based carriers invest \$10 billion or more each year on such expenses. For example, the merging parties claim that New T-Mobile will invest “nearly \$40 billion within three years of closing to deliver a more robust nationwide 5G network.” Sprint/T-Mobile Commitments Letter at 1.

Further, if DISH marshals the financial resources to fund its new business, there are technical and logistical challenges presented by its buildout deadlines. DISH has committed to deploying a “nationwide 5G network” using the latest 5G standard covering 70 percent of the U.S. population by June 14, 2023 – about 3 ½ years from now. *See* Letter from Jeffrey H. Blum, Senior Vice President, Public Policy & Government Affairs, DISH Network Corp. to Donald Stockdale, Chief, Wireless Telecommunications Bureau, FCC, DBSD Corporation, AWS-4, Lead Call Sign T070272001, et al., at 3 (filed July 26, 2019) (DISH Commitments Letter). The obstacles to meeting such a commitment are daunting and will require a start-from-scratch deployment at an unprecedented pace, using resources that have not been arranged, technology for which the standard has not yet been finalized, at sites that have not yet been voluntarily decommissioned by New T-Mobile. Indeed, in an earlier proceeding regarding its AWS-4 commitments, DISH claimed that it needed at least 4 years to deploy a 4G network covering only 20 percent of the population. *See* Comments of DISH Corporation, WT Docket No. 12-70 at 22-23 (filed May 17, 2012) (“Even at four years, a 30 percent POPs coverage requirement is aggressive and likely unrealistic.”).

Finally, even if DISH somehow evolves from the Boost and other Sprint assets into a facilities-based competitor, I am concerned that that the new “Big 3” wireless carriers will use the buildout period between now and 2023 to divide up the market, capture the most lucrative customers, and leave DISH at a significant financial disadvantage. Four years is a long time.

⁵⁹ Notably, this isn’t the first time that the Commission has reviewed a proposed wireless carrier merger where the parties promised broadband deployments that would take place only if the merger was approved. Eight years ago, AT&T and T-Mobile promised their merger would deliver “a significant expansion of LTE-based mobile broadband coverage” that would result in the “upgrading of the entirety of [New AT&T’s] wireless footprint within six years of closing.” *See AT&T/T-Mobile Staff Report* at para. 245. Like here, AT&T and T-Mobile further argued that rural Americans would experience much of the benefits of the transaction, including higher speeds and lower latency. *Id.* at para. 247. Nevertheless, in that proceeding, the staff rejected the parties’ claims that only merger approval would adequately fuel broadband deployment.

⁶⁰ *See Sprint/T-Mobile Order* at para. 225 n.760.

⁶¹ *Id.* at para. 250. *See also id.* at para. 236 n.816.

⁶² *Id.* at para. 240 (“Although we do not have a basis in the record to precisely quantify this [network complementarities] effect, we acknowledge that it provides additional reason to credit the substantial network deployment claimed by the Applicants and imposed as a condition of our approval.”); *id.* at 241 (“There remain disputes regarding the verifiability of particular benefit claims because the Applicants’ claimed benefits involve 5G technologies and marketplaces that will continue to develop over time—rather than long-established technologies and services.”).

⁶³ *Id.* at para. 217.

T-Mobile and Sprint's deployments under these commitments are unable to be verified. T-Mobile and Sprint claim that New T-Mobile will provide mid-band coverage to 6.5 million more rural Americans three years after the merger, and an additional 6.1 million rural Americans six years after the merger. But T-Mobile and Sprint have not explained how they calculated the numbers attached to the commitments, have offered no updated coverage maps, and have failed to provide an updated version of the engineering model, all of which leave unresolved questions in my mind.⁶⁴

The Merger Will Undermine Rural Service by Making Roaming Agreements More One-Sided.

On the subject of rural broadband, the Order ignores the impact of this transaction on the roaming agreements that have been critical to providing service to rural America. Without the low-band spectrum necessary to provide coverage outside of urban areas,⁶⁵ Sprint has been forced to enter into roaming agreements with rural carriers, allowing them to more effectively provide services to their communities.⁶⁶ T-Mobile and the other major facilities-based carriers, however, have ample low-band spectrum and therefore offer roaming on less favorable terms, as they can service these areas on their own.⁶⁷ With respect to T-Mobile specifically, commenting parties allege that the carrier charges roaming rates as high as 20 times those of Sprint,⁶⁸ has been slow or unwilling to adopt Voice-over-LTE (VoLTE) roaming agreements with rural carriers, and has a history of turning off outbound roaming for its own customers when they travel out of network, depriving those customers of service and rural wireless carriers of their roaming fees.

New T-Mobile will have plenty of low-band spectrum and therefore will have no incentive to serve rural carriers in the way that Sprint does today. But the parties claim that their network improvements will allow New T-Mobile to offer better terms to roaming partners. They also have agreed to permit parties with existing roaming agreements with both Sprint and T-Mobile to pick what rates will govern their relationship with New T-Mobile.⁶⁹

⁶⁴ See CWA Commitments Response Letter at 6.

⁶⁵ *20th Mobile Wireless Competition Report*, 32 FCC Rcd at 8996, Tbl. II.E.3. While Sprint licenses a total of 188.3 population-weighted MHz, only 13.9 MHz is in low-band spectrum. By comparison, AT&T, T-Mobile, and Verizon, hold 148.4 MHz, 109.7 MHz, and 114.9 MHz respectively, of which 55.4 MHz, 40.7 MHz, and 46.9 MHz is low-band. The merged Sprint and T-Mobile would hold 54.6 MHz.

⁶⁶ See, e.g., Marina Lopes & Alina Selyukh, *Sprint Grabs Lifeline with Rural U.S. Roaming Deals* (Aug. 29, 2014) (“Sprint’s . . . CEO Marcelo Claure said that the networks of rural carriers ‘are really important in places where we haven’t and don’t intend to build our network.’”).

⁶⁷ See, e.g., Petition to Deny of the Rural Wireless Association, Inc., WT Docket No. 18-197, at 6-9, 11-16 (filed Aug. 27, 2018) (RWA Petition). See also Petition to Deny of the Greenlining Institute, WT Docket No. 18-197, at 8 (filed Aug. 27, 2018), (Greenlining Petition); Petition to Deny of NTCA-The Rural Broadband Association, WT Docket No. 18-197, at 8-9 (filed Aug. 27, 2018); Petition to Deny of Union Telephone Co. et al., WT Docket No. 18-197, at 39-41 (filed Aug. 27, 2018); RWA Reply at 3; Union Telephone Reply at 14-16; and Letter from Eric Steinmann, Development Manager, NTCH, Inc. and Thomas Wise, President, Wise Electronics, Inc., to Hon. Ajit Pai, Chairman, FCC, WT Docket No. 18-197, at 2 (filed June 12, 2019).

⁶⁸ RWA Petition at 13.

⁶⁹ Public Interest Statement of T-Mobile US, Inc. and Sprint Corporation, WT Docket No. 18-197, at 69 (filed June 18, 2018) (Public Interest Statement); Joint Opposition of T-Mobile US, Inc. and Sprint Corporation, WT Docket No. 18-197, at 98-99 (filed Sept. 17, 2018) (Joint Opposition); Letter from R. Michael Senkowski, Counsel to T-Mobile, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 2 (filed Nov. 19, 2018) (T-Mobile Nov. 19, 2018 *Ex Parte* Letter).

But these short-term commitments do not address the concerns raised by commenters about the long-term impact on their roaming arrangements. As commenters have pointed out, there is nothing in these commitments governing future roaming agreements, including what happens when existing agreements expire. With respect to 5G services, where existing agreements are silent, rural carriers will have no guarantees of access to roaming for such advanced services, and the Order doesn't deal with this issue. I am left with serious concerns about the impact of this transaction on rural carriers and service to rural Americans.

The Sprint/T-Mobile Merger Will Harm Competition—Pricing. As noted above, the Order finds that the proposed merger would likely result in increased consumer prices, particularly in the first few years after the transaction closes.⁷⁰ To address concerns about price increases, T-Mobile and Sprint have promised that New T-Mobile “will make available the same or better rate plans as those offered by T-Mobile or Sprint as of [February 4, 2019] for three years following the merger.”⁷¹ The parties have clarified that the phrase “better plans” refers to “the same plan with a lower price; the same plan with more data for the same price; or the same plan with a lower price and more data.”⁷² The Order finds that “the price commitment will help to address some of the predicted static harms arising from the proposed transaction in the first three years [after the merger]” and that “it would help offset, in concert with other commitments, the prospective harms associated with the predicted unilateral effects [of the merger].”⁷³

Mobile wireless prices in the United States have steadily declined in the last few years.⁷⁴ As the Order acknowledges, this is due in large part to the efforts of “maverick” carriers like T-Mobile and Sprint, who have sought to compete with larger carriers by introducing innovative pricing plans and features that the larger carriers have been forced to match.⁷⁵ Elimination of one of these maverick carriers—as the Order also acknowledges—will remove these incentives and encourage the remaining carriers to increase prices.⁷⁶ Given that prices have been declining due to competition, promising to keep prices flat does not address the harm to competition resulting from the merger. Moreover, a time-limited pricing guarantee is not a substitute for preserving the competition that will be lost with the permanent elimination of Sprint as a nationwide facilities-based carrier, particularly regarding the promotions and device deals that T-Mobile and Sprint have used to attract customers.

Moreover, as DISH pointed out when it was in opposition to the merger, the parties' pricing commitment raises numerous questions, including the definitions of the phrases “same plan” and “same price.”⁷⁷ For example, what happens if New T-Mobile introduces a non-monetary benefit (e.g., Netflix)

⁷⁰ *Sprint/T-Mobile Order* at para. 163 (finding consumer price increases to be likely for each year modeled through 2024).

⁷¹ Letter from Nancy Victory, Counsel to T-Mobile US, Inc. to Marlene H. Dortch, Secretary, FCC, WT Docket. No. 18-197, at 2 (filed Feb. 4, 2019).

⁷² Letter from Nancy Victory, Counsel to T-Mobile US, Inc. to Marlene H. Dortch, Secretary, FCC, WT Docket. No. 18-197, at 3 (filed Feb. 12, 2019).

⁷³ *Sprint/T-Mobile Order* at para. 212.

⁷⁴ *Communications Marketplace Report et al.*, GN Docket No. 18-231 et al., Report, 33 FCC Rcd 12558, 12574-75, paras. 19-20 (2018).

⁷⁵ *Sprint/T-Mobile Order* at para. 181.

⁷⁶ *Id.* at para. 179.

⁷⁷ See Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp. to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Feb. 7, 2019); Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp. to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197 (filed Feb. 14, 2019).

to a legacy plan? May it change the price at that point? In addition, the parties admit that the pricing commitment does not include device or handset offerings, which would allow New T-Mobile to impose a fee on customers using certain handsets or increase the cost to purchase or upgrade a new phone. As it deploys 5G service, it might even require 5G-enabled phones to be on a new plan. The parties also state that New T-Mobile “can cancel or modify benefits under legacy plans if those benefits are provided by third-party services.” This would allow the carrier to terminate benefits like free in-flight Wi-Fi service and free subscriptions to streaming services and restrict or eliminate third-party promotions. For me, this is entirely too many loopholes to a merger commitment.

The Sprint/T-Mobile Merger Will Harm Resellers and their Customers. As stated earlier, MVNOs offer mobile wireless service by reselling service purchased wholesale from facilities-based carriers like T-Mobile and Sprint. According to one estimate, T-Mobile and Sprint “provide network service for more than 60% of MVNOs’ subscribers through the wholesale network hosting contracts between the MVNOs and the merging firms.”⁷⁸ Sprint, in particular, has a record of favorable MVNO agreements, and is the only facilities-based carrier that has granted MVNOs “core control,” allowing an MVNO to use its own spectrum and facilities in addition to Sprint’s. Through such arrangements, an MVNO can reduce its wholesale costs and provide customers with new and improved services.

For example, Sprint has an innovative “iMVNO” arrangement with Altice, under which Sprint has granted Altice “core control” in exchange for the use of Altice’s sites and services to install its own radio equipment and efficiently densify its network in areas where necessary.⁷⁹ This has benefited both Altice and Sprint, which “advertises that it has increased download speeds in Long Island . . . by 135% and is now the ‘most improved network’ in New York City and on Long Island.”⁸⁰ Such arrangements are particularly advantageous for cable providers, which already have extensive infrastructure in addition to some spectrum holdings. Indeed, before the merger announcement, Sprint had entered negotiations to grant core control with both Comcast and Charter.⁸¹

Sprint has entered into these favorable MVNO agreements for reasons similar to its roaming arrangements – it simply lacks enough low-band spectrum. As noted previously, Sprint has the least amount of low-band spectrum of the four nationwide facilities-based carriers. Arrangements like the Altice iMVNO agreement allow Sprint to avoid the difficult choice between incurring the expense of building more facilities to utilize its mid-band spectrum or allowing its service to suffer. By contrast, however, New T-Mobile has no plans to grant MVNOs core control.⁸² Reducing the options available to MVNOs will reduce the quality of service they can provide, stifle innovation, and increase prices to consumers.

⁷⁸ Declaration of Joseph Harrington et al., Exh. B to Petition to Deny of DISH Network Corp., at 11 (Harrington/Brattle Decl.). *See also id.* at 38 (“Based on our estimates of the number of the wholesale connections, Sprint and T-Mobile (combined) account for more than 60% of wholesale connections (i.e., 26.6 million of the estimated 42.5 million connections.”).

⁷⁹ Altice states that it “rel[ies] critically, but minimally, on mobile network operator (‘MNO’) partners, utilizing only the radio access network (‘RAN’) of the MNO . . . [while] supply[ing] all other aspects of the mobile offering, including the SIM, roaming and network partners, data and Internet access, voice messaging, rate charging, customer care, and billing.” Altice Reply at 2 (rec. Oct. 31, 2018).

⁸⁰ Altice Information Request Response, Exh. 1, Declaration of Michael Cragg and Eliana Garcés at 35 (Jan. 28, 2019).

⁸¹ State AG Complaint ¶ 89.

⁸² *Id.* ¶ 90.

The Order dismisses these concerns as “speculative,” and claims that MVNOs will benefit from New T-Mobile’s expanded network capacity.⁸³ Consistent with the overall approach in the decision, the Order even comes to the counterintuitive conclusion that “even though the number of providers would be fewer, the market for wholesale services could become more competitive.”⁸⁴ Finally, to the extent concerns remain, the Order notes that the parties have agreed that New T-Mobile will honor their existing MVNO agreements, including the deal with Altice.⁸⁵

But if an extensive network were the key to providing service to MVNOs, the larger facilities-based carriers like AT&T and Verizon would already be doing so. Instead, however, these large carriers have little incentive to enter into agreements like the iMVNO agreement between Altice and Sprint – they simply don’t need Altice’s infrastructure to obtain sufficient coverage. Instead, they are more likely to regard such arrangements as cannibalizing their own customer base.⁸⁶ This is consistent with the concerns raised by the Justice Department in its Complaint challenging the merger, even after the parties’ May 20, 2019 commitments. As the Complaint states:

Competition between Sprint and T-Mobile to sell mobile wireless service wholesale to MVNOs has benefited consumers by furthering innovation, including the introduction of MVNOs with some facilities-based infrastructure. *The merger’s elimination of this competition likely would reduce future innovation.*⁸⁷

At a minimum, New T-Mobile is likely to seek higher prices from new MVNO agreements.⁸⁸ And existing MVNO agreements are unlikely to be renewed on the currently favorable terms.⁸⁹ By raising prices for MVNO providers, this merger is likely to both discourage new infrastructure based carriers like Altice and result in higher prices to consumers that rely on such providers, including 45 percent of pre-paid service customers, who tend to have lower incomes.⁹⁰

⁸³ *Sprint/T-Mobile Order* at para. 290.

⁸⁴ *Id.* at para. 291.

⁸⁵ See *Sprint/T-Mobile Order* at para. 289; Sprint/T-Mobile Commitments Letter at 7, Attach. 4 (commitment to amend existing agreement, subject to good-faith negotiations, to expand Altice’s access to New T-Mobile’s 5G and other network facilities).

⁸⁶ See Roger Linguist, Chairman and CEO, MetroPCS Communications Inc., Remarks at the Sanford C. Bernstein Strategic Decisions Conference (June 4, 2010) (“[A reseller is] completely at the mercy of the carrier that’s selling you the bits and the -- or the bytes and the minutes. So I think it’s really the question about what the -- it’s not a question of what TracFone does, it’s a question of what does Verizon, AT&T, and T-Mobile and Sprint do. And that question can only be answered by how many degrees of separation do they want so that the cannibalization of their more treasured contract business doesn’t get impacted by what they end up doing selling minutes and bytes to the -- to these resellers.”).

⁸⁷ DOJ Complaint ¶ 22 (emphasis added).

⁸⁸ Harrington/Brattle Decl. at 11-12. (“We calculate increases in vertical ‘upward pricing pressure’ index values of 22.7% for T-Mobile’s current wholesale contracts and 48.0% for Sprint’s current wholesale contracts.”).

⁸⁹ See Declaration of Michael Cragg and Eliana Garcés, Exh. 1 to Altice Information Request Response, at 41, Appx. 1.

⁹⁰ See Harrington/Brattle Decl. at 37, 54, Tbl. 13. These concerns are unlikely to be remedied by the *DOJ Proposed Final Judgment*. The Order argues that DISH, as a facilities-based provider, will provide an excellent counterweight to any reduction in competition for the provision of wholesale services caused by this transaction. The DOJ agreement also requires New T-Mobile to extend its existing MVNO agreements until seven years after consummation of the merger. As with the pricing guarantee, time-limited commitments regarding the MVNO agreements are no substitute for the structural protections inherent in the current robust competition.

Harm to Lifeline Customers. Relatedly, the loss of competition in the MVNO market will negatively affect the Lifeline program, which provides communications services to the most vulnerable in our society. With the exception of Sprint (now alleged to have committed the largest set of Lifeline violations in FCC history), none of the four largest mobile wireless carriers is a nationwide Lifeline provider.⁹¹ Thus, most Lifeline participants are MVNOs and will be impacted by the above issues – rising prices and lack of access to infrastructure sharing arrangements.

But the harm to the Lifeline program could extend beyond the harm to Lifeline MVNOs. T-Mobile currently offers Lifeline service in nine states through its Metro pre-paid brand, while Sprint offers Lifeline nationwide through both Virgin Mobile (as its Assurance brand) and Boost Mobile. While the parties have committed that New T-Mobile will “continue the Lifeline services currently offered by T-Mobile and Sprint,”⁹² that commitment provides no specifics about the duration of this commitment and is ambiguous at best about the scope. What we do know is that T-Mobile previously expressed no interest in participating in the program as a facilities-based carrier, eliminated T-Mobile’s Lifeline participation in seven states, referred to Lifeline as “non-sustainable,” and has stated that the company would look to phase out its current Lifeline customers.⁹³

In-Home Broadband Service. T-Mobile’s CEO has promised to use New T-Mobile’s 5G network to offer in-home broadband service and create a strong alternative to cable and other fixed broadband service.⁹⁴ The Order finds that this in-home broadband service will constitute a significant public benefit weighing in favor of the transaction. On this aspect of the transaction, I too am excited. However, I am unable to assign much weight to the parties’ claims. First, even the Order admits both that it “cannot verify the Applicants’ quantification of benefits,” and that it makes no “determinations or assumptions

⁹¹ T-Mobile currently offers Lifeline service in nine states. Greenlining Petition at 10.

⁹² Public Interest Statement at 51 n.177. T-Mobile also has publicly stated that “New T-Mobile will maintain the existing T-Mobile and Sprint Lifeline program throughout the country indefinitely, barring fundamental changes to today’s program.” Eli Blumenthal, *T-Mobile Promises to Support Low-Income Lifeline Program ‘Indefinitely’ if Merger Approved* (Mar. 11, 2019), <https://www.usatoday.com/story/tech/2019/03/11/t-mobile-well-keep-low-income-offers-indefinitely-merger/3129108002/>. Notably, however, the Order does not expressly condition its approval of the transaction on New T-Mobile’s continued support to the Lifeline program. See *Sprint/T-Mobile Order* at paras 387-400. To the extent New T-Mobile honors this promise, the phrase “barring fundamental changes to today’s program” creates a significant loophole that the company can utilize at its sole discretion. For example, the Commission is currently considering elimination of resellers from the program. See *Bridging the Digital Divide for Low-Income Consumers*, Lifeline and Link Up Reform and Modernization, Telecommunications Carriers Eligible for Universal Service Support, WC Docket Nos. 17-287, 11-42, and 09-197, Fourth Report and Order, Order on Reconsideration, Memorandum Opinion and Order, Notice of Proposed Rulemaking, and Notice of Inquiry, 32 FCC Rcd 10475, 10499 para. 67 (2017). Would that constitute a “fundamental change to today’s program”?

⁹³ Petition to Deny of Common Cause et al., WT Docket No. 18-197, at 29 (filed Aug. 27, 2018) (citing Joan Engebretson, *CFO: ‘Non-Sustainable’ T-Mobile Lifeline Business to be Phased Out* (June 8, 2017), <https://www.telecompetitor.com/cfo-non-sustainable-t-mobile-lifelinebusiness-to-be-phased-out/>). I also note that the *DOJ Proposed Final Judgment* says nothing about DISH continuing to offer Lifeline service following its acquisition of Boost Mobile.

⁹⁴ See John Legere, *New T-Mobile: Creating a True Alternative to Fixed Broadband* (Mar. 7, 2019), <https://www.t-mobile.com/news/new-t-mobile-fixed-broadband-alternative> (“With the New T-Mobile and our unique 5G capabilities, we’ll be able to offer a fast and reliable alternative for in-home broadband – yes, a real alternative option! And we aren’t just going to offer a new alternative. No. We’re the Un-Carrier! – and if there’s ever been an industry more in need of disruption than wireless, it’s the Cableopoly. So we are going to change it the same way we changed wireless! Aggressive prices, rapid innovation, listening to customers and fixing what’s broken. That’s just what we do – we are not going to simply do more of what the other guys do!”).

regarding [New T-Mobile's in-home broadband service] substitutability with particular competitors' fixed broadband offerings."⁹⁵ Second, the benefits of New T-Mobile's in-home broadband service cannot be ascribed to the transaction. Specifically, T-Mobile already has plans to offer such services.⁹⁶ And third, according to DISH, New T-Mobile will lack the millimeter wave spectrum after the merger necessary to provide fixed wireless broadband at the speeds necessary to compete with fixed wireline providers.⁹⁷

This Merger Will Result in Fewer Overall Jobs. As the Order states, job losses and gains are relevant to the Commission's assessment of whether a transaction is in the public interest.⁹⁸ Notwithstanding the fact that the bulk of the savings realized through this merger will undoubtedly come from consolidating operations and thereby reducing staffing,⁹⁹ the Order only grudgingly concedes that "the transaction has 'the potential to lead to store closings'" and that "some job losses are possible"¹⁰⁰ But the record contains evidence that between 20,000 and 30,000 U.S. jobs could be lost as a result of this transaction, the bulk of them in retail, with the remainder in "overhead" positions at the headquarters of T-Mobile and Sprint.¹⁰¹ While much of our work on this proceeding has focused on abstract issues of competition, I am very concerned about the direct impact that this transaction will have on thousands of workers around the country.

CONCLUSION

Despite claims that 5G hangs in the balance, I find that this merger is fundamentally no different than past attempts to consolidate the wireless market that the Justice Department and the FCC have rejected. In this respect, today's decision represents an inflection point in the history of mobile wireless competition. In 2003, there were eight major national wireless carriers, with the largest being Verizon with a 23.4% market share. Since then, the large carriers have steadily acquired smaller wireless carriers while shunting off less-profitable wireline assets. Consummation of this merger will leave only three national facilities-based wireless carriers, each with more market share than even the largest carrier in 2003.¹⁰²

In short, I believe that T-Mobile and Sprint have not proven that their merger will benefit the public interest. Vague promises do not change what was true when this deal was first proposed and what remains true today – the harms from this merger are not overcome by any condition imposed in the majority's order. While I hope for the sake of consumers that I am wrong, I fear that we will one day look back at this decision and recognize it as a moment that forever changed the U.S. wireless industry, and not for the better.

⁹⁵ *Sprint/T-Mobile Order* at para. 282 & n.978.

⁹⁶ See T-Mobile, *T-Mobile Home Internet FAQ*, <https://www.t-mobile.com/isp/FAQs> (last visited Oct. 3, 2019).

⁹⁷ See DISH Reply at 89-91 (rec. Oct. 31, 2018).

⁹⁸ *Sprint/T-Mobile Order* at para. 321.

⁹⁹ Petition to Deny of DISH Network Corp., WT Docket No. 18-197, at 42 (filed Aug. 27, 2018) (DISH Petition).

¹⁰⁰ *Sprint/T-Mobile Order* at paras. 329, 330.

¹⁰¹ See Communications Workers of America, *Methodology for Estimating Job Losses from T-Mobile/Sprint Merger* (2018), https://www.cwaunion.org/sites/default/files/tmobile_sprint_estimating_job_losses_20180626.pdf; Karl Bode, *The Jobs-and-Competition-Killing T-Mobile/Sprint Merger Is Back On* (Apr. 13, 2018), https://motherboard.vice.com/en_us/article/gymm3w/sprint-t-mobile-merger-can-stillhappen.

¹⁰² DISH Petition at 58-59.