Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
The State of Mobile Wireless Competition	)	WT Docket No. 18-203
	)	
	)	

COMMENTS OF VERIZON

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EXECUTIVE SUMMARY

Competition in the U.S. mobile wireless marketplace is providing consumers with more data at faster speeds and lower prices than ever before. And it is driving deployment of next-generation networks and services. The mobile wireless marketplace is constantly evolving with each "generation" of wireless technology ushering in dramatic innovations for consumers that change not only the way they communicate but also how they go about their lives. Today we stand at the precipice of game-changing 5G deployments. 5G networks and technologies, with their blazing fast speeds and low latency, will power applications that will enhance education, transportation, manufacturing, healthcare, and environmental sustainability, to name a few. Competition is fueling this investment, innovation, and growth in the mobile wireless marketplace, all to the benefit of U.S. consumers.

A review of key performance metrics in 2017 makes clear that the mobile wireless marketplace is dynamic and robustly competitive:

- ***Exploding demand/usage.*** Usage continues to rise: total U.S. mobile data traffic reached almost 15.7 trillion megabytes in 2017, up *2 trillion megabytes* and 15 percent from 2016. And U.S. mobile data traffic is expected to grow at a 35 percent compound annual growth rate, reaching nearly 4.6 exabytes per month by 2021.

- ***Falling prices.*** The overall monthly service Average Revenue Per Unit ("ARPU") – a metric that analysts and the Commission use as a proxy for price – dropped below $40 for the first time, to $38.66, a nearly 7 percent decrease from 2016, and 13.5 percent lower than in 2015. And the wireless Consumer Price Index ("CPI") fell 0.5 percent over the past year, even as the general CPI for all goods *increased* by 2.9 percent. Since 2010, wireless CPI has fallen by almost 24 percent, even as the General CPI increased more than 15 percent over the same period.

- ***Innovative offerings.*** Providers are fiercely competing for consumers by continuing to offer innovative service plans and more expansive bundled offerings. This year, providers are offering a growing array of unlimited data plans. The value proposition continues to expand – these innovative service plans have driven the price per megabyte of data down by 96.6 percent since 2007.

- ***Robust investment.*** U.S. providers collectively spent $25.6 billion in 2017 improving and expanding their networks to compete for customers. The nationwide carriers are

> expected to invest over $30.5 billion capex in 2018 – the highest investment level since 2014. By the end of 2017, more than 323,000 cell sites were in operation, an increase of 52 percent in the last decade. The number of small cells is expected to increase substantially in the next few years – from 13,000 in 2017 to 86,000 this year, then increase almost tenfold by 2026.

And traditional mobile providers and new entrants alike have continued to innovate, enabling consumers to do more with their services than ever before.

As users have come to rely more on their wireless services, and to demand more from these offerings, their satisfaction has risen; one recent report found that current wireless customer satisfaction is at "an all-time high." The American Customer Satisfaction Index ("ACSI") recently reported, "[T]he wireless industry is a good example of how competition impacts customer satisfaction. When companies fight for customers, prices are competitive, service improves, and customer satisfaction is higher." This, of course, is no surprise to the Commission, which found in last year's *Twentieth Mobile Competition Report* that "competition in the provision of mobile wireless services drives innovation and investment to the ultimate benefit of the American people and economy."

As the Commission well knows, the race to 5G is on and it is global. 5G will usher in nothing short of a Fourth Industrial Revolution. It will be 100 times faster, five times more responsive, and able to connect 100 times more devices than 4G. 5G will support the dynamic and scalable networks needed to power the Internet of Things. In a 5G world, not just people but things will be connected, such as cars to roads and roads to traffic lights, and soil sensors to irrigation systems and surgeons to robotic arms. And the connections will be instantaneous. Deploying 5G networks will benefit countless industries – agriculture, retail, healthcare, automotive, industrial, entertainment, and many more – and lead us into a world of "smart cities."

And the competitive and economic benefits of being first are massive: creating millions of new jobs, putting new technology into the hands of American entrepreneurs, and delivering innovative new services to American consumers and industry. But the flip side is also true. While the United States has led on 4G, evidence shows that the loss of a country's wireless leadership during a technological transition (*e.g.*, from 2G, to 3G, to 4G, etc.) has resulted in economic benefits migrating to other markets. While Verizon is at the global vanguard of 5G, the global competition to lead on 5G is intense. The Commission should focus on the actions it can take to ensure U.S. 5G leadership.

Verizon commends the Commission for its continued leadership on the "winning playbook" for 5G: continuing to unleash spectrum – particularly in the mid-band – and modernizing infrastructure policy to foster small cell deployments. Advancing these policies will advance consumer interests and U.S. interests overall and will, together with investment and commitment by Verizon and other mobile providers, help to secure continued U.S. mobile wireless leadership on the world stage.

The inaugural Communications Marketplace Report should reflect the mobile wireless reality, and pick up where the *Twentieth Mobile Competition Report* left off. The evidence of a robustly competitive and innovative mobile wireless marketplace remains overwhelming and is only growing stronger.

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I. INTENSE COMPETITION AND BOUNDLESS INNOVATION DRIVE THE MOBILE WIRELESS MARKETPLACE.

In 2017, as in every year since the Commission began tracking the mobile wireless marketplace's performance, wireless consumers benefited tremendously from competition, innovation, and investment. Mobile data usage grew dramatically, while prices continued to fall. Service plans diversified and expanded, bringing consumers many new options, including an array of unlimited data offerings. Mobile providers invested billions of dollars in mobile network upgrades and services. Competitors of all types continued to innovate, allowing consumers to do more with their services than ever before. And consumer satisfaction in 2017 reached "an all-time high."[1]

Last year, facing similar facts, the Commission properly found in the *Twentieth Mobile Competition Report* that "competition in the provision of mobile wireless services drives innovation and investment to the ultimate benefit of the American people and economy"[2] and

[1] American Customer Satisfaction Index, ACSI Telecommunications Report 2018, at 12 (May 22, 2018) ("ACSI 2018 Report"), https://www.theacsi.org/news-and-resources/customer-satisfaction-reports/reports-2018/acsi-telecommunications-report-2018.

[2] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Twentieth Report, 32 FCC Rcd 8968, 8969 ¶ 3 (2017) ("*Twentieth Mobile Competition Report*").

concluded that there was "effective competition" in the mobile wireless marketplace.[3] The evidence firmly supports the same conclusion this year. Just as the Commission found last year, "[c]ompetition continues to play an essential role in the mobile wireless marketplace – leading to lower prices, more innovation, and higher quality service for American consumers."[4]

Last year's report provides an excellent roadmap for the competition analysis the Commission should undertake in its inaugural Communications Marketplace Report.[5] In particular, the Commission made clear the importance of considering "various generally accepted metrics of competition."[6] The report emphasized that "[a]lthough high market concentration levels in a given market may raise some concern that a market is not competitive, this is not necessarily the case."[7] The Commission's analysis appropriately emphasized "performance measures," including "prices and trends in prices, non-price rivalry, investment, innovation, and any barriers to entry."[8]

The same analytical approach should apply to the Commission's assessment of mobile wireless competition within the broader context of the communications marketplace. Indeed, providers' conduct and output – that is, market performance – remain the most relevant and

[3] *Id.* at 8970 ¶ 2, 8971 ¶ 4, 9037 ¶ 93.

[4] *Id.* at 9037 ¶ 93.

[5] Public Notice, *Wireless Telecommunications Bureau Seeks Comment on the State of Mobile Wireless Competition*, DA 18-663, WT Docket No. 18-203, at 1 (WTB rel. June 26, 2018) ("Public Notice") (seeking comment on "the criteria or metrics that could be used to evaluate the state of mobile wireless competition").

[6] *Twentieth Mobile Competition Report*, 32 FCC Rcd at 9037 ¶ 93.

[7] *Id.* at ¶ 33; *see also id.* ¶ 33 n.101 ("'[m]arket shares are not synonymous with market power; they should mark the beginning for careful analysis, not the end of it'") (quoting Ernest Gellhorn, *Antitrust Law and Economics* (4th ed.), West Publishing, at 117 (1994)).

[8] *Id.* at 8970 ¶ 3, 8989 ¶ 33 (citation omitted).

powerful indicia of the mobile wireless marketplace's competitiveness.[9] Or, as the Commission put it in a previous mobile wireless competition report, "market performance metrics … provide more direct evidence of competitive outcomes and the strength of competitive rivalry than intermediate factors, such as concentration measures."[10]

This year, again, a review of performance metrics shows that the mobile wireless marketplace is fiercely competitive. As Verizon details below, all aspects of market performance – including rising demand and penetration rates (with a jump in wireless-only households), falling prices, significant network investment, improved service quality and speed, and the race to 5G – demonstrate the robust competitiveness of the mobile wireless marketplace.

Thus, while the breadth of the Commission's marketplace review has expanded with the adoption of RAY BAUM'S Act,[11] its analysis and conclusion should track last year's report. As Chairman Pai observed in February, "[t]he U.S. wireless marketplace is extremely competitive."[12]

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[9] Notably, in light of the new law, the Commission is no longer required to "identif[y] the number of competitors in various commercial mobile services" and "analy[ze] whether any of such competitors have a dominant share of the market for such services." Public Notice at 1 n.3 (quoting the previous version of 47 U.S.C. § 332(c)(1)(C)).

[10] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Sixteenth Report, 28 FCC Rcd 3700, 3732 ¶ 10 (2013) (citation omitted); *see also, e.g.*, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Eighth Report, 18 FCC Rcd 14783, 14812 ¶ 57 (2003) ("it is the totality of the circumstances" – including subscriber growth, average monthly usage per subscriber, prices, and similar factors – "that shows the extent of competition in the growing CMRS industry").

[11] Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, Div. P—RAY BAUM'S Act of 2018, § 401, 132 Stat. 348, 1087-90 (2018).

[12] Remarks of FCC Chairman Ajit Pai at the Mobile World Congress, Barcelona, Spain, at 3 (Feb. 26, 2018), https://docs.fcc.gov/public/attachments/DOC-349432A1.pdf.

II. CONSUMERS ARE BENEFITTING FROM A ROBUSTLY COMPETITIVE MARKETPLACE FOR MOBILE WIRELESS SERVICES.

The mobile wireless marketplace is more dynamic than ever, with mobile data usage exploding, prices dropping, service plan options expanding, billions of dollars in network investment, and innovation from wireless carriers and emerging providers alike promoting an increasingly dynamic consumer experience. Even as consumers demand more from – and rely more on – wireless services, the result is rising consumer satisfaction and increasing consumer loyalty. This is all a direct result of competition. As the American Customer Satisfaction Index ("ACSI") reported, "[T]he wireless industry is a good example of how competition impacts customer satisfaction. When companies fight for customers, prices are competitive, service improves, and customer satisfaction is higher."[13] Abundant marketplace evidence proves that proposition right. According to one analyst, "[W]ireless continues to change and to grow, year after year and this year is no different."[14]

A. Consumers Continue to Benefit from Increasing Usage, Declining Prices, Innovative Offerings, and Massive Investment, All Pointing to a Fiercely Competitive Marketplace.

A review of key performance metrics shows that the mobile wireless marketplace is fiercely competitive.

[13] American Customer Satisfaction Index, ACSI Telecommunications Report 2017, at 8 (May 23, 2017) ("ACSI 2017 Report"), https://www.theacsi.org/news-and-resources/customer-satisfaction-reports/reports-2017/acsi-telecommunications-report-2017.

[14] Jeff Kagan, *Wireless competition should heat up second half of year*, ComputerWorld (July 9, 2018), https://www.computerworld.com/article/3288608/wireless-carriers/wireless-competition-should-heat-up-second-half-of-year.html.

1. Mobile Usage Is Up, Pricing Is Down, and Consumers Continue to Reap More Value For Their Wireless Dollars.

Consumers continue to capture even greater value for each dollar spent as data usage climbs and prices drop. Indeed, the value proposition continues to expand – competitive forces have driven the price per megabyte of data down by 96.6 percent since 2007.[15]

As an initial matter, mobile data usage is significantly up once again: in 2017, total U.S. mobile data traffic reached almost 15.7 trillion megabytes, up 2 trillion megabytes and almost 15 percent from 2016.[16] That is four times more mobile data traffic than the 4 trillion megabytes in 2014, and 40 times more than the 388 billion megabytes in 2010.[17]

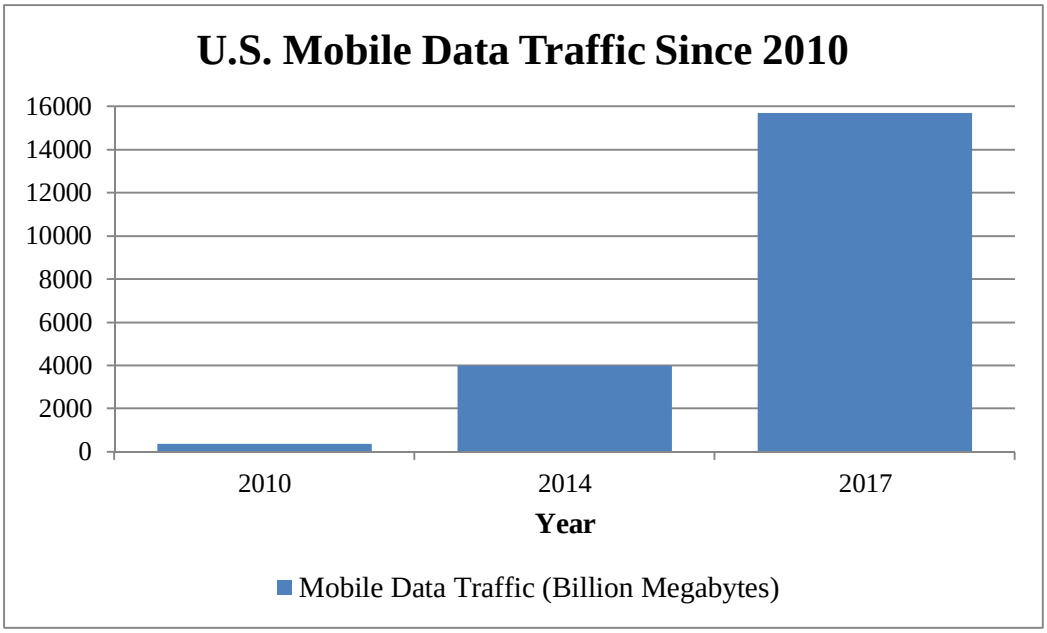

Chart 1. *Overall growth in the amount of U.S. mobile data traffic since 2010 in billions of megabytes.*

[15] CTIA, The State of Wireless 2018, at 15 (2018), https://api.ctia.org/wp-content/uploads/2018/07/CTIA_State-of-Wireless-2018_0710.pdf ("CTIA State of Wireless 2018").

[16] *Id*. at 4.

[17] CTIA, Background on CTIA's Wireless Industry Survey, at 3 (2018), https://api.ctia.org/wp-content/uploads/2018/07/CTIA_ToplineWirelessIndustrySurvey.pdf ("CTIA Wireless Industry Survey"); CTIA State of Wireless 2018 at 4.

In 2017 alone, the typical smartphone user in the United States generated 5 gigabytes of data traffic per month, a 2,844 percent increase from 2010.[18] Today, among mobile Internet users, 89 percent go online daily and 31 percent go online almost constantly.[19] According to a GSMA report, "Engagement among users in the U.S. is consistently higher than the developed world average across all mobile activities."[20] Americans use their mobile devices for paying bills, reading the news, checking the weather, shopping, watching videos, connecting with family and friends via social messaging applications, connecting to health applications, and listening to music, among other things.[21] And Cisco has projected that mobile data traffic per U.S. user will grow at a 35 percent compound annual growth rate at least until 2021, reaching nearly 4.6 exabytes per month.[22]

At the same time, mobile wireless prices fell again since last year, according to two key pricing indicators relied on by the Commission – Average Revenue Per Unit ("ARPU") and the wireless Consumer Price Index ("CPI"). Thus, the mobile wireless value proposition continues to grow, and consumers are capturing even greater value for each dollar spent.

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[18] CTIA State of Wireless 2018 at 5.

[19] Andrew Perrin & JingJing Jiang, *About a quarter of U.S. adults say they are "almost constantly" online,* Pew Research Center (Mar. 14, 2018), http://www.pewresearch.org/fact-tank/2018/03/14/about-a-quarter-of-americans-report-going-online-almost-constantly/.

[20] GSMA, The Mobile Economy: North America 2017, at 11-13 (2017) ("GSMA, The Mobile Economy"), https://www.gsmaintelligence.com/research/?file=b0cf4f71cb2d035f429d9de8ca4fc72e&download.

[21] Sarah Perez, *U.S. consumers now spend 5 hours per day on mobile devices*, TechCrunch (Mar. 3, 2017), https://techcrunch.com/2017/03/03/u-s-consumers-now-spend-5-hours-per-day-on-mobile-devices/.

[22] Cisco, V*NI Mobile Forecast Highlights, 2016-2021, Find highlights based on location and category*, http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/#~Country (last visited July 12, 2018).

According to the Commission, the ARPU metric "is frequently used as a proxy for price" and "for understanding pricing."[23] In 2017, the overall monthly service ARPU dropped below $40 for the first time, to $38.66, a nearly 7 percent decrease from 2016, and 13.5 percent lower than in 2015.[24] These declines are displayed in the chart below:

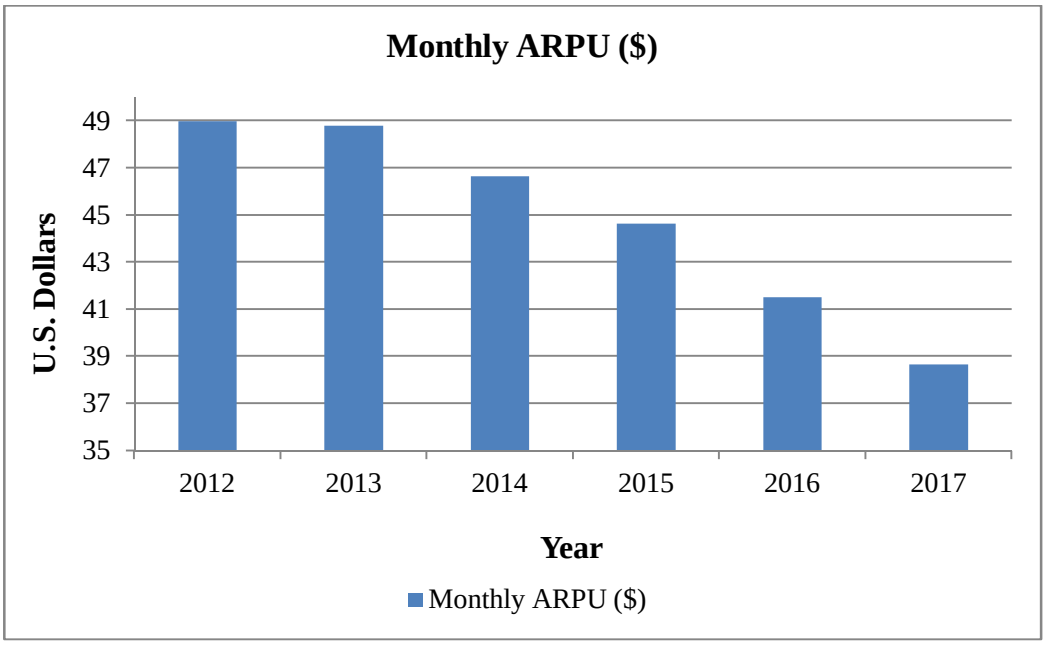

Chart 2. *Overall monthly ARPU change over the last six years in U.S. dollars.*

And in the first quarter of 2018, the postpaid ARPU for the major four carriers continued to drop.[25]

The wireless telephone services component of the CPI also shows that prices continue to fall. Wireless CPI fell 0.5 percent over the past year, even as the general CPI for all goods

[23] *Twentieth Mobile Competition Report*, 32 FCC Rcd at 8972 ¶ 6, 9008 ¶ 59; *see also Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Seventeenth Report, 29 FCC Rcd 15311, 15328 ¶ 36 (2014) (noting that ARPU "has commonly been used in the industry as an overall pricing indicator" and "remains the best such measure currently used by industry and financial analysts").

[24] *See* CTIA Wireless Industry Survey at 2.

[25] Morgan Stanley, *1Q18 Trend Tracker: Better Than Feared*, at 12 (May 22, 2018) ("Morgan Stanley Trend Tracker").

increased 2.9 percent during the same period.[26] In the last two years, since June 2016, wireless CPI has fallen almost 13 percent.[27] Since 2010, wireless CPI has significantly fallen by almost 24 percent,[28] even as the General CPI increased more than 15 percent.[29] The overall and wireless CPI trends over the last eight years are depicted in the chart below:

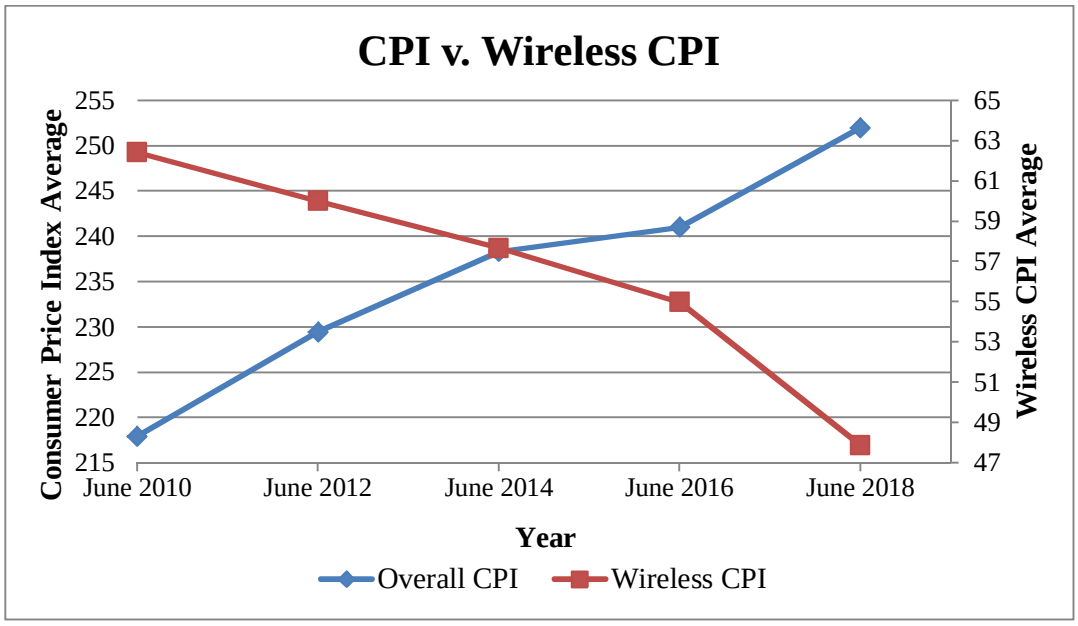

Chart 3. *Overall CPI change over the last eight years contrasted with the isolated wireless CPI over the same timeframe.*

[26] From June 2017 to June 2018, the wireless telephone services component of the CPI declined 0.5 percent while the overall index rose 2.9 percent. *See* News Release, Bureau of Labor Statistics, Consumer Price Index – June 2018, at 8 (July 12, 2018), https://www.bls.gov/news.release/pdf/cpi.pdf (showing increase from 244.955 in June 2017 to 251.989 in June 2018).

[27] U.S. Department of Labor, BLS Beta Labs, BLS Data Viewer, https://beta.bls.gov/dataViewer/view/timeseries/CUUR0000SEED03 (showing a decrease from 54.989 to 47.874 from June 2016 to June 2018).

[28] *Id.* (showing a decrease from 62.423 to 47.874 from June 2010 to June 2018) (Time Period: Start Year 2010; End Year 2018).

[29] U.S. Department of Labor, Databases, Tables & Calculators By Subject, CPI-All Urban Consumers (Current Series) (July 20, 2018), https://data.bls.gov/timeseries/CUSR0000SA0?output_view=pct_1mth (showing increase from 217.965 to 251.989 from June 2010 to June 2018).

As the cost of wireless services has continued to fall, the prices of other consumer services have continued to rise. For example, the cost of transportation has risen approximately 11 percent, cable and satellite television service has risen over 24 percent, medical care has risen over 25 percent, and housing has risen almost 20 percent.[30] With data usage up, and pricing down, the U.S. wireless industry continues to provide enhanced value to consumers.

2. Competition Is Driving Innovative Data Plans and Bundles.

Providers are fiercely competing for consumers by continuing to offer innovative service plans and more expansive bundled offerings. Consumers can choose from many different types of plans, postpaid and prepaid. For example, providers offer a growing array of unlimited data plans:

- Verizon offers three different unlimited plans to appeal to consumers' varying needs and preferences.[31]
- AT&T offers two multiple "Unlimited &More" plans that include a WatchTV service that bundles more than 30 live channels.[32]
- Sprint recently adjusted its unlimited plan offerings to match the various options offered by other carriers.[33]

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[30] U.S. Department of Labor, One-Screen Data Search, CPI-All Urban Consumers (Current Series), https://data.bls.gov/PDQWeb/cu (showing an increase in the seasonally adjusted average for transportation from 189.426 to 210.159 from June 2010 to June 2018, an increase in the seasonally adjusted average for cable and satellite from 373.545 to 466.191, an increase in the seasonally adjusted average for medical care from 388.188 to 486.300, and an increase in the seasonally adjusted average for housing from 216.060 to 257.903).

[31] Patrick Holland, *Verizon, AT&T, T-Mobile and Sprint unlimited plans compared*, CNET (July 2, 2018), https://www.cnet.com/news/verizon-att-t-mobile-sprint-unlimited-data-plan-comparison/ ("CNET, *Unlimited Plans Compared*"); *see also* Verizon, Choose from three Unlimited plans, https://www.verizonwireless.com/plans/unlimited/ (last visited July 25, 2018).

[32] CNET, *Unlimited Plans Compared*; AT&T Wireless & Entertainment, Unlimited &More, https://www.att.com/plans/unlimited-data-plans.html (last visited July 25, 2018).

[33] CNET, *Unlimited Plans Compared*; Sprint, Introducing Unlimited Plus, https://www.sprint.com/en/shop/plans/unlimited-cell-phone-plan (last visited July 25, 2018).

- T-Mobile also has multiple unlimited plans and recently simplified its pricing by folding taxes, fees, and surcharges into one bundled price.[34]
- U.S. Cellular offers two different tiers of unlimited plans for as low as $40 per line.[35]

Not only are carriers offering more unlimited plans, but they are offering more lines and data for lower prices. Verizon, AT&T, and T-Mobile all offer unlimited plans for as low as $70-$75 per month for a single smartphone.[36] Wireless providers have also continued to offer a variety of promotions and specials. For example, Sprint recently offered a "5 for $100" special – or $20 per line – which is approximately 60 percent lower than its April 2017 special of two lines for $90.[37] Similarly, T-Mobile had a promotion earlier this year offering four lines for $140, a decrease of almost 13 percent since its January 2017 offering of four lines for $160.[38]

3. Carriers Are Competing on Many Other Dimensions, Spurring Investment in a Next-Generation Wireless Future.

While carriers are competing aggressively on pricing and plan options, the Commission has rightly recognized that mobile wireless service providers also compete "across many dimensions" other than price,[39] including network performance and coverage, and innovation in technology. As described below, these vectors also point to a robustly competitive marketplace.

Network Investment and Quality. Network performance and coverage are key variables consumers rely on when choosing a service provider. Wireless providers have collectively spent hundreds of billions of dollars improving and expanding their networks to compete for customers

[34] CNET, *Unlimited Plans Compared*; T-Mobile, Cell Phone Plans, https://www.t-mobile.com/cell-phone-plans (last visited July 25, 2018).

[35] U.S. Cellular, Total Plans, https://www.uscellular.com/uscellular/plans/showPlans.jsp?plan-selector-type=voice-messaging&type=plans#listing (last visited July 25, 2018).

[36] CNET, *Unlimited Plans Compared*.

[37] Morgan Stanley Trend Tracker at 10 Exhibit 6.

[38] *Id*.

[39] *Twentieth Mobile Competition Report*, 32 FCC Rcd at 9002 ¶ 47.

– $226 billion over the last 8 years, and $25.6 billion in 2017 alone.[40] In the first quarter of 2018, AT&T and Verizon together spent over $10 billion to enhance their networks.[41]

As providers continue to aggressively deploy 4G and race to deploy 5G, these numbers will only continue to rise. All of the U.S. nationwide carriers "are expected to increase their overall capex in 2018 by 14 percent over last year to $30.5 billion" – the highest investment level since 2014.[42] U.S. providers "will be among the first to launch 5G commercial services," and the North America region is "anticipated to lead 5G uptake" internationally.[43] Indeed, providers are making remarkable investments in infrastructure upgrades to prepare for next-generation wireless and actively deploying cell sites to deepen and extend coverage. By the end of 2017, more than 323,000 cell sites were in operation, an increase of 52 percent over the last decade.[44] The number of small cells is expected to increase substantially in the next few years – from 13,000 in 2017 to 86,000 this year, and up to 800,000 by 2026.[45]

Since 2000, Verizon has invested more than $100 billion in its network infrastructure, and its 4G LTE network continues to be the largest in the industry, covering more than 2.4 million square miles and over 322 million people, or 98 percent of Americans.[46] Even with 5G

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[40] CTIA State of Wireless 2018 at 12.

[41] Mike Dano, *Verizon, AT&T show surprise increase in network spending in Q1*, Fierce Wireless (May 7, 2018), https://www.fiercewireless.com/5g/verizon-at-t-show-surprise-increase-network-spending-q1 (citing Deutsche Bank Research).

[42] *Id*.

[43] Ericsson, Ericsson Mobility Report, at 6, 11 (June 2018), https://www.ericsson.com/assets/local/mobility-report/documents/2018/ericsson-mobility-report-june-2018.pdf ("Ericsson Mobility Report").

[44] CTIA State of Wireless 2018 at 20.

[45] *Id*.

[46] Verizon, Better Matters, https://www.verizonwireless.com/featured/better-matters/ (last visited July 12, 2018).

on the way, Verizon continues to deploy new 4G LTE Advanced technologies that improve data speeds and capacity for consumers across the nation.[47] Verizon has recently accomplished several milestones on this front, including: achieving 953 megabits per second speeds in a real-world deployment in Florida and 1 gigabit per second speeds along with partners Ericsson and Qualcomm; deploying the first end-to-end use of band 48 Citizens Broadband Radio Service ("CBRS") 3.5 gigahertz spectrum in a demonstration; and completing the first trial of Frequency Division Multiplexing ("FDD") Massive Input, Massive Output ("MIMO") technologies using a customer device.[48]

And Verizon is leading the way in 5G and plans to launch fixed 5G services in four markets this year and 5G mobile services in 2019, as further discussed below. This level of investment is driven by competition – a race to the top to build the fastest, most reliable, and most versatile next-generation wireless network – and consumers are the beneficiaries.

Innovation in Technology, the Internet of Things ("IoT"), and More. Separately, U.S. providers are also "leading developments in the IoT ecosystem" and "driving growth in IoT" through their own network developments as well as funding the activities of others.[49] In 2017, the total number of wireless subscriber connections reached over 400.2 million or 120.7 percent of the total U.S. population, up from approximately 395 million in 2016 and 378 million in 2015.[50]

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[47] News Release, Verizon, *Verizon continues industry-leading LTE Advanced network deployments* (July 13, 2018), https://www.verizon.com/about/news/verizon-continues-industry-leading-lte-advanced-network-deployments.

[48] *Id*.

[49] GSMA, The Mobile Economy at 36.

[50] CTIA Wireless Industry Survey at 2.

Of these 400 million connections, the total number of data-only or non-phone-connected devices in the United States surpassed 126 million in 2017, representing a growth of 147 percent since 2013.[51] Many of these devices are IoT devices, such as health and fitness monitors, smart home monitors, or smartwatches.

And we will soon be entering a world of "smart cities" that will be safer, cleaner, more energy efficient, less congested, and more economical. City officials will be able to use low-cost sensors and wireless technology to collect and track vast amounts of information that they can use to reduce air pollution and traffic congestion or develop real-time transit schedules.[52] Smart car convoys and other changes to public transportation and smart metering are expected to lead to an increase of 27 percent in parking revenue and result in fuel savings of 25 percent.[53] Smart grid technology and smart lighting are expected to create benefits as high as $2 trillion over the next 20 years, ranging from economic benefits like improved asset utilization and electricity cost savings to environmental benefits like enhanced energy efficiency to security benefits like reduced wide-scale blackouts.[54] Smart city innovations in public safety such as real-time monitoring of gunshots are expected to reduce gun crime by up to 50 percent.[55] In rural communities, wireless connectivity will enable precision agriculture, which will significantly

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[51] *Id*. at 3.

[52] Verizon, *State of the Market: Internet of Things 2017*, at 10 (2017), https://www.verizon.com/about/sites/default/files/Verizon-2017-State-of-the-Market-IoT-Report.pdf ("Verizon IoT Report").

[53] Accenture Strategy, *Smart Cities: How 5G Can Help Municipalities Become Vibrant Smart Cities*, at 7-10 (Jan. 2017), https://api.ctia.org/docs/default-source/default-document-library/how-5gcan-help-municipalities-become-vibrant-smart-cities-accenture.pdf.

[54] *Id*. at 7 (citing Electric Power Research Institute, *Estimating the Costs and Benefits of the Smart Grid: 2011 Technical Report*, Tbl. 4-5, https://www.smartgrid.gov/files/Estimating_Costs_Benefits_Smart_Grid_Preliminary_Estimate_In_201103.pdf (itemizing these benefits)).

[55] *Id*. at 10.

raise profitability and productivity.[56] Verizon will soon launch fixed 5G in four markets, including Houston, Los Angeles, and Sacramento, and will be a leading provider for smart cities and other IoT innovation.[57]

In short, the wireless industry is leading a technological revolution that has tremendous implications not just for how we communicate, but for how we live. In the words of one industry observer, as a result of innovations such as 5G and the IoT, "this year will likely go down into the history books as the start of an even bigger societal change" than when mobile data traffic eclipsed mobile voice traffic, with 2018 being "a pivotal year for our industry."[58]

B. Increasing Competition from a Variety of Providers Continues to Promote a Dynamic Consumer Experience.

The dynamic consumer experience for wireless services results from diverse participants across the mobile ecosystem – from existing mobile carriers to new entrants and other sources of competition. Companies are continuously exploring innovative business models to develop new platforms and services to attract and retain customers, expanding consumer options and enhancing the mobile experience.

1. Consumers Can Choose from a Diverse Selection of Operators.

The wireless marketplace includes a wide range of providers offering services under a variety of business models. There are 123 facilities-based service providers ranging in size from

[56] *See* CTIA Research Team, Wireless Technology: Outstanding in its (Agricultural) Field, CTIA Blog (June 13, 2018), https://www.ctia.org/news/wireless-technology-outstanding-in-its-agricultural-field.

[57] *See, e.g.*, Verizon IoT Report at 3, 10; *see also infra* Sections III.A-B.

[58] Ericsson Mobility Report at 2.

nationwide to regional to local.[59] And other sources of mobile connectivity provide an assortment of additional alternatives. Key segments of the wireless marketplace, which we describe further below, all contribute to the competitive landscape of the mobile industry.

Nationwide Providers Enhance Service Quality and Compete Intensively. The four "nationwide" providers have networks that cover the vast majority of the country and offer facilities-based service to nearly all Americans. Approximately 99.8 percent of the population is covered by LTE, 98.2 percent of the U.S. population has wireless coverage from three or more service providers, and 93.3 percent of the population has coverage from four or more providers.[60]

Even as providers prepare for 5G, they are busy deploying advanced LTE technologies that support today's unlimited plans and cutting-edge services and operate as a bridge to 5G.

[59] *See* FCC, Industry Analysis and Technology Division, *Voice Telephone Services: Status as of December 31, 2016*, at 10, Table 2 (Feb. 2018), https://docs.fcc.gov/public/attachments/DOC-349075A1.pdf.

[60] *Twentieth Mobile Competition Report*, 32 FCC Rcd at 9019 Chart III.D.1, 9022 Chart III.D.4. Moreover, the percentage of rural areas covered by three or more LTE providers at the end of 2016 was 84.2 percent, up from 64.8 percent at the end of 2014. *Compare id.*, 32 FCC Rcd at 9028 Chart III.D.11, *with Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Eighteenth Report, 30 FCC Rcd 14515, 14544 Chart III.A.5 (2015).

These technologies, which include LTE Advanced (LTE-A),[61] LTE Category M1 (LTE-M),[62] LTE-Licensed Assisted Access (LTE-LAA),[63] and LTE Unlicensed (LTE-U),[64] support faster speeds for consumers, greater capacity, lower latency, and IoT applications.[65] Verizon, AT&T, and T-Mobile, along with new entrant DISH Network, also are deploying narrowband-Internet of

[61] *See* Thompson Reuters Streetevents, Transcript of Verizon Communications Inc. at Morgan Stanley Technology, Media and Telecom Conference 2018, at 5 (Feb. 27, 2018), https://www.verizon.com/about/investors/morgan-stanley-technology-media-telecom-conference-2018 (Matt Ellis, CFO: "We've deployed carrier aggregation, 4x4 MIMO, 256-QAM, getting into massive MIMO and other features. And as you deploy these, they make the LTE network more efficient. You get customers on and off[,] their data sessions [are] faster, [and] it creates more capacity in the network just by adding those technological features."); Chris Teale, *AT&T rolls out '5G Evolution' in more than 100 new markets*, Smart Cities Dive (Apr. 23, 2018), https://www.smartcitiesdive.com/news/att-5g-evolution-markets-waco-atlanta-dallas/521930/; Sprint Corp., Q4 2017 Earnings Call Transcript (May 2, 2018), https://seekingalpha.com/article/4168931-sprint-corporations-s-ceo-michel-combes-q4-2017-results-earnings-call-transcript?part=single (Marcelo Claure, CEO: "We're also well underway rolling out 256-QAM and 4x4 MIMO nationwide to improve the efficiency of our spectrum and drive even faster data speeds. These technologies, combined with three-channel carrier aggregation using 60 megahertz of 2.5 gigahertz spectrum, will enable us to provide consumers with gigabit plus LTE service in more than 100 of the largest markets in the country.").

[62] LTE-M provides scale, coverage and security for customers seeking wireless access solutions for IoT. Last year, Verizon and AT&T launched nationwide commercial LTE-M networks. *See* Chris Donkin, *Verizon Beats AT&T to First US-Wide LTE-M Launch*, Mobile World Live (Mar. 31, 2017), https://www.mobileworldlive.com/featured-content/home-banner/verizon-beats-att-to-first-us-wide-lte-m-launch/; News Release, AT&T, *AT&T Launches Nationwide LTE-M Network for Internet of Things* (May 18, 2017), http://about.att.com/story/att_launches_lte_m_network_a_step_forward_to_5g.html.

[63] *See* Monica Alleven, *T-Mobile to Focus on LAA Rollout in Q1 of 2018*, Fierce Wireless (Nov. 13, 2017), https://www.fiercewireless.com/wireless/t-mobile-to-accelerate-rollout-laa-q1-2018.

[64] *See* Diana Goovaerts, *T-Mobile Lights Up LTE-U in Six Cities*, Wireless Week (June 26, 2017), https://www.wirelessweek.com/news/2017/06/t-mobile-lights-lte-u-six-cities.

[65] *See* Rysavy Research, *LTE to 5G: Cellular and Broadband Innovation*, at 17-18 (2017), http://www.5gamericas.org/files/1915/0282/6623/LTE_to_5G_Cellular_and_Broadband_Innovation_-_Rysavy_for_upload.pdf.

Things (NB-IoT) networks to support a dizzying array of lower-bandwidth applications and devices.[66]

Regional and Local Providers Expand Consumer Choice. Scores of regional and local facilities-based providers help shape the competitive landscape and elevate the consumer experience. Regional carriers like U.S. Cellular and C Spire, the fifth- and sixth-largest facilities-based wireless carriers in the United States, have a substantial market presence and impact. For example, U.S. Cellular provides service in 22 states,[67] operates a 4G LTE network, is deploying VoLTE and fixed wireless services throughout its footprint,[68] and is completing a series of tests on 5G technology.[69] U.S. Cellular also recently won 188 600 MHz licenses, the third-largest number of licenses won by any applicant.[70] C Spire, which is the largest privately held carrier in the country, has aggressively expanded its nationwide 4G LTE capabilities over the

[66] *See* News Release, Verizon, *Verizon carries successful data session on new NB-IoT Guard band network* (Feb. 1, 2018), https://www.verizon.com/about/news/verizon-carries-successful-data-session-new-nb-iot-guard-band-network; News Release, T-Mobile, *T-Mobile Launches Nation's First Plan for Narrowband IoT* (Jan. 8, 2018), https://www.t-mobile.com/news/narrowband-iot; Joan Engebretson, *AT&T NB-IoT Network Will Co-Exist with LTE-M*, Telecompetitor (June 20, 2018), https://www.telecompetitor.com/att-nb-iot-network-will-co-exist-with-lte-m/; Mike Dano, *Ergen's 5G build-out ambitions for Dish could pass $10B*, FierceWireless (May 23, 2018), https://www.fiercewireless.com/5g/ergen-s-5g-buildout-ambitions-for-dish-could-pass-10b.

[67] Telephone and Data Systems, Inc., Quarterly Report (Form 10-Q), at 7 (May 4, 2018), https://www.tdsinc.com/investor-relations/financial-information/sec-filings/sec-filings-details/default.aspx?FilingId=12730079.

[68] *Id.* at 2.

[69] *See* News Release, U.C. Cellular, *U.S. Cellular Expands 5G Tests with Ericsson to 28GHz* (Oct. 24, 2017), https://www.uscellular.com/about/press-room/2017/USCellular-EXPANDS-5G-TESTS-WITH-ERICSSON-TO-28GHZ.html.

[70] *Incentive Auction Closing and Channel Reassignment Public Notice*, 32 FCC Rcd 2786, 2879 App. B (2017) ("*Incentive Auction Winners Public Notice*").

past three years.[71] In early 2018, the carrier unveiled unlimited data plans,[72] and it conducted its own 5G tests over fixed wireless technology.[73] In addition to U.S. Cellular and C Spire, dozens of smaller regional and local facilities-based carriers also continue to drive competition, such as Blue Wireless, Bluegrass Cellular, Carolina West Wireless, Choice Wireless, GCI Wireless, Inland Cellular, SI Wireless d/b/a MobileNation, Southern Linc, Union Wireless, and Viaero Wireless, to name a few.

And some smaller regional and local carriers have partnered with larger carriers to help accelerate deployment of 4G LTE in rural or underserved areas where the cost of building networks previously may have been prohibitively expensive. For example, Verizon has been able to deliver 4G LTE wireless technology to even the smallest towns and rural counties by working with its LTE in Rural America ("LRA") partners, who build and maintain their own high-quality 4G LTE mobile broadband networks using 700 MHz and AWS-1 spectrum leased from Verizon.[74] Verizon's 22 LRA partners use their own brands and have their own customers.

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[71] *See* News Release, C Spire, *#1 Network*, https://www.cspire.com/cms/wireless/no1network/?utm_source=twitter&utm_medium=social&utm_content=ltexpansion. C Spire (under the name of Cellular South Licenses, LLC) also won 11 licenses in the 600 MHz auction. *Incentive Auction Winners Public Notice*, 32 FCC Rcd at 2879 App. B.

[72] *See* News Release, *C Spire debuts Unlimited plan with 4 lines for $25 each a month* (Feb. 10, 2018), https://www.prnewswire.com/news-releases/c-spire-debuts-unlimited-plan-with-4-lines-for-25-each-a-month-300596759.html.

[73] *See* News Release, *C Spire tests leading edge 5G technology for first time in Mississippi today* (Feb. 20, 2018), https://www.prnewswire.com/news-releases/c-spire-tests-leading-edge-5g-technology-for-first-time-in-mississippi-today-300601222.html.

[74] *See, e.g.*, News Release, *Bluegrass Cellular begins rollout of LTE Advanced* (Nov. 18, 2016), https://bluegrasscellular.com/about/news/bluegrass-cellular-begins-rollout-of-lte-advanced ("Bluegrass's 4G LTE expansion is made possible in part through Bluegrass's partnership with Verizon Wireless.").

The LRA program covers more than 226,000 square miles and 2.9 million people in 17 states.[75] As evidenced by industry data that shows that more than 1.5 million additional rural Americans have been covered by mobile broadband over the past five years,[76] these advancements have extended the reach of LTE coverage to rural areas throughout the country and supported the provision of competitive mobile services by regional and local providers.

2. Innovative Players Are Intensifying Competition.

In addition to the facilities-based providers described above, the Commission's competitive analysis should include additional suppliers of wireless connectivity. Emerging rivals offer services and applications that are both substitutes and complements, driving still more competition and choice.[77]

Cable Companies are Leveraging Wi-Fi to Deploy Mobile Broadband Services. Recently, several major cable providers have rolled out "Wi-Fi First" products that leverage consumers' ability to connect to the companies' own extensive Wi-Fi hotspot deployments. As one Charter executive explained, given the company's Wi-Fi routers and hotspot deployments, "We're already a wireless operator today. We're going to have a very attractive MVNO that sits on top. … That allows us to lease the macro tower, which is a minority of the traffic that we

[75] Verizon, Product Responsibility, https://www.verizon.com/about/responsibility/product-responsibility.

[76] CTIA State of Wireless 2018 at 14.

[77] *See, e.g.*, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Thirteenth Report, 24 FCC Rcd 6185, 6198-6204 ¶¶ 12-28, 6249 ¶ 125, 6264-70 ¶¶ 164-76 (WTB 2009) ("*Thirteenth Report*") (describing how many types of service providers contribute to a competitive market, and how they compete on multiple levels, including price, coverage, service quality, speeds, and content).

need."[78] In addition, Comcast and Charter have reportedly conducted tests in the CBRS band as a potential pathway to deploying their own mobile infrastructure,[79] and entered into a joint mobile operating platform deal "that aims to bring scale to the backend systems used for their respective mobile services."[80] Comcast also won 73 licenses in last year's 600 MHz Incentive Auction.[81]

Comcast and Charter are not alone. In November 2017, Sprint and Altice USA announced a multi-year agreement in which Altice will use Sprint's network to provide mobile services to its customers, in exchange for Sprint leveraging Altice's broadband platform to accelerate the densification of its network.[82] Altice has emphasized that this agreement goes well beyond a "light MVNO" model, with Altice building its own wireless core network and controlling more of the customer experience.[83] Similar to Charter and Comcast, Altice is conducting tests in the CBRS band to evaluate whether it can offset payments to facilities-based

[78] *See, e.g.*, S&P Global Market Intelligence, Transcript of Charter Communications Inc. at J.P. Morgan Global Technology, Media and Communications Conference, at 10 (May 15, 2018) (comments of Christopher Winfrey, CFO).

[79] *See, e.g.*, Mike Dano, *Comcast eyes 3.5 GHz CBRS for both fixed and mobile applications, including commercial handsets*, Fierce Wireless (Feb. 15, 2018), https://www.fiercewireless.com/wireless/comcast-eyes-3-5-ghz-cbrs-for-both-fixed-and-mobile-applications-including-commercial (describing tests by both Comcast and Charter).

[80] Jeff Baumgartner, *Charter Unleashes Spectrum Mobile … Without the iPhone*, Light Reading (July 3, 2018), https://www.lightreading.com/mobile/charter-unleashes-spectrum-mobilewithout-the-iphone-/d/d-id/744402.

[81] *Incentive Auction Winners Public Notice*, 32 FCC Rcd at 2875 App. B.

[82] News Release, *Sprint, Altice USA Announce Strategic MVNO Agreement* (Nov. 5, 2017), http://investors.sprint.com/news-and-events/press-releases/press-release-details/2017/Sprint-Altice-USA-Announce-Strategic-MVNO-Agreement/default.aspx.

[83] *See* Amy Maclean, *Wireless Week: Charter Exec Questions Mobile Operators & 5G Launch Plans*, Cablefax (Feb. 28, 2018), http://www.cablefax.com/technology/wireless-week-charter-exec-questions-mobile-operators-5g-launch-plans.

carriers "once its own mobile offering starts to scale up."[84] Altice expects to launch its mobile service during the first quarter of 2019.[85]

Over-the-Top Messaging and VoIP Providers are Exerting Competitive Pressure.

Mobile VoIP technologies and IP messaging platforms are evolving to provide consumers with multiple options to communicate via text, video, and voice chat functionalities.[86] Reflecting the clear trend toward smaller, more personal interactions,[87] consumers are increasingly flocking to Facebook Messenger, Snapchat, WhatsApp, Google Hangouts, GroupMe, Kik, Skype, Discord, and other applications to meet their communications needs.[88] As noted in a recent assessment of the wireless industry, native voice and messaging services are striving to compete with these apps.[89]

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[84] Jeff Baumgartner, *Altice USA Eyes CBRS Small Cell Strategy*, Multichannel News (May 11, 2018), https://www.multichannel.com/news/altice-usa-eyes-cbrs-small-cell-strategy.

[85] *See Altice USA Reports First Quarter 2018 Results*, Business Wire (May 9, 2018), https://www.businesswire.com/news/home/20180509006351/en/Altice-USA-Reports-Quarter-2018-Results.

[86] *See, e.g.*, David Pierce, *Phone Calls Are Dead. Voice Chat Is The Future.*, Wall St. J. (July 8, 2018), https://www.wsj.com/articles/phone-calls-are-dead-voice-chat-is-the-future-1531051200; Josh Constine, *400M people use Facebook Messenger audio and video calling each month*, TechCrunch (Feb. 1, 2017), https://techcrunch.com/2017/02/01/facebook-video-calls/.

[87] *See* Andrew Hutchinson, *Social Media Interactions are Changing – Here's Why That's Important*, Social Media Today (Dec. 22, 2017), https://www.socialmediatoday.com/news/social-media-interactions-are-changing-heres-why-thats-important/513658/.

[88] *See* Statista, *Most popular mobile messaging apps in the United States as of May 2018, by monthly active users (in millions)*, https://www.statista.com/statistics/350461/mobile-messenger-app-usage-usa/ (last visited July 20, 2018).

[89] Laurie Beaver, *How AT&T, Verizon, T-Mobile, and Sprint are overcoming slow user growth amid a fierce price war*, Business Insider (May 18, 2018), http://www.businessinsider.com/the-mobile-carrier-landscape-report-2018-5.

This is especially true with respect to messaging. Although SMS/MMS continues to be popular with consumers,[90] the over-the-top platforms are growing tremendously. For example, in 2016, 60 billion messages per day were exchanged on a global basis over just two messaging apps, Facebook Messenger and WhatsApp, three times more than the global peak of SMS traffic.[91] Flash forward to today, and the number of messages exchanged over Messenger and WhatsApp is now *five times* greater than the high water mark of SMS, with consumers sending 100 billion messages per day over these two apps alone.[92] Needless to say, the popularity of messaging options in particular is transforming how consumers interact with businesses and other entities, further demonstrating how innovative providers and services are competing with more traditional facilities-based providers to deliver ever-increasing benefits to consumers.

C. The Competitive Marketplace Is Driving Rising Consumer Satisfaction.

As carriers fight to win and retain customers in a vigorously competitive mobile ecosystem, overall wireless consumer satisfaction levels remain high – another important signpost of a well-performing competitive market. Surveys of wireless consumer opinion and the low level of customer complaints to the Commission show that wireless competitors are succeeding in their efforts to meet customers' needs and expectations.

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[90] *See* CTIA State of Wireless 2018 at 7 (consumers exchanged 1.77 trillion SMS/MMS messages in 2017). Of note, however, the total number of SMS/MMS messages exchanged by consumers declined by 169 billion on a year-over-year basis. *See* CTIA, *Wireless Snapshot 2017*, at 4 (2017), https://api.ctia.org/docs/default-source/default-document-library/ctia-wireless-snapshot.pdf (consumers exchanged 1.939 trillion SMS/MMS messages in 2016).

[91] Facebook, Inc., Second Quarter 2016 Results Conference Call, at 14 (July 27, 2016), https://s21.q4cdn.com/399680738/files/doc_financials/2016/q2/FB-Q216-Earnings-Transcript.pdf.

[92] *See* Facebook Q1 2018 Results, Earnings Call Transcript (Apr. 25, 2018), https://seekingalpha.com/article/4165992-facebook-fb-q1-2018-results-earnings-call-transcript?part=single.

1. Surveys Consistently Report High Levels of Satisfied Customers.

Consumers are increasingly satisfied with their wireless services – as noted, wireless customer satisfaction is at "an all-time high," according to the ACSI.[93] The ACSI found that in 2017, most carriers posted gains since the previous year and most aspects of the customer experience improved during that period.[94] These increases are consistent with the upward trend in wireless customer satisfaction dating back to the ACSI's first survey in 2004.[95]

Similarly, J.D. Power and Associates ratings show that wireless consumer satisfaction is consistently high. Overall satisfaction with the wireless purchase process has significantly improved over the past several years, with a score of 838 out of 1000 among full-service wireless customers for 2017 (an increase of 35 points since its 2016 findings).[96] Overall satisfaction with wireless customer care also remained high, with a score of 811 out of 1000 among full-service wireless customers and a score of 808 out of 1000 among non-contract customers – increases of

[93] ACSI 2018 Report at 12.

[94] ACSI 2017 Report at 8-9.

[95] American Customer Satisfaction Index, *Benchmarks by Industry – Wireless Telephone Service*, https://www.theacsi.org/index.php?option=com_content&view=article&id=149&catid=&Itemid=214&i=Wireless+Telephone+Service (last visited July 3, 2018).

[96] *Compare* Press Release, J.D. Power, *Smartphones Become Preferred Channel for Buying New Wireless Devices, J.D. Power Finds* (Feb. 15, 2018), http://www.jdpower.com/sites/default/files/2018017_u.s._wireless_purchase_experience_v1.pdf, *with* Press Release, J.D. Power, *Wireless Purchase Experience Satisfaction Increases, Despite Rising Cost of Smartphones and Demise of Device Subsidies, Says J.D. Power Study* (Feb. 18, 2016), http://www.jdpower.com/press-releases/2016-us-wireless-purchase-experience-fs-nc-performance-studies-vol-1 (stating an average ranking of 803 among full-service carriers).

23 and 70 points, respectively, since J.D. Power's 2016 findings.[97] Network quality is also improving – studies by J.D. Power scored 15 problems per 100 calls in 2008, which decreased in 2017 to 11 problems per 100 calls for unlimited data plan customers and 13 problems per 100 calls for customers with data allowances.[98] Just last week, J.D. Power observed, "Overall network quality has improved year over year, reflecting reduced problems in call quality, data quality and texting."[99]

In a study on the importance of customer service, J.D. Power found that "[w]ithout exception, J.D. Power finds a strong relationship across industries between the level of customer satisfaction and demand-side benefits, such as repurchase intent rate."[100] To that end, Verizon has invested heavily in customer service operations to meet customers' needs, with over 1,600 retail locations and 24/7 account access.[101] Customers also may utilize self-serve options,

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[97] *Compare* Press Release, J.D. Power, *Social Media Emerges as Wireless Customer Service Channel of Choice, J.D. Power Finds*, at 3-4 (Jan. 18, 2018), http://www.jdpower.com/press-releases/jd-power-2018-us-wireless-customer-care-performance-studies-vol-1, *with* Press Release, J.D. Power, *Overall Satisfaction with Wireless Carrier Customer Care Increases, as a Shift in Demographics and Usage Patterns Impacts Phone, Online and Retail Store Channels, J.D. Power Study Finds*, at 2 (Feb. 4, 2016), http://www.jdpower.com/press-releases/2016-us-wireless-customer-care-fs-nc-performance-studies-vol-1 (stating an average ranking of 788 among full-service carriers and 738 among non-contract carriers).

[98] *Thirteenth Report*, 24 FCC Rcd at 6286-87 ¶ 214; Press Release, J.D. Power, *Unlimited Data Positively Affects Network Quality, while "Bring Your Own Device" Campaigns Have Negative Effects, J.D. Power Finds* (Feb. 1, 2018), http://www.jdpower.com/press-releases/jd-power-2018-us-wireless-network-quality-performance-study.

[99] Press Release, J.D. Power, *Wireless Network Quality Shows Overall Improvement, J.D. Power Finds* (July 19, 2018), http://www.jdpower.com/press-releases/2018-us-wireless-network-quality-study%E2%80%94vol-2.

[100] J.D. Power and Associates, *Beyond Satisfaction: J.D. Power 2012 Customer Service Champions, Brands That Deliver Service Excellence to Maximize Business Results*, Executive Summary at 3 (Mar. 2012), https://pictures.dealer.com/jdpower/12ea79a70a0d02b7014443193be6f066.pdf.

[101] *See* Verizon, *A clear purpose*, at 2, https://www.verizon.com/about/sites/default/files/Verizon_Fact_Sheet.pdf (last visited July 9, 2018).

including on-line, handset-accessible, or interactive voice response call-in systems, to address their needs.[102] Through such efforts, Verizon and other carriers have generated the high satisfaction rates described above and thereby preserved their customers' loyalty,[103] resulting in a low overall churn rate even though switching costs remain low.[104]

2. Consumer Complaints Are Minimal.

Based upon a review of the Commission's data on informal complaints, wireless-related complaints are extremely low relative to the total number of wireless subscribers. According to data from the Commission's online Consumer Help Center, the number of informal complaints identified as having been filed in connection with wireless service in 2017 represents a minute fraction of the total number of wireless connections – just 0.0279 percent.[105] Put another way, that is just one complaint for every 3,580 wireless connections in the United States. And even that figure is inflated, as it includes complaints relating to issues like robocalling that do not pertain to wireless carrier services or practices but instead focus on unaffiliated bad actors.

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[102] Verizon, Support, https://www.verizonwireless.com/support/ (last visited July 9, 2018).

[103] *See Twentieth Mobile Competition Report*, 32 FCC Rcd at 8984 ¶ 26 (noting that a service provider's churn rate depends on "customer satisfaction with their service provider" among other factors).

[104] CTIA's Wireless Industry Indices Report: Year-End 2017 Results, at 35 (July 2018) ("CTIA 2017 Indices Report") (noting overall monthly churn rate of 1.32 percent in 2017, compared to 2.21 percent in 2016).

[105] FCC, CGB – Consumer Complaints Data (identifying 111,720 informal complaints as filed in connection with wireless service in 2017), https://opendata.fcc.gov/Consumer/CGB-Consumer-Complaints-Data/3xyp-aqkj/data#column-menu (last visited July 16, 2018). CTIA estimates that in the United States there were 400 million mobile wireless connections in 2017. CTIA 2017 Indices Report at 23.

III. CONTINUED U.S. LEADERSHIP ON SPECTRUM AND INFRASTRUCTURE POLICY WILL ENABLE VERIZON AND OTHER U.S. COMPETITORS TO LEAD THE WAY IN THE GLOBAL RACE TO 5G.

The global race to 5G is on, and the competitive and economic benefits of being first are massive. New 5G technologies will stimulate the economy and create millions of jobs. Deploying 5G networks first will put new technology into the hands of American entrepreneurs who will use it to the benefit of countless industries – agriculture, retail, healthcare, automotive, industrial, entertainment, and many more.[106] Consumers will be able to access more information faster than ever before. The impact of 5G on consumers will be enormous – it will transform how cities work, how healthcare is delivered, and how we educate our children.

Of course, the rest of the world knows this too. Other countries are racing to be first in 5G. Verizon commends the Commission for advancing U.S. interests in the race to 5G and urges sustained focus by the Commission on making more spectrum available and reforming infrastructure policy – the two most important levers in the Commission's control for spurring 5G deployment. With the Commission's leadership, the U.S. wireless industry is well positioned to lead in 5G and capture the benefits for American consumers and industries.

A. Across the Globe, There Is Intense Interest in 5G – But the U.S. Can Be First.

The advantages of being the first to deploy next-generation wireless networks are historically tied to tangible economic benefits for the leading nation.[107] The flip side is also true. Evidence shows that the loss of wireless leadership during a technological transition (*e.g.*, from

[106] *See* Verizon, *What is 5G*, https://www.verizon.com/about/our-company/5g/what-5g (last visited July 16, 2018) ("By 2035, 5G will enable $12.3 trillion of global economic output and support 22 million jobs worldwide. Much of that growth will come from the digitization of transportation, agriculture, manufacturing and other physical industries.").

[107] Recon Analytics, *How America's 4G Leadership Propelled the U.S. Economy* at 3 (Apr. 16, 2018), https://ecfsapi.fcc.gov/file/10417556600122/Recon%20Analytics%204G%20Leadership%20Economic%20Report.pdf.

2G, to 3G, to 4G, etc.) has led to economic benefits migrating to other markets – the consequences of which "can be long lasting and hard to overcome."[108] As expected, countries and wireless carriers around the world are competing to be the first to achieve robust 5G networks.[109] To cite just a few of the many examples, in Japan, NTT DoCoMo has been carrying out 5G trials; more generally, Japanese operators are expected to start deploying 5G technology around 2020.[110] GSMA forecasts 5G connections in China will exceed 400 million by 2025.[111] South Korea recently completed an auction for 3.5 GHz and 28 GHz spectrum to be used for 5G, and its mobile operators have announced plans to share the costs to launch a nationwide 5G network.[112] And Vodafone has announced 2020 as its target date for 5G in Australia.[113]

Importantly, in its April 2018 report, Analysys Mason found that China, South Korea, the United States, and Japan were leading the world in 5G readiness – with China ranking highest

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[108] *Id.* at 12; David Abecassis *et al.*, *Global Race to 5G – Spectrum and Infrastructure Plans and Priorities*, Final Report for CTIA, Analysys Mason, at 5 (Apr. 2018), https://ecfsapi.fcc.gov/file/10417556600122/Analysys%20Mason%20Global%20Race%20To%205G%20Report.pdf ("*Global Race to 5G*").

[109] *See, e.g.*, News Release, Telus, *Successful 5G Pilot Places Canada at the Forefront of Global Wireless Innovation* (June 23, 2017), https://www.telus.com/en/bc/about/news-and-events/media-releases/successful-5g-pilot-places-canada-at-the-forefront-of-global-wireless.

[110] Juan Pedro Tomás, *The State of 5G Trials in Japan*, RCR Wireless News (May 3, 2018), https://www.rcrwireless.com/20180503/5g/state-5g-trials-japan-tag23-tag99.

[111] GSMA, *5G in China: Outlook and Regional Comparisons*, at 4-5 (2017), https://www.gsmaintelligence.com/research/?file=67a750f6114580b86045a6a0f9587ea0&download (noting several Chinese companies will begin launching in 2018).

[112] Cho Mu-Yun, *South Korea Completes 5G Spectrum Auction*, ZDNet (June 19, 2018), https://www.zdnet.com/article/south-korea-completes-5g-spectrum-auction/; Juan Pedro Tomás, *South Korean Telcos to Share 5G Network Infrastructure*, RCR Wireless News (Apr. 13, 2018) ("'Our goal is to lead the fourth industrial revolution and to support the early commercialization of 5G technology' said … a senior ICT ministry official."), https://www.rcrwireless.com/20180413/5g/south-korean-telcos-announce-plan-share-5g-network-infrastructure-tag23.

[113] Vodafone, *5G by 2020: The Next Generation* (last visited July 10, 2018) https://www.vodafone.com.au/red-wire/5g-by-2020.

overall, followed closely by the other three nations.[114] Of particular note is that the report concludes that United States has a large mid-band spectrum deficit.[115] But the race is still anyone's to win – and Verizon is doing its part to makes sure the United States prevails.

B. U.S. Companies Are Competing to Deploy 5G, and Verizon Is a Global Leader.

Just as Verizon was the first to launch 4G LTE on a broad scale, it is leading the race to deploy 5G technology in the United States – with plans to be first to market with both fixed and mobile versions of 5G technology. Verizon will launch fixed 5G in Houston, Los Angeles, Sacramento, and one other city in the second half of 2018, and 5G mobile services in 2019. Verizon's imminent 5G rollout will include over 1,000 cell sites, with fixed wireless to start and, as soon as the mobile devices become available, it will move into the mobile environment.[116] This is no accident or stroke of luck; Verizon has been busy preparing for this moment by:

- Performing real-world 5G tests since February 2016, which have successfully demonstrated multi-gigabit per second speeds in both fixed and mobile applications.[117]

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[114] *Global Race to 5G* at 2.

[115] *Id.*

[116] Jeremy Horwitz, *Verizon Promises Fixed 5G for Los Angeles by Q4 2018, Mobile 5G by Q1 2019*, Venturebeat (May 15, 2018), https://venturebeat.com/2018/05/15/verizon-promises-fixed-5g-for-los-angeles-by-q4-2018-mobile-5g-by-q1-2019/; *see also* Barclay, *Verizon: Better Wireless Performance; Tax Reform Boosts Return Profile*, at 3 (Jan. 23, 2018) (stating that today, Verizon has over 200 5G sites on line).

[117] Roger Cheng, *Inside Verizon's Vision of Smokin' 5G Speeds*, CNET (Feb. 21, 2016), https://www.cnet.com/news/verizon-5g-inside-field-test-smokin-super-fast-speeds/ (detailing an in-the-field test of Verizon 5G technology where the "5G connection maxed out at 3.77 gigabits a second, 377 (yes, 377) times faster than a typical 4G LTE connection"); Sue Marek, *Verizon's 5G Tests Hit 10-Gig Speeds, Commercial Deployment in 2017 Possible*, Fierce Wireless (Feb. 22, 2016), http://www.fiercewireless.com/tech/verizon-s-5g-tests-hit-10-gig-speeds-commercialdeployment-2017-possible (noting that 5G tests include both fixed and mobile 5G in both indoor and outdoor environments and at both residential and commercial buildings).

- Launching the 5G Technology Forum ("5GTF") to enable world-class companies to work collaboratively to drive technical standards for 5G.[118] This effort put pressure on standards setting bodies and the industry internationally to accelerate the pace of work.

- Completing 5G radio specifications in mid-2016, the first U.S. carrier to do so.[119]

- Pushing the worldwide 5G ecosystem to accelerate its efforts to establish the industry-wide 3rd Generation Partnership Project ("3GPP") 5G New Radio ("NR") standard in December 2017 – a full year ahead of expectations.[120]

- Working with commercial partners to become the first carrier to make an over-the-air call using the NR standard.[121]

- Completing 5G testing over millimeter wave spectrum with real customers in 11 markets last year that exceeded expectations for speed, latency, distance, and propagation.[122]

- Sponsoring Verizon's 5G incubator at Alley to give 5G thought leaders the opportunity to explore the power and potential of 5G and develop use cases to bring 5G to the real world.[123]

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[118] *See, e.g.*, News Release, Verizon, *Verizon 5G Trials Driving Ecosystem towards Rapid Commercialization* (Feb. 22, 2016); Verizon, *Verizon 5G Technical Forum: Accelerating the Pace of Innovation*, http://www.5gtf.net/ (last visited May 31, 2017).

[119] *See, e.g.*, Verizon 5G TF; Air Interface Working Group; Verizon 5th Generation Radio Access; Physical channels and modulation (Release 1) (Oct. 2016), http://www.5gtf.net/V5G_211_v1p7.pdf.

[120] Verizon, *What It Means to Lead the Race to 5G* (Apr. 25, 2018), https://www.verizon.com/about/news/what-it-means-lead-race-5g ("Verizon, *Lead the Race*"); Samsung, *Mobile Industry Works Together to Deliver Complete 5G System Standard on Time* (June 14, 2018), https://news.samsung.com/global/mobile-industry-works-together-to-deliver-complete-5g-system-standard-on-time.

[121] News Release, Verizon, *Another Step Toward Mobile 5G Service: Verizon, Nokia and Qualcomm Complete First Call Using 3GPP-Compliant 5G New Radio Technology* (Feb. 12, 2018), https://globenewswire.com/news-release/2018/02/12/1339484/0/en/Another-step-toward-mobile5G-service-Verizon-Nokia-and-Qualcomm-complete-first-call-using-3GPP-compliant-5G-NewRadio-technology.html.

[122] *See, e.g.*, Jeff Baumgartner, *Verizon CFO: Volume of Activity from New MVNOs "Relatively Small,"* Multichannel News (Apr. 24, 2018), https://www.multichannel.com/news/verizon-cfo-activity-new-mvnos-relatively-small; Verizon, *Lead the Race.*

[123] John O'Malley, *Alley and Verizon: Bringing 5G Network Technology to Life*, Verizon (July 12, 2018), https://www.verizon.com/about/news/alley-and-verizon-bringing-5g-network-technology-life.

- Acquiring inputs necessary to support 5G, including fiber (from Corning and Prysmian) and fiber networks (from XO and WOW!), to extend its fiber network for wireless backhaul and other uses.[124]

Verizon has also been shoring up its spectrum portfolio for 5G, including through its recent acquisition of Straight Path and Nextlink licenses in the 28 GHz, 29 GHz, 31 GHz, and 39 GHz bands.[125] Verizon plans to rely on its existing spectrum holdings, and in particular its millimeter wave spectrum, to meet its aggressive timeline to launch 5G in the United States. Working with its technology partners, Verizon continues to advance 5G technology and reach important milestones on the path to full deployment, not only in the lab, but in the real world – where it matters most.

Verizon's competitors are also gearing up for 5G. Last year, T-Mobile announced it would use its 600 MHz spectrum for its nationwide 5G rollout, beginning in 2019.[126] Sprint has announced plans to begin providing 5G in 2019.[127] AT&T is currently upgrading its 700 MHz spectrum in preparation for 5G.[128] Although U.S. wireless competitors have different 5G business strategies, all have made it clear that governmental policies are a key ingredient in the race to 5G, and that the Commission should move quickly to free up more spectrum and streamline infrastructure rules.

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[124] *Application of Verizon Communications Inc. and Straight Path Communications, Inc.*, Memorandum Opinion and Order, 33 FCC Rcd 188 (WTB 2018).

[125] *Id.*; *Application of Cellco Partnership d/b/a Verizon Wireless and XO Holdings*, Memorandum Opinion and Order, 32 FCC Rcd 10125 (WTB 2017).

[126] News Release, T-Mobile, *T-Mobile Announces Plans for Real Nationwide Mobile 5G* (May 1, 2017), https://www.t-mobile.com/news/nationwide-5g.

[127] News Release, Sprint, *Qualcomm, SoftBank and Sprint Announce Collaboration on 2.5 GHz 5G* (May 10, 2017), http://newsroom.sprint.com/news-releases/qualcomm-softbank-and-sprintannounce-collaboration-on-25-ghz-5g.htm.

[128] Mike Dano, *AT&T's CEO: After FirstNet Tower Climbs, 5G Will Be A Software Upgrade*, Fierce Wireless (June 21, 2018), https://www.fiercewireless.com/5g/at-t-s-ceo-after-firstnet-tower-climbs-5g-will-be-a-software-upgrade.

C. To Lead in 5G the Commission Should Continue to Unleash Spectrum – Particularly in the Mid-Band – and Modernize Infrastructure Policies to Better Foster Small Cell Deployments.

As Chairman Pai has observed, "[w]hen it comes to 5G, we need to keep the playbook fresh and forward leaning … [because] it's imperative that we remain at the front of the pack."[129] And each of the Commissioners agrees: "the winning playbook" in the race to 5G has two key elements – spectrum and infrastructure.[130] In the past two years, the Commission has taken key steps to advance both of these policy components. We support the Commission's continued efforts to make millimeter wave spectrum available for 5G and urge it to move quickly to make needed mid-band spectrum available for 5G.[131] In addition, the Commission's actions beginning in 2017

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[129] Ajit Pai, Chairman, FCC, *Scoring a Victory for 5G*, FCC Blog (June 20, 2018), https://www.fcc.gov/news-events/blog/2018/06/20/scoring-victory-5g.

[130] *See id.*; Michael O'Rielly, Commissioner, FCC, Remarks before the American Enterprise Institute, at 1 (Apr. 19, 2018) ("Key to [our success] is making sure our wireless providers have large swaths of spectrum, both licensed and unlicensed, along with cell infrastructure builds unlike anything we've seen before."), https://docs.fcc.gov/public/attachments/DOC-350335A1.pdf; Brendan Carr, Commissioner, FCC, Remarks at CTIA's Race to 5G Summit, Washington, DC, at 3 (Apr. 20, 2018) ("As with 4G, we have to focus on two things: spectrum and infrastructure."), https://docs.fcc.gov/public/attachments/DOC-350348A1.pdf; *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd 10988, 11126 (2017) ("*24 GHz Second R&O*") (Statement of Commissioner Jessica Rosenworcel) ("[W]e need to focus as much on the ground as on the skies. Airwaves alone are not enough – no amount of spectrum will lead to better wireless service without good infrastructure.").

[131] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016); *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, 32 FCC Rcd 6373 (2017); *24 GHz Second R&O*, 32 FCC Rcd 10988; *Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services*, Public Notice, FCC 18-43 (rel. Apr. 17, 2018); *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Notice of Proposed Rulemaking, FCC 18-59 (rel. May 10, 2018); *Amendment of Part 90 of the Commission's Rules*, Sixth Further Notice of Proposed Rulemaking, FCC 18-33 (rel. Mar. 23, 2018); *Promoting Investment in the 3550-3700 MHz Band*, Notice of Proposed Rulemaking and Order Terminating Petitions, 32 FCC Rcd 8071 (2017).

to remove barriers to infrastructure deployment are crucial to support next-generation technologies.[132]

1. The Commission Should Move Quickly to Permit Commercial Wireless Use of the 3.7-4.2 GHz Band and Finalize Rules for the 3.5 GHz Band.

Global interest in mid-band spectrum for 5G is intense, and this spectrum – with its relatively large blocks (relative to low band) and favorable propagation characteristics (relative to millimeter wave band) – should prove enormously important to the widespread deployment of 5G. Yet, as Verizon has previously explained, the United States "is facing a mid-band spectrum deficit that could ultimately slow 5G deployment, particularly beyond dense urban areas."[133] Fortunately, the Commission is thinking creatively about solutions that will rapidly unleash mid-band spectrum for 5G.

Currently, the 3.7-4.2 GHz band represents the largest swath of mid-band spectrum that could be used to support 5G. It contains more bandwidth than the Cellular, PCS, AWS-1, AWS-3, 600 MHz, and 700 MHz bands *combined* and is likely to be globally harmonized for mobile broadband, which reduces equipment costs and benefits consumers. Verizon applauds the recent adoption of the *3.7-4.2 GHz Order and NPRM*.[134] Verizon looks forward to commenting on that item and urges the Commission to move quickly to permit commercial wireless use of the band.

Additionally, the 3.5 GHz band is an important tool in the toolkit, especially given the increasing international focus on the band and the benefits of global harmonization for

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[132] *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Report and Order, 32 FCC Rcd 9760 (2017) ("*2017 Infrastructure Order*").

[133] Comments of Verizon, GN Docket No. 18-122 (filed May 31, 2018).

[134] *See Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order and Notice of Proposed Rulemaking, FCC 18-91 (rel. July 13, 2018) ("*3.7-4.2 GHz Order and NPRM*").

equipment costs and other benefits. South Korea and the United Kingdom recently held auctions for mid-band spectrum, and Spain, Australia, and France among others are expected to do so soon.[135] For the most part, nations are licensing mid-band spectrum on a national basis, and for the few that are auctioning regional licenses, those geographic areas are substantially larger than census tracts at issue in the 3.5 GHz proceeding. Verizon reiterates its support for targeted changes to the licensing regime for Priority Access Licenses ("PALs"). License renewability, longer license terms, and larger geographic areas for PALs will promote long-term investment in the band, and the Commission should adopt rules that reflect those changes.[136] Verizon also urges the Commission to move forward with the finalization of CBRS rules and move expeditiously to auction PALs.

Introducing mobile broadband into mid-band spectrum will help secure U.S. leadership in the global race for 5G and continue to spur competition at home as well.

2. The Commission Should Take Additional Steps on Infrastructure Reform to Speed 5G Deployments.

The second part of the winning playbook is infrastructure reform because, as Chairman Pai stated, "[b]y making it quicker and cheaper to attach to poles, we can accelerate network buildout."[137] Gaining the ability to deploy small cells on a reasonable and timely basis is one of the biggest challenges facing providers. To that end, in 2017, the Commission initiated a

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[135] *See* David Abecassis *et al.*, *Mid-Band Spectrum Geographical Licensing Approaches*, Final Report for CTIA, Analysys Mason, at 2-3 (July 2018), attached to Letter from Scott K. Bergmann, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 17-258 *et al.* (filed July 9, 2018).

[136] While we recognize that there is no optimal geographic size for all bidders, it is generally easier to disaggregate down in a secondary market than to aggregate up to a desired size at auction. *See* Reply Comments of Verizon, GN Docket Nos. 17-258, 12-354 (filed Jan. 29, 2018).

[137] Chairman Ajit Pai, *Coming Home*, FCC Blog (July 11, 2018), https://www.fcc.gov/news-events/blog/2018/07/11/coming-home.

proceeding to assess whether localities' siting regulations were hindering the deployment of infrastructure needed for 4G and, soon, 5G.[138] The resulting record demonstrated that, while some localities are cooperatively working with providers and applying reasonable siting rules, many others are enforcing costly and burdensome requirements that delay and impede needed investment. These obstacles include excessive and discriminatory siting fees, protracted delays of many months or years in approving siting permits, and onerous prohibitions or restrictions on where and how facilities can be deployed. As Verizon recently advised the Commission, "Given the finite nature of capital budgets and the need to manage expense budgets, the resulting higher costs mean fewer resources are available for network infrastructure deployment in other parts of the country. Similarly, local permitting delays continue to stymie deployments."[139]

Commission leadership in addressing these issues is critical. In its *2017 Infrastructure Order* and *2018 Second Infrastructure Order*, the Commission made substantial progress on removing legacy barriers to infrastructure deployment and streamlining requirements for small cell deployments.[140] But, as the Commission is well aware, more should be done to assure that as wireless carriers are aggressively deploying 5G, their progress is not hindered by costly and burdensome barriers to deployment.

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[138] *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Notice of Proposed Rulemaking and Notice of Inquiry, 32 FCC Rcd 3330 (2017).

[139] Letter from Katharine R. Saunders, Verizon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 17-79, at 2 (filed June 21, 2018).

[140] *2017 Infrastructure Order*, 32 FCC Rcd 9760; *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Second Report and Order, WT Docket No. 17-79, FCC 18-30 (rel. Mar. 30, 2018) ("*2018 Second Infrastructure Order*").

To that end, the recently released *Draft Third Infrastructure Order* is a welcome next step.[141] In particular, Verizon strongly supports a "one-touch make-ready" ("OTMR") framework that will allow attachers, as well as pole owners, the option to use pole-owner-approved contractors to coordinate and do all work to add a new attachment. While Verizon continues to support OTMR for complex make-ready work, the regime in the *Draft Third Infrastructure Order* will speed fiber and small-cell deployment for simple make-ready work. As one of the few broadband providers with experience both as a pole owner and as a wireline and wireless attacher to other companies' poles, Verizon knows firsthand that America needs practices and processes that will increase the speed and efficiency for getting new broadband facilities out in the field. Similarly, the conclusion in the draft order that Section 253 of the Communications Act bars state and local siting moratoria will remove one of the most troublesome obstacles to wireless broadband deployment.

The Commission should continue to address state and local barriers to small cell deployment by: (1) using its authority under Sections 253 and 332(c)(7) of the Communications Act to bar state or local actions that erect substantial barriers to wireless facilities deployment (such as denial of access to state and local rights-of-way and municipal poles); (2) declaring that fees for access to rights-of-way and municipal poles that exceed cost violate Sections 253(a) and (c); and (3) adopting a 60-day shot clock for acting on small cell applications and to deem applications granted when the applicable Section 332(c)(7) shot clock expires without action.[142]

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[141] Draft, *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Third Report and Order and Declaratory Ruling, WC Docket No. 17-84, WT Docket No. 17-79, FCC-CIRC1808-03 (rel. July 12, 2018) ("*Draft Third Infrastructure Order*").

[142] *See, e.g.*, Letter from Andre J. Lachance, Verizon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 17-79, WC Docket No. 17-84, at 1 (filed June 22, 2018).

These actions will go far in fostering 5G deployment and delivering U.S. industry investment and innovation to consumers and industries alike.

IV. CONCLUSION

In light of the data above demonstrating the vibrant market for mobile wireless services, the Commission should find, for purposes of its Communications Marketplace Report, that the mobile wireless marketplace continues to be robustly innovative and competitive.

Respectfully submitted,

/s/ Leora Hochstein

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