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

In the Matter of	)	
	)	
Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorization	)))	WT Docket No. 18-197
	)	

COMMENTS OF KIM KEENAN

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Introduction

Based on my background in civil rights and telecommunications, I submit[1] these comments to highlight the importance of prepaid calling services to underserved communities. As the former General Counsel of the NAACP, I witnessed firsthand how countless Americans across the Nation would have no connection to the internet or to telecommunications services but for the existence of widespread prepaid calling services. This market is key to ensuring that everyone has access to the power of broadband communications.

I. PREPAID CALLING SERVICES ARE AN IMPORTANT SEGMENT OF THE BROADBAND MARKET AND ARE ESPECIALLY IMPORTANT TO UNDERSERVED COMMUNITIES

These comments are filed in response to the applications filed by T-Mobile US (T-Mobile) and Sprint Corporation (Sprint, together with T-Mobile, hereinafter the "Applicants") under Sections 214 and 310(d) of the Communications Act of 1934, as amended (the Act),[2] (collectively, the Merger, including T-Mobile's petition for a declaratory ruling to permit foreign ownership in excess of the statutory benchmark in Section 310(b) of the Act).[3]

At the outset, I take no position on whether the Commission should approve the Merger. I submit these comments, however, to highlight the significant impact that the Merger, as currently structured, would most likely have on the market for prepaid calling services – a market which is particularly important in several communities, including communities of color,

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[1] My professional affiliation is EVP Marketing & Research and General Counsel of Odyssey Media, an international communications and marketing company that connects influential multicultural women to world-class business programs and high-impact networking events. I formerly served as President and CEO of Multicultural Media, Telecom & Internet Council (MMTC). Prior to MMTC, I served as General Counsel and Secretary of the NAACP, the oldest, the largest, and most recognized grassroots civil rights organization in the world and was responsible for the national litigation strategy of the organization. I have also served as principal of my own law firm and in the litigation practices of two nationally recognized law firms as well as serving as a Senior Adjunct Professor at the George Washington University Law School and as past president of the District of Columbia Bar and President of the National Bar Association, the oldest and largest coalition of African-American lawyers, judges, law professors.
[2] 47 U.S.C. §§ 214, 310(d).
[3] 47 U.S.C. § 310(b).

lower-income consumers, and consumers with limited credit options. The Commission has taken great interest in mobile broadband in support of the urgent goal of making high-speed broadband easily accessible to all Americans.

Regrettably, it is extremely difficult for outside parties to estimate the precise impact of the Merger on the market for prepaid calling services because neither the companies' initial filing, nor a statement of T-Mobile Chief Executive Officer John Legere to the U.S. Senate,[4] nor subsequent responses for the record included detailed plans for prepaid calling services. This is also true for the future of the brands under which Applicants currently offer prepaid services. Strictly, of course, the parties do not need to file these details publicly; the Commission's provisions for review of commercially sensitive material outside the public record are both sound and appropriate.

Nevertheless, clearly the Applicants – who together own Boost, MetroPCS, and Virgin Mobile USA – are each significant players in that market and together would become even more powerful if the Merger is approved. Even without access to commercially sensitive data, it is clear that the effects of the Merger on the prepaid calling services market are likely to be profound. Taking the raw numbers alone, as *USA Today* reported, "T-Mobile has 20.9 million prepaid users, most on MetroPCS, and Sprint has 9 million, most on Boost Mobile."[5] By any standard, this is a large segment of American consumers, one that warrants significant attention. Reuters, citing data from Standard & Poor's, reported that if the Merger is approved the

[4] U.S. Senate, Committee on the Judiciary, Subcommittee on Antitrust, Competition Policy, and Consumer Rights, "Game of Phones: Examining the Competitive Impact of the T-Mobile – Sprint Transaction," June 27, 2018; available at https://www.judiciary.senate.gov/meetings/game-of-phones-examining-the-competitive-impact-of-the-t-mobile_sprint-transaction.

[5] Rob Pegoraro, "Could the Sprint-T-Mobile merger mean higher bills for Boost or MetroPCS customers?" *USA Today*, May 11, 2018, available at https://www.usatoday.com/story/tech/columnist/2018/05/11/sprint-t-mobile-merger-make-your-boost-metropcs-bill-higher/587179002/.

combined company would have 54 percent of the prepaid calling services market.[6] This significant level of market power, combined with a reduction in the number of options available to consumers, principally low-income consumers, would, according to basic economics, be more likely to give Applicants the ability to raise prices in that market, harming economically-challenged consumers.

In particular, T-Mobile has been reluctant to commit itself publicly on the question of price for prepaid wireless services but merely states that "New T-Mobile will have powerful incentives to take advantage of our greater network capacity and lower costs per unit provided by its new 5G network – to provide MetroPCS and Boost customers with the best service at a low price."[7] At the same time, however, the Applicants expect to derive significant cost savings from the Merger.[8] The result is uncertainty for consumers in the prepaid market; it is therefore reasonable to give more careful examination to the Merger's impact in this area.

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[6] Sheila Dang and Diane Bartz, "Poorest U.S. consumers seen hit hard by T-Mobile, Sprint merger,' Reuters, May 2, 2018; available at 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 ("While AT&T and Verizon dominate the U.S. wireless market overall, T-Mobile is the most popular among customers who make less than $75,000 per year, and Sprint's pre-paid brand Boost counts 83 percent of its users in that income range, according to data from Kagan, S&P Global Market Intelligence data. T-Mobile has 38 percent of the U.S. pre-paid market, while Sprint has 16 percent, which would give the combined company 54 percent, according to S&P."). Another estimate of the combined company's share of the prepaid calling services market comes from investor Peter Addington, who puts it at 40 percent, *see* James Langford, "Boost founder: T-Mobile-Sprint merger would kill prepaid wireless market," Washington *Examiner*, June 12, 2018, available at https://www.washingtonexaminer.com/business/boost-founder-t-mobile-sprint-merger-would-kill-prepaid-wireless-market.

[7] "Q. Will you commit to not raise prices on prepaid plans as a result of the merger? A. After the merger, prepaid customers will pay less and get more on the best 5G network – just like our postpaid customers. The success of the MetroPCS brand is owed to our focus on providing excellent service and value to our MetroPCS customers. Churn in the prepaid segment is very high. In this fiercely competitive space, New T-Mobile will have powerful incentives to take advantage of our greater network capacity and lower costs per unit provided by its new 5G network – to provide MetroPCS and Boost customers with the best service at a low price." John Legere, Questions for the Record, July 11, 2018, available at https://www.judiciary.senate.gov/imo/media/doc/Legere%20Responses%20to%20QFRs.pdf

[8] "The 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 . . . These merger synergies also will free up financial resources that can be invested into improving customer care, and expanding or enhancing business segments, such as in-home broadband, consumer and business IoT, business, and rural market segments." New T-Mobile, "Description of Transaction, Public Interest Statement, and Related Demonstrations," July 18, 2018, available at https://ecfsapi.fcc.gov/file/1061884849864/Joint%20Domestic-Intl%20214%20Application%20061818.pdf. The absence of a reference here to "enhancing" the prepaid wireless services market is notable.

The concerns about the interrelationship of Sprint and T-Mobile in the market for prepaid calling services go back several years, at least to T-Mobile's purchase of Metro PCS in 2012.[9] The likely impact would be borne not just by customers of Boost, MetroPCS, and Virgin America USA alone but extend to all consumers and other participants in the market. Because of the complicated nature of the market, the Merger would almost certainly impact resellers in the prepaid market as well as the large number of independent wireless dealers across the country, many of which are in low-income neighborhoods and serve important roles by offering convenient and affordable access to wireless broadband.[10]

Instead of detailed plans or reassurances on the future of prepaid calling services if the Merger is approved, the Applicants, particularly T-Mobile as the surviving corporation, have focused instead on the "Un-carrier" model – and in fact linked this to the prepaid market. As T-Mobile's CEO responded to the Senate, "our revolutionary Un-carrier approach to our postpaid and prepaid offerings and services – eliminating contracts, providing unlimited data, and making overages a thing of the past – has made prepaid and postpaid offerings essentially the same product. Today, the only major difference between our postpaid and prepaid customers is when

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[9] See Brooke Sutherland and Scott Moritz, "Sprint Left Behind as MetroPCS Joins T-Mobile: Real M&A," Bloomberg, Oct. 3, 2012, available at http://www.bloomberg.com/news/print/2012-10-03/sprint-behind-as-t-mobile-talks-to-metropcs-real-m-a.html ("Deutsche Telekom AG (DTE)'s plan to merge its T-Mobile USA division with MetroPCS (PCS) Communications Inc. is leaving Sprint Nextel Corp. (S) behind again. "A combination with MetroPCS will give T-Mobile USA an additional 9.3 million prepaid customers, bringing it closer to No. 3 Sprint, which had 56.4 million subscribers, according to data from Sanford C. Bernstein & Co."At that time it was speculated that ". . . Sprint could try to preempt a combination by making a rival offer for MetroPCS, said Wall Street Access' Burnett." "Sprint might try to break up the party before it becomes a party," Burnett said.")

[10] "These prepaid and resold services have allowed many customers to lower their bills by buying only the level of data they need; some also rank higher in customer-satisfaction surveys than these carriers' own subscription services. Weaving together Sprint and T-Mobile's networks could upgrade those services, but the combined company could also choose to consolidate its own prepaid brands. Meanwhile, resellers—in trade jargon, MVNOs, short for "mobile virtual network operators"—that now offer service from both firms would find themselves tied to one." Rob Pegoraro, "Could the Sprint-T-Mobile merger mean higher bills for Boost or MetroPCS customers?," *USA Today*, May 11, 2018, available at https://www.usatoday.com/story/tech/columnist/2018/05/11/sprint-t-mobile-merger-make-your-boost-metropcs-bill-higher/587179002/

they pay; otherwise T-Mobile and MetroPCS customers operate on the same network, receive the same high-quality service, and all enjoy low prices."[11] Applicants therefore seem willing to discuss price – an aspect of the prepaid market which touches low-income consumers more deeply – but do not commit as to what "low prices" actually means for this vulnerable segment of broadband users.

Of course, it is not the Commission's role to opine on corporate strategies. It is the Commission's role, however, to determine whether a proposed transaction will serve the public interest, convenience, and necessity, including "whether granting the application could result in public interest harms . . . Competition, diversity, localism, and encouraging the provision of advanced services to all Americans are among the principal objectives of the Act."[12]

This implies the Commission must determine the likely effects of a proposed merger on all markets or submarkets affected by it, including seeking more data from the parties, under protective orders if necessary. Only in this way can the Commission ensure that its examination of the prepaid calling services market meets the rigorous public interest standard of Section 310 of the Act.

While the Merger implicates each of the public interests cited by the Commission as among those demanding examination in merger review, the impact on competition and economically-vulnerable households presents most profoundly.[13] It is reasonable to assume, at

[11] John Legere, Questions for the Record, July 11, 2018, available at https://www.judiciary.senate.gov/imo/media/doc/Legere%20Responses%20to%20QFRs.pdf

[12] "Frequently Asked Questions About Transactions," https://www.fcc.gov/reports-research/guides/mergers-frequently-asked-questions, citing to 47 U.S.C. § 310(b).

[13] "Thirty-one percent of Americans with an annual household income of less than $30,000 are smartphone-only internet users, more than three times the share among those living in households earning $75,000 or more per year (9%). According to the research center, this phenomenon is also notably more prevalent among African-Americans and Hispanics than among Caucasian Americans." Phil Britt, "Pew: Smartphone-Only Homes Grow, Now 1 in 5 Use Smartphones Exclusively for Internet Access," Telecompetitor, May 1, 2018, available at https://www.telecompetitor.com/pew-smartphone-only-homes-grow-now-1-in-5-use-smartphones-exclusively-for-internet-access/

the outset, that many low-income households rely on prepaid calling services and that many of these families obtain prepaid calling services from one of the Applicants. All participants in the market are impacted – and competition is reduced – by the presumed reduction of one operator, assuming that Boost and MetroPCS will no longer actively compete against each other. This is obviously true of the Merger itself, by virtue of Sprint and T-Mobile no longer competing with each other, which will also impact those who participate in the prepaid services market as resellers. Yet, if the Merger is approved, the extent to which T-Mobile has formally committed itself is that "[w]e will maintain our commitment to prepaid customers through our nationally recognized brands and continue to provide the best service at a low-price, and T-Mobile has no plans to leave the pre-paid space."[14]

Whether *brands* will disappear after the merger is less important than the actual economic reality that a *network operator* – presumably fully integrated post-merger – would disappear as both a predicted and natural outcome of the merger. As one commenter noted, resellers would "find themselves tied to one," not two firms.[15] So, too, would individual consumers, who would lose an important competitive option. Almost by definition, this would have negative effects on competition. Robust competition in the prepaid space and for prepaid users is vital to ensure the Commission's goal of easy and affordable access to fast broadband for all Americans.

II. ECONOMIC ANALYSIS SHOWS THE IMPORTANCE OF PREPAID CALLING SERVICES AND DEMANDS FURTHER INVESTIGATION BY THE COMMISSION

[14] "Q. What concrete protections can you commit to for your prepaid customers? A. We will maintain our commitment to prepaid customers through our nationally recognized brands and continue to provide the best service at a low price, and T-Mobile has no plans to leave the pre-paid space." John Legere, Questions for the Record, July 11, 2018, available at https://www.judiciary.senate.gov/imo/media/doc/Legere%20Responses%20to%20QFRs.pdf

[15] Pegoraro, op. cit, fn. 10.

As discussed above, various voices have highlighted the importance of the customer base for prepaid wireless calling services and how it differs from wireless customers as a whole. The reality is that many participants in this market are more subject to economic vulnerability and are highly sensitive to price increases. It clearly follows that the loss of a provider for this segment of the wireless market will have predictable negative and potentially detrimental consequences that the Commission must consider and address in its merger review. This may include additional protections offered by the Applicants or, if such protections are not offered or satisfactory, then the issue must be addressed by the Commission itself.

By definition the reduction of one operator would almost certainly lead to an increase in market concentration, a key factor in antitrust review. Higher market concentration generally permits a greater ability to raise prices, thus harming consumers. However, equally important is the decline in competition which reduces the pricing discipline that would otherwise be provided by a highly competitive market.

Beyond these basic conclusions supported by antitrust economics, this transaction poses additional difficulties which the Commission should investigate. In particular, would the combined company be able to exert pricing pressure on resellers, to the detriment of consumers? Would the combined company have a negative impact on independent sellers of wireless services, to the detriment of those businesses and also to consumers who would lose a competitive option for the purchase of wireless services? And would the combined company maintain its current levels of commitment to the prepaid market or not?[16]

[16] See supra, fn. 14.

A recently published paper[17] from Dr. Anna-Maria Kovacs, Visiting Senior Policy Scholar at the Georgetown Center for Business and Public Policy (attached as Appendix A), highlights several of the challenges the Commission faces as it considers the impact of the Merger.

Dr. Kovacs includes in her analysis an estimate of the current market share (total wireless connections) of the leading facilities-based wireless providers. Considerations of the prepaid market and Lifeline customers figure prominently in this estimate. As she notes, “Sprint and T-Mobile serve Lifeline customers, the former both as prepaid and as wholesale and the latter as wholesale customers, but have excluded them from their reported customers since mid-2017 while still including the revenues. Ignoring roughly 10.6 million connections that are being served by the two providers and whose revenues are included is a major distortion, so we have adjusted for it.”[18] Doing so gives an estimate for the combined company’s *total* market share of 31.4 percent.

With respect to the wireless prepaid market, she concludes that “Were Sprint and T-Mobile to merge, their combined share would be by far the largest, at 43% of the market.”[19] This far exceeds the share of the current largest company in the market, the reseller TracFone (a fact which shows once again why the Commission must examine carefully the impact of the Merger on all market participants, including resellers, such as TracFone, which, for example, has lost up to 3.9 million subscribers in the period since December 31, 2016.[20])

[17]Anna-Maria Kovacs, “Competition in the U.S. Wireless Services Market,” August 2018, available at http://cbpp.georgetown.edu/sites/cbpp.georgetown.edu/files/Policy%20Paper%20-%20Kovacs%20-%20Wireless%20Competition%202018-08.pdf.
[18] Id/ at 5
[19] Id. at 6. “The only numbers that we adjusted here are those of Sprint, to whose prepaid connections we added back its prepaid Lifeline customers.” Id. at 7.
[20] Id. at 8.

From the foregoing analysis, as supplemented by Dr. Kovacs' important estimates of the combined companies' power in both the total wireless services market and particularly in the prepaid wireless services market, several conclusions resonate even in the absence of complete data. First, at the outset, the Applicants have placed great emphasis on their estimated cost savings and synergies from the Merger.[21] It is clear that the prepaid wireless services market is an important part of the Applicants' business and a source of significant revenue. Second, given that the Applicants expect large increases in revenue, the issue naturally arises as to the extent to which the burden of revenue increases will fall on customers in the prepaid market, who in many cases are ill-prepared to pay higher costs for wireless service. Third, If the Applicants do not believe that the cost savings and revenue increases will come at the expense of prepaid customers, they should be willing to give assurances to that effect. Finally, if they cannot identify sources of new revenue outside the prepaid market, then it seems likely that prices will increase and consumers will be harmed. Ultimately, it all boils down to what assurances the Applicants can give – or should the Commission expressly require more than the previously stated generalizations regarding the prepaid market?

III. CONCLUSION

For the foregoing reasons, I urge the Commission to carefully review the market for prepaid calling services, including, if necessary, requesting additional confidential data from the

[21] "the success of the MetroPCS integration provides a good indication of what will occur in the New T-Mobile migration plan—the cost savings were ahead of schedule, the synergies achieved were better than expected, and the MetroPCS customer base doubled in the 4.5 year period since the transaction. As we will utilize many of the same tools and team for the migration of the Sprint customer base, I am confident we will again deliver on the cost savings, synergies, and timing for this proposed transaction." New T-Mobile, "Description of Transaction, Public Interest Statement, and Related Demonstrations," July 18, 2018, available at https://ecfsapi.fcc.gov/file/1061884849864/Joint%20Domestic-Intl%20214%20Application%20061818.pdf, at 37-38.

parties and conducting a thorough analysis of any such data, before reaching its public interest decision under section 310(d) of the Act regarding the Merger. The Commission could consider requiring further assurances from the Applicants regarding this critical market. Too many Americans' easy and affordable access to broadband is at risk for the Commission to act without a thorough and thoughtful investigation of this market in the context of the Merger. The Commission has an opportunity here to continue the path forward to affordable broadband access for all.

APPENDIX A

Competition in the U.S. Wireless Services Market

Anna-Maria Kovacs, Ph.D., CFA

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Competition in the U.S. Wireless Services Market

Anna-Maria Kovacs, Ph.D., CFA

Executive summary

Americans rely increasingly on wireless service, with more and more households becoming wireless-only. Indeed, our appetite for wireless devices and usage appears insatiable, with wireless connections continuing to increase despite a penetration rate of over 120%. Driven by video as well as a host of new applications, usage and traffic are projected by Cisco VNI and L.M. Ericsson to grow explosively over the next few years. Migration to 5G, the next generation of wireless technology, will provide the improvements in capacity and quality that those applications will require. Capital investment by the wireless industry, which totaled $25.6 billion in 2017 and $514.6 billion over the life of the industry, has funded prior technology transitions and is expected to fund the migration to 5G. Beyond the investment the carriers make in the industry is the broader impact on the American economy. Accenture estimates that the wireless industry supports 4.7 million jobs across the economy and contributes $475 billion to GDP.

As the Federal Communications Commission (FCC) found in its *Twentieth Wireless Competition Report*, there is effective competition in the wireless market. Data from the Bureau of Labor Statistics (BLS) show falling prices. The annual survey conducted by CTIA shows falling average revenue per unit (ARPU). Our own analysis of the ARPU of publicly reporting wireless carriers also shows decreasing ARPU. Our analysis also shows that market share is shifting, with the vast majority of retail net adds in the last three and a half years captured by T-Mobile.

Whether this vibrant competition will be helped or harmed by the proposed merger of Sprint and T-Mobile depends on the merger's overall impact on competition in light of Sprint's disappearing as a separate competitor. The financials that are presented in the registration statement filed by T-Mobile on July 30th at the Securities and Exchange Commission (SEC) provide several approaches to that issue and raise some interesting questions.

Characteristics of wireless use and investment

The U.S. Wireless market is integral to the lives of individual Americans and to its economy. American households increasingly rely on wireless as their primary means of communication. According to the Centers for Disease Control and Prevention's latest *Wireless Substitution* report, for the second half of 2017, 53.9% of American households are wireless-only and another 36.9% use it even though they have a landline.[1] The wireless-only rate is even higher for households with children, 61.8%. Among adults, the highest rates of wireless-only adoption are for those in Hispanic or Latino households at 65.6%. Of those between ages 25-29, 75.6% live in wireless only-households, in contrast to 26.4% of those aged 65

[1] Stephen J. Blumberg, Ph.D., and Julian V. Luke, *Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July – December 2017*, Centers for Disease Control and Prevention, June 2018, pp. 5-7.

or older. By household structure, 77.5% of unrelated adults living in a household with no children are in wireless-only households. They are also more likely to be renters at 72% than owners at 44.6%. Another indicator is poverty, with 68.1% of adults in wireless-only households characterizing themselves as poor. The urban v. non-urban divide is narrowing, with 53.9% of adults in wireless-only households living in metropolitan areas v. 49.3% in non-metro areas. Just three years ago, in the second-half of 2014, only 37.6% of non-metro households were wireless only.

Collectively, according to CTIA, there are 400.2 million subscriptions for mobile wireless from a population of 331.5 million Americans.[2] Although that indicates a penetration rate of 120.7%, the market is clearly not saturated, since penetration has continued to rise since 2012, when it first reached 100%. While the majority of the connections in 2017 were smartphones--273 million smartphones, up 4.2% from 262 million in 2016, ownership of data-only devices is growing far more rapidly.[3] In 2017, there were 126.4 million data-only devices, up 19.6% from 105.7 million in 2016.[4] Cisco VNI expects that growth to continue, estimating that by 2021 there will be 1,014 million mobile-connected devices, for a 300% penetration rate.[5]

Traffic over U.S. wireless networks is growing rapidly, especially data traffic, which grew 14.3% in 2017, reaching 15.7 trillion megabytes.[6] That equates to average usage per month of 5.1 gigabytes per data-capable device, with smartphones averaging 3.3 gigabytes per month.[7] Another way of looking at the figure is that adults spend an average of 3.3 hours per day using their mobile devices, according to Mary Meeker.[8] L. M. Ericsson expects traffic per smartphone to reach nearly 50 gigabytes per month by 2023.[9] Cisco VNI projects total U.S. data traffic to reach 5.9 exabytes per month by 2021, with 8% of that M2M.[10] The key driver of data traffic is video, which is expected to reach 4.6 exabytes per month in 2021 and amount to 76% of mobile data traffic, up from 0.9 exabytes and 64% of traffic in 2016.[11]

Such rapid growth takes a high level of capital investment. In 2017, U.S. wireless carriers invested $25.6 billion, bringing cumulative industry capex investment to $514.6 billion.[12] One way that investment manifests itself is in new cell sites. In 2017, the U.S. wireless carriers added 15,114 cell sites, reaching a total of 323,448 by year-end. The industry is moving more and more from traditional macrocells toward small cells as it begins the transition to 5G, the fifth generation of wireless technology. 5G will be able to use higher frequency spectrum, which travels shorter distances than low frequency but can be made available by the FCC in much wider bands. 5G is expected to bring much greater data speeds and lower

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[2] Robert F. Roche, Ph.D., and Shae Gardner, *CTIA's Wireless Industry Indices Report, Year End 2017 Results*, July 2018, p. 27. Hereafter referred to as CTIA.
[3] CTIA, p. 14.
[4] *CTIA Survey Highlights Year End 2017*, p. 3.
[5] Cisco VNI, *Mobile Forecast Highlights 2016-2021, United States – Network Connections*.
[6] CTIA, p. 13.
[7] CTIA, p. 15.
[8] Mary Meeker, *Internet Trends 2018*, Kleiner Perkins, p. 11.
[9] Ericsson, *Mobility Report*, June 2018.
[10] Cisco VNI, *Mobile Forecast Highlights 2016-2021, United States – Potential M2M Connections*.
[11] Cisco VNI, *Mobile Forecast Highlights 2016-2021, United States – Mobile Applications*.
[12] CTIA, p. 51 and p. 54.

latency, greatly expanding its usefulness for many applications, including sensitive ones such as telehealth and self-driving automobiles. L.M. Ericsson estimates that by 2023, 48% of North American subscriptions will use 5G, with the rest using LTE.

Wireless industry's effect on the economy

The U.S. wireless industry has a major positive effect on America's economy. The industry itself had 207,324 direct employees in 2017,[13] but that only begins to show its impact on American jobs. Accenture estimates that the industry currently supports 4.7 million jobs, contributes $475 billion to GDP, and generates $1 trillion in economic output.[14]

As eMarketer points out, mobile has become a major factor for the retail economy, with an estimated 195 million American consumers using mobile devices to shop and 147 million consumers making purchases over their mobile devices. Mobile commerce constituted 34.5% of total ecommerce in 2017 and is expected to grow to 53.9% by 2021. As a portion of total retail sales in 2017 it was only 3.1%, but is expected to reach 7.4% by 2021. Smartphone mcommerce is expected to triple by 2021 from $102 billion in 2017 to $346 billion in 2021.[15] Another area mobile is transforming is advertising. In 2017, mobile ad spending reached $60.7 billion, up 30% from 2016. It constituted 67.2% of digital ad spending and 29.3% of total media spending.

Wireless industry competition

There are four national facilities-based wireless service providers in the U.S. —AT&T, Sprint, T-Mobile and Verizon—who collectively account for most of the subscriber connection. There are also some regionals, including U.S. Cellular. These are the five facilities-based providers who reports their financials publicly[16]. There are also resellers, with TracFone being the largest, and Comcast (and now Charter) entering recently and offering service inside their own cable system footprints.

Carriers compete on price, promotions, network coverage and quality, and service more generally. In its *Twentieth Wireless Competition Report*, the FCC found that "there is effective competition in the mobile wireless services marketplace."[17] That conclusion is supported by the shifts in market share among competitors as well as by falling prices.

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[13] CTIA, *Survey Highlights*, p. 1.

[14] Accenture Strategy, *Accelerating Future Economic Value from the Wireless Industry*, p. 4.

[15] eMarketer, *US Ecommerce Performance StatPack 2017*, November 2017, and *Mobile Measurement and Targeting Roundup*, June 2018.

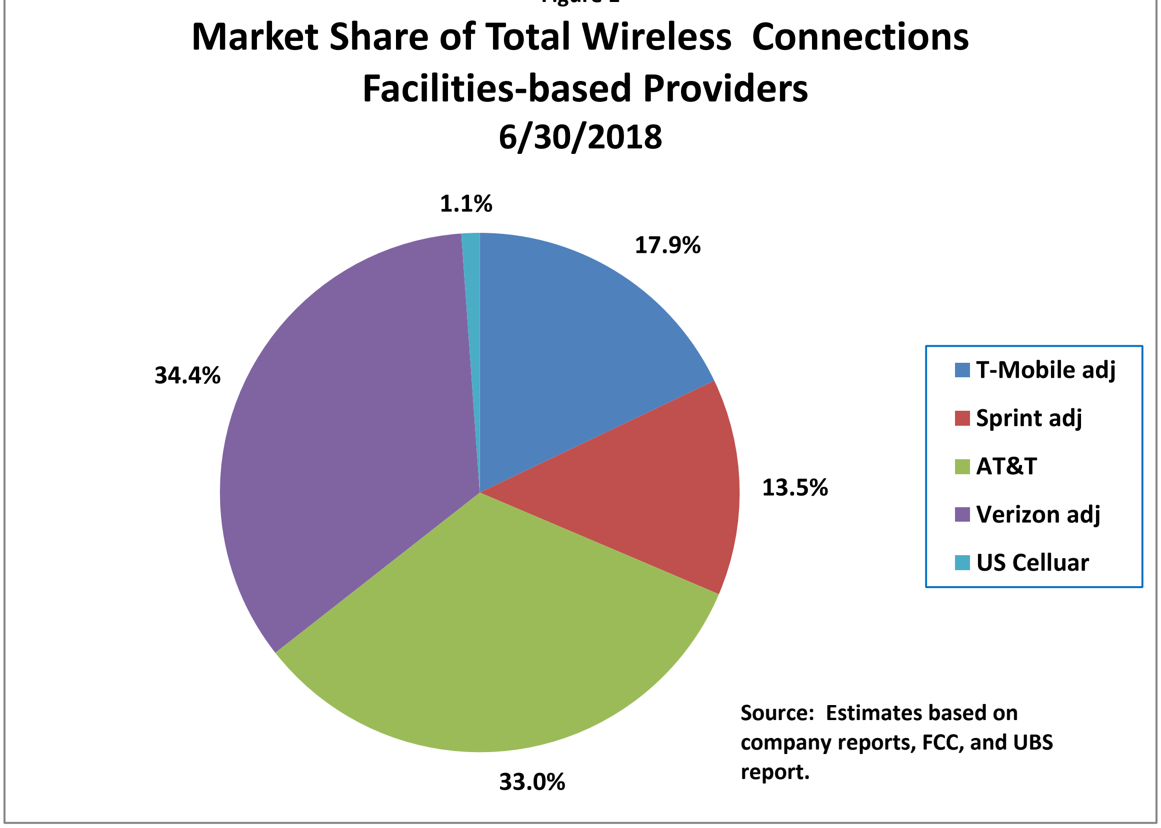
[16] Their market shares are shown in Figures 1 and 2 below.

[17] Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services: Twentieth Report*, Docket 17-69, released September 27, 2017, ¶ 2. Hereafter referred to as *Twentieth Wireless Competition Report*. For a discussion of effective competition, please see Amanda B. Delp and John W. Mayo, Ph.D., "The Evolution of 'Competition': Lessons for 21st Century Telecommunications Policy," *Review of Industrial Organization*, Vol 50, June 2017, pp. 393-416.

Wireless market share

Wireless carriers report their subscribers to the financial community, but how they categorize them and which categories they report varies. For example, Verizon reports retail connections, but not wholesale. Thus, for Verizon we use estimates of total subscribers from UBS, as the FCC did in its *Twentieth Wireless Competition Report*.[18] There have been some acquisitions and divestitures of connections and they are usually reflected in end-of-period counts of connections, so they require no adjustment from us. However, Sprint and T-Mobile serve Lifeline customers, the former both as prepaid and as wholesale and the latter as wholesale customers, but have excluded them from their reported customers since mid-2017 while still including the revenues. Ignoring roughly 10.6 million connections that are being served by the two providers and whose revenues are included is a major distortion, so we have adjusted for it. For share of connections, for share of net adds, and for average price per unit (ARPU) calculations we have added back those subscribers.[19] In each case where we have made an adjustment, the label in a figure or table includes "adj" along with the company's name.

Figure 1



[18] Federal Communications Commission, *Twentieth Wireless Competition Report*, Table II.B.1, p. 15 for 2013-2106, and John C. Hodulik, CFA, *Verizon Communications*, UBS Global Research, July 24, 2018, p. 2 for 2017 and 2018. As of June 2018, UBS reports 153.3 million (m) total subscribers (subs) while Verizon reports 116.5 retail subs.

[19] For T-Mobile, we have added back 4.3 m subs as of December 2017 and 4.1 m subs as of June 2018, all in wholesale. For Sprint, we added back a total of 5.7 m subs as of December 2017 and 5.4 m as of June 2018, split between prepaid and wholesale. These are smaller than the numbers dropped by the companies, 4.5 m by T-Mobile and 6.1 m by Sprint, to reflect the shrinkage of the Lifeline program, per USAC's quarterly figures.

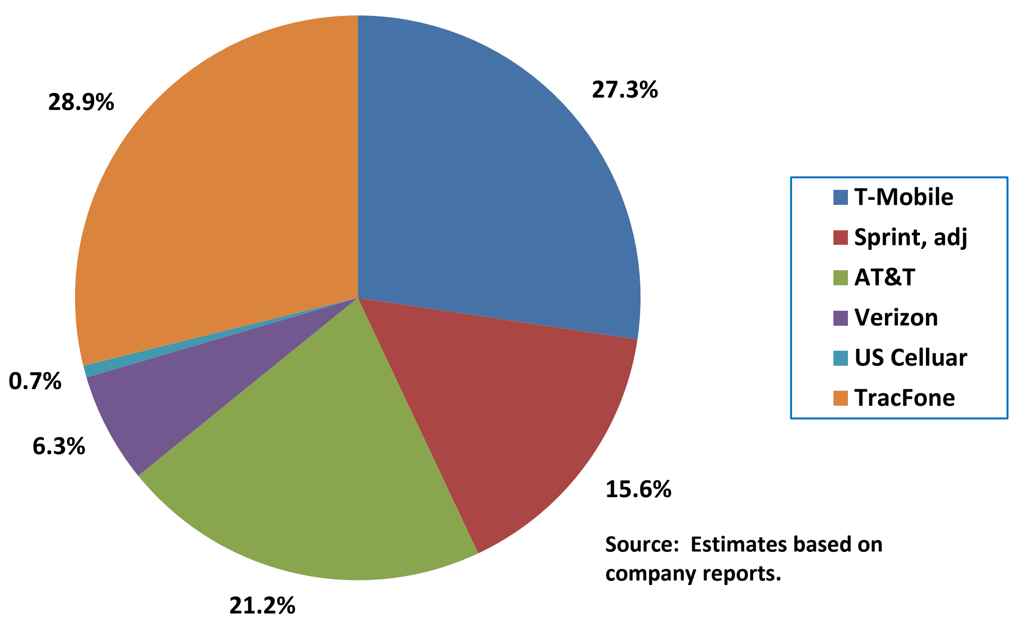
There are other potential pitfalls, as well. For example, Verizon's and Sprint's category of retail connections appears to match AT&T's category of branded subscribers and T-Mobile's branded customers, so we compare them accordingly, but note that they may not match perfectly. Keeping all that in mind, we show the market share of the facilities-based providers as of second quarter 2018 in Figure 1, as a percentage of total connections.[20]

Because it serves customers who generally have difficulty getting credit, it is worth also showing market share for the wireless prepaid market, which we do in Figure 2.

We show the prepaid market by retailer. The largest share at 29% currently belongs to TracFone, which is a reseller. It is closely followed by T-Mobile at 27% with AT&T and Sprint more distant in third and fourth place. Were Sprint and T-Mobile to merge, their combined share would be by far the largest, at 43% of the market.

Figure 2

Market Share of Prepaid Wireless Connections 6/30/2018



Source: Estimates based on company reports.

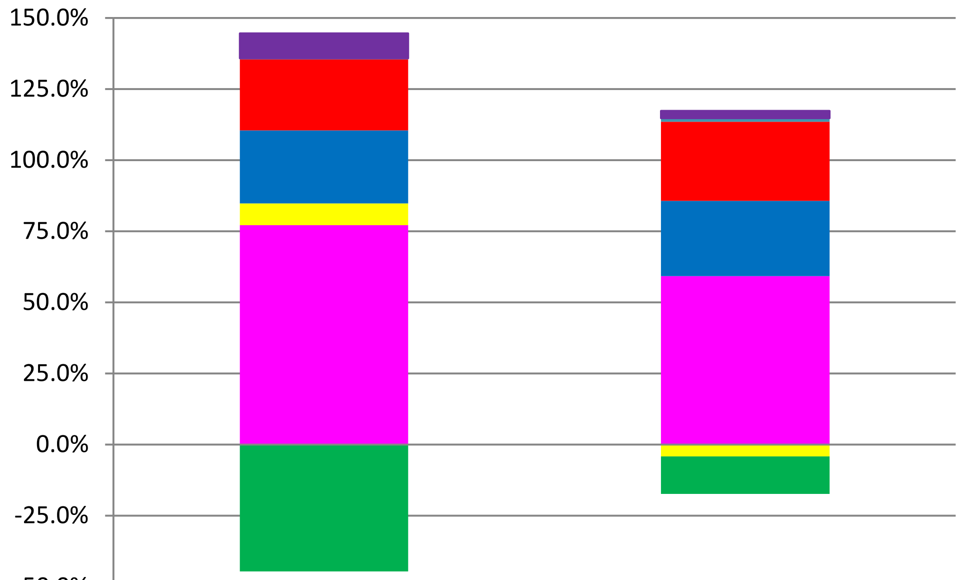
Aside from pricing, which we discuss below, one of the best measures of market competition is net adds, which shows who is gaining customers and who is losing them. In Figure 3, we show share of

[20] Market shares of the facilities-based providers measured in terms of total wireless service revenues as of the end of second quarter 2018 were: T-Mobile's share at 17.7%, Sprint at 12.5%, AT&T at 32.3%, Verizon at 35.7% and U.S. Cellular at 1.7%.

retail net adds for two periods: 12/31/16-6/30/18 and 12/31/14-6/30/18. The first shows recent trends, including cable entry into the market. The rapid progress of Comcast as a reseller of wireless is impressive, but it is too soon to tell what its long-term overall competitive impact will be, given that it is reselling and marketing service only inside its cable footprint. The second period shows trends since the completion of the last major set of acquisitions, i.e., T-Mobile's of MetroPCS in 2013, AT&T's of Leap in 2014, and Sprint's of Clearwire in 2013. The use of 12/31/14 as the starting point for comparisons minimizes distortions although it cannot avoid them entirely. The only numbers that we adjusted here are those of Sprint, to whose prepaid connections we added back its prepaid Lifeline customers.

Figure 3

Share of Retail Net Adds



	12/31/16 to 6/30/18	12/31/14 to 6/30/18
Comcast	8.8%	2.6%
TracFone	-44.7%	-13.1%
US Celluar	0.3%	1.2%
Verizon	25.0%	27.8%
AT&T	25.7%	26.5%
Sprint, adj	7.7%	-4.2%
T-Mobile	77.1%	59.2%

Source: Estimates based on company financials.

As Figure 3 shows, T-Mobile has gained the overwhelming majority of retail net adds in both of those periods. During the 12/31/16 to 12/30/18 period there were a total of 8.8 million retail connections added, as a combination of both prepaid and postpaid customers. Of the 8.8 million, 6.8 million were

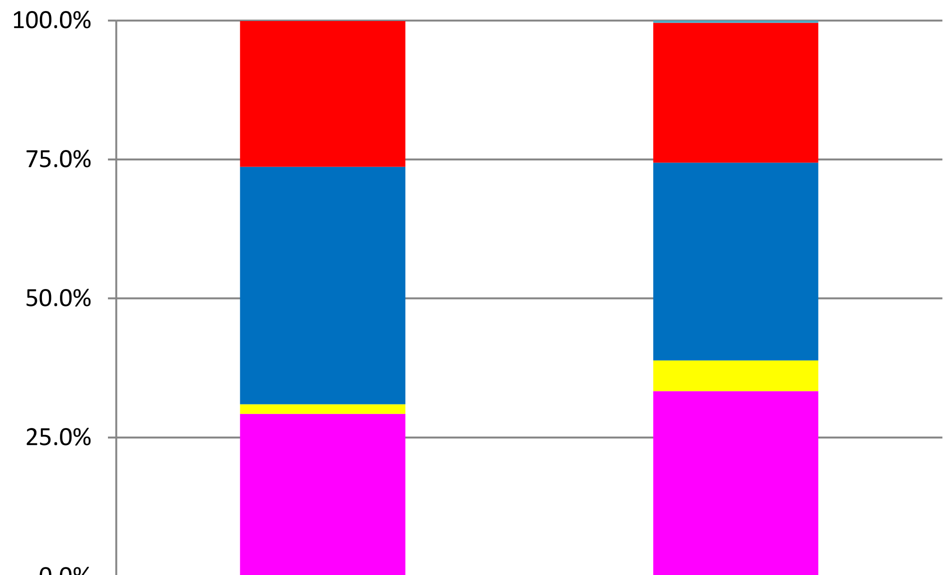
added by T-Mobile. AT&T and Verizon were far distant with gains of 2.2 million each. Comcast gained 0.78 million customers, exceeding Sprint's gain of 0.68 million. TracFone lost 3.9 million subscribers.

T-Mobile's share gain is not a new trend. Since 12/31/14, it has gained 17.5 million subscribers out of an industry total of 29.6 million new retail subscribers. Verizon and AT&T trail in distant second and third place with 8.2 million and 7.8 million net adds, respectively. Over that same period, Sprint has lost roughly 1.3 million subscribers and TracFone 3.9 million.

Figure 3 above tracks retail net adds, even if that provider is a reseller. Figure 4 below tracks total net adds, showing both the retail and wholesale connections of the facilities-based providers. Thus, TracFone does not appear explicitly in the total net adds figure, to avoid double-counting its customers who are included as wholesale connections for the network(s) TracFone resells.

Figure 4

Share of Total Net Adds
Facilities-based Providers



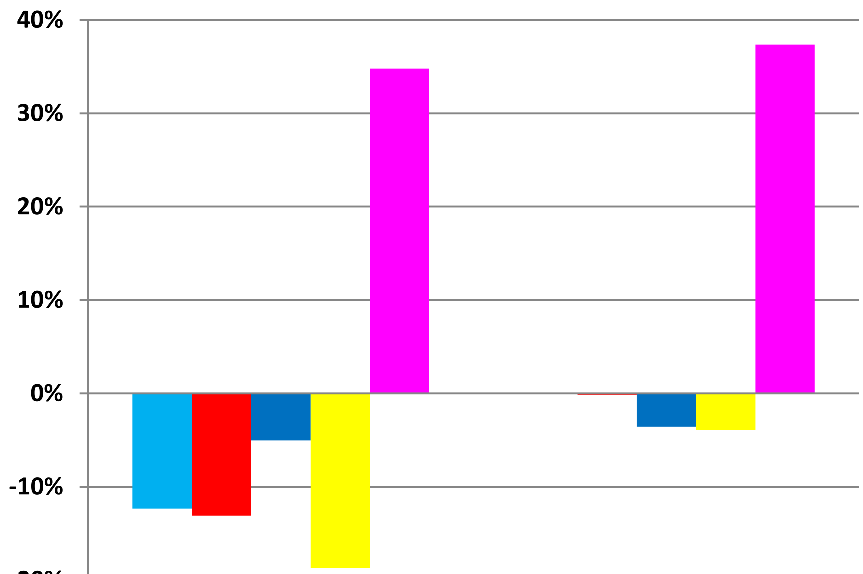
	12/31/16 to 6/30/18	12/31/14 to 6/30/18
US Celluar	0.1%	0.4%
Verizon, adj	26.2%	25.2%
AT&T	42.7%	35.6%
Sprint, adj	1.7%	5.5%
T-Mobile, adj	29.2%	33.3%

Source: Estimates based on company financials, and FCC and UBS reports.

AT&T leads in total net adds for both the most recent and longer period, with T-Mobile second, Verizon a more distant third, and Sprint a relatively minor factor. Please note that the numbers we use here have been adjusted to add Verizon wholesale customers per the FCC's and UBS' reports, and to add back the Lifeline customers to T-Mobile and Sprint. What is clear from comparing the two net adds Figures, i.e. retail v. total, is that AT&T's and Verizon's gains have largely been in the wholesale and/or connected device market and Sprint's entirely so. That tends to be a lower ARPU market than the retail market.

Figure 5

Percent Revenue Growth (decrease)
CY 2014 to CY 2017



	service revenues	total revenues
USM	-12%	0%
VZ	-13%	0%
T	-5%	-4%
S	-19%	-4%
TMUS	35%	37%

Source: Company reports.

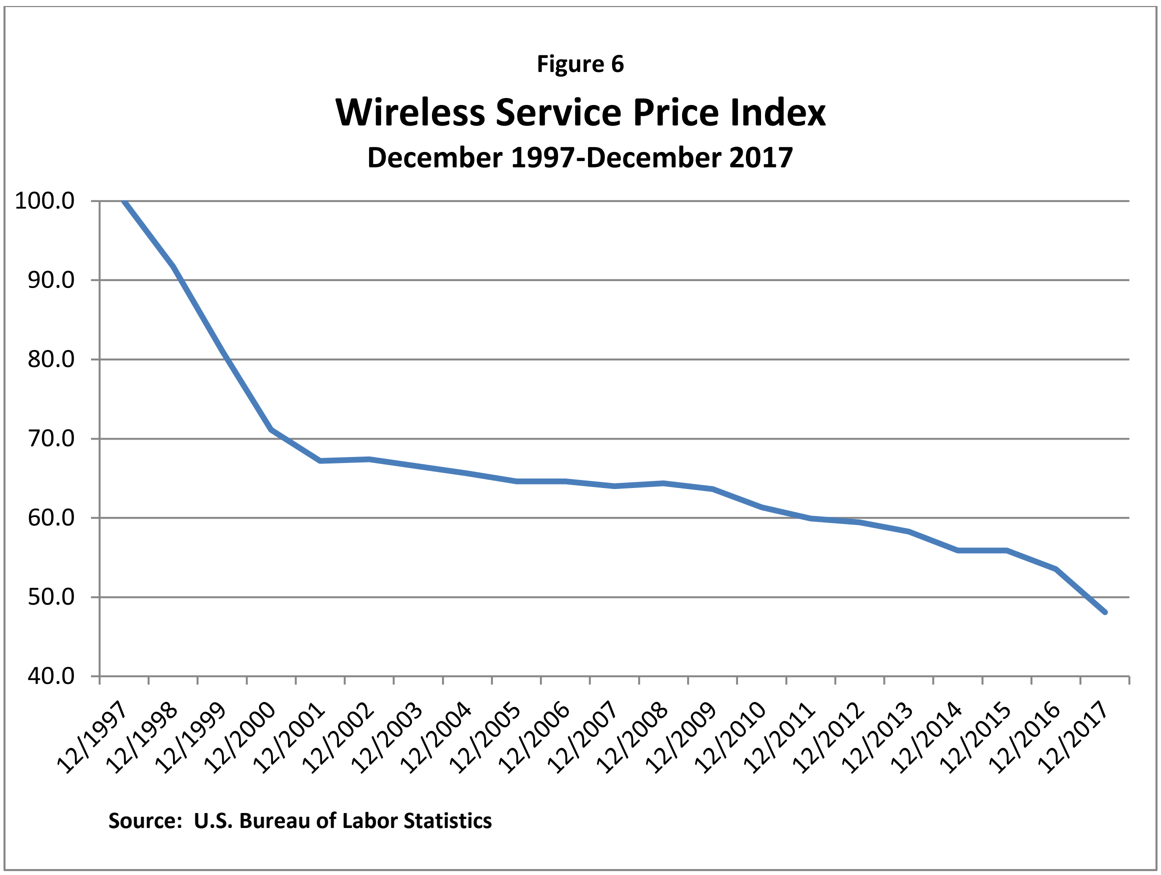
Figure 5 shows the change in wireless revenues between 2014 and 2017,[21] both service revenues and total revenues, for each of the facilities-based providers. For the group, service revenues declined from $187.4 billion in 2014 to $176.9 billion in 2017, a decrease of 6%. Total revenues, including both service

[21] We derive calendar year (CY) revenues for Sprint by adding the revenues for the relevant four quarters for 2014 and 2017.

and equipment, increased 3% from $227.9 billion to $234.9 billion. However, individual companies fared quite differently, as is obvious from Figure 5. T-Mobile's revenues grew sharply while the others' shrank or stagnated.

Wireless pricing

Pricing, of course, is a key indicator of competition. It's not surprising that the FCC found that there is effective competition in the wireless market, given both the long term pricing trends and the constant barrage of offers with which wireless carriers tempt consumers. Consumers have a broad and often-changing range of choices. They can pre-pay or post-pay. They can opt for voice-only and buy specified numbers of minutes or they can opt for plans that include voice for free. They can pay for various amounts of data, ranging from as little as a gigabyte per month to unlimited. They can bring their own devices or make them part of the deal. Carriers offer numerous permutations, depending on the number of connections per account, the amount of usage, the type of device(s) and how they are purchased, and many other variables. Consumers can find the optimal choice for their own needs.



Looked at on an aggregate level, wireless service pricing has declined steadily since the U.S. Bureau of Labor Statistics began measuring it in 1997 as a component of the Consumer Price Index (CPI). As can be seen in Figure 6, using 1997 as 100, the index for December 2017 was 48.1, a decrease of 51.9%. The

decrease from year-end 2013 to 2017 was 17.8% and there was a particularly sharp decline of 10.2% from year-end 2016 to year-end 2017.[22]

One of the statistics reported in CTIA's annual survey is average revenue per unit (ARPU), which divides total revenue for a service category by the relevant number of connections. In the last four years, monthly service ARPU has decreased from $48.79 in 2013 to $38.66 in 2017, a decrease of 20.8%. In the last year, it fell 6.8%, from $41.50 to $38.66.[23] Deloitte points out that the gain to consumers far exceeds the decrease in ARPU, when explosively-growing data usage is taken into account.[24] Revenue per megabit declined in the four years between 2012 and 2016 from an index of 100 in 2012 to 10.94 in 2016, i.e. a decrease in the price per megabit of roughly 89% in just four years. In that period, data traffic increased from 1.468 trillion megabits to 13.719 trillion megabits per year.[25]

One segment, however, appears to have been an exception. As CTIA reports for the industry, prepaid ARPU has actually risen, from $26 in 2012 to $32 in 2017, an increase of 23%.[26] While to some extent that may reflect a different mix and amount of purchases, including a decrease in the number of Lifeline subscribers who carry a very low ARPU, it is a source of concern because prepay tends to be the mode available to those whose income is low or who have difficulty obtaining credit.

As we noted above, providers define subscriber categories somewhat differently. What they report for revenues varies even more sharply, making it difficult to compare ARPU between providers. They each provide some average revenue figures, but they vary between ARPU which is per connection v. ARPA which is per account. Some provide ABPU, which is ARPU plus the cost of leased or financed equipment. Some provide ARPU, ABPU, ARPA or ABPA for postpaid but not prepaid or for postpaid phone but not postpaid in total. The obvious solution is to calculate the relevant figure from the underlying income statement and subscriber figures, but that creates its own challenges.

While all carriers provide a service revenue and an equipment revenue number, the level of detail below that varies. For their wireless segments, AT&T and Verizon provide only a single category of service revenue. AT&T provides both total service revenue and total subscribers, making it possible to calculate wireless service ARPU per subscriber. Verizon, on the other hand, provides total service revenue but only retail subscribers. In other words, to get a full picture of Verizon's ARPU, its subscriber count must be adjusted to include wholesale, hence our use of FCC and UBS estimates of Verizon's total subscriber base.

T-Mobile and Sprint provide more detail. T-Mobile breaks down service revenue into postpaid branded, prepaid branded, wholesale, and roaming and other. Sprint breaks down service revenue by total postpaid, total prepaid, and total wholesale, which is not fully comparable to T-Mobile's categories.

[22] U.S. Bureau of Labor Statistics, Wireless Telephone Service in U.S. City Averages, All Urban Consumers, Not Seasonally Adjusted.
[23] CTIA, *Survey Highlights*, p. 1.
[24] Deloitte, *5G: The Chance to lead for a decade*, p. 7.
[25] CTIA, p. 13.
[26] Robert F. Roche, Ph.D., and Shae Gardner, *Prepaid Wireless Service in the United States: Year End 2017 Results*, July 2018, p. 16.

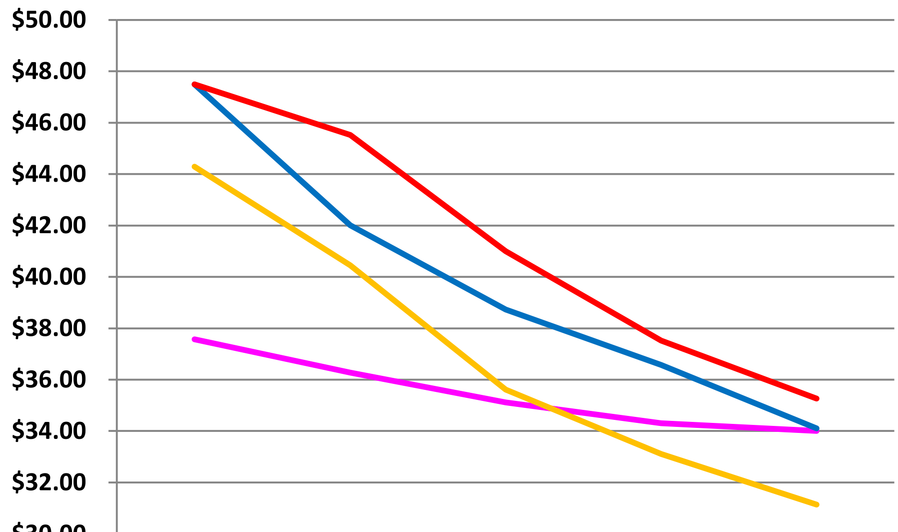
Furthermore, Sprint explains that it includes postpaid connected devices with postpaid subscribers, and the rest with wholesale. T-Mobile does not specify where it places connected devices. AT&T provides them as a separate category. Verizon does not discuss them at all. As noted above, T-Mobile and Sprint's treatment of the Lifeline subscribers they serve but exclude from subscriber counts also requires adjustment.

A further complication is that Sprint reports a fiscal year that ends in March, while the others report fiscal years that end in December. To avoid those timing differences, we show ARPU for the fourth calendar quarter of each year for each provider rather than for a differently timed fiscal year.

Figure 7

Wireless Service ARPU 2013-2017

Based on Adjusted Connections



	Q4 2013	Q4 2014	Q4 2015	Q4 2016	Q4 2017
T-Mobile, adj	$37.57	$36.27	$35.11	$34.30	$34.01
Sprint, adj	$44.28	$40.44	$35.61	$33.11	$31.14
AT&T	$47.49	$42.01	$38.73	$36.57	$34.10
Verizon, adj	$47.50	$45.52	$40.99	$37.52	$35.27

Source: Estimates based on company reports, USAC reports (for T-Mobile and Sprint), FCC and UBS reports (for Verizon connections). All ARPU fourth quarter of each year.

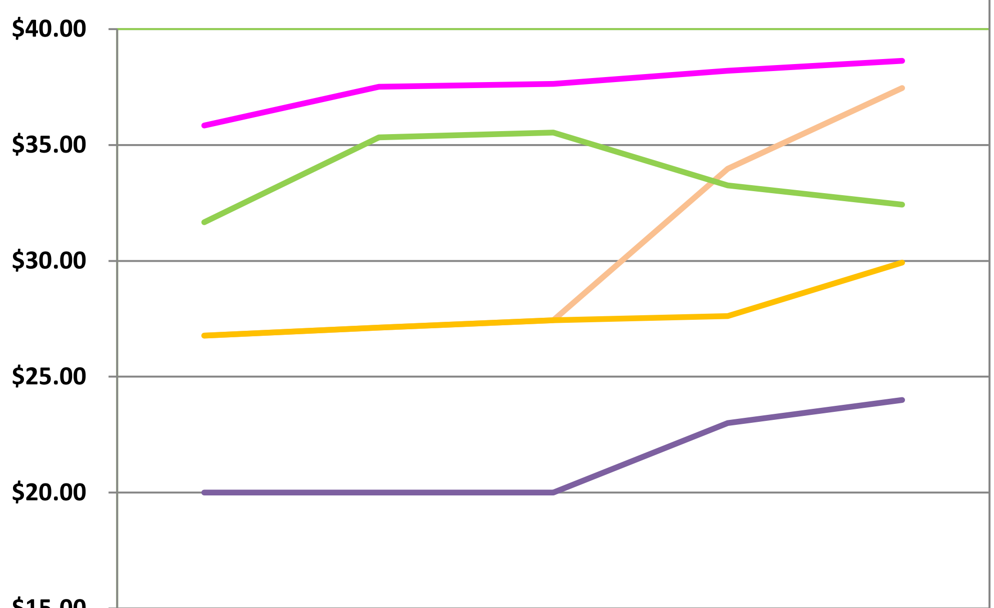
Bottom line, total service revenue is the most likely revenue number to be comparable between the four carriers, so we are providing an estimate of total wireless service ARPU per connection for each of the four national providers. Total service ARPU is not, of course, a specific price but an average for each

wireless provider of the revenues it obtains from subscribers to a wide variety of services and plans. Thus, it is affected not only by the prices of those services and plans but by the mix. We use each provider's total service revenues as reported on their wireless segment income statements[27] and we use the same adjusted total subscriber numbers that we used in our market-share and net-add calculations in the Figures above.

Figure 7 above shows that wireless service ARPU has been falling steadily. It also shows that T-Mobile initially had the lowest service ARPU in Q4 2013 and has lowered its service ARPU somewhat since then, but at a much slower rate than the other three. AT&T's service ARPU now essentially matches T-Mobile's. Sprint's service ARPU is now below T-Mobile's. Verizon's is still above, but only slightly.

Figure 8

Prepaid ARPU 2013-2017



	Q4 2013	Q4 2014	Q4 2015	Q4 2016	Q4 2017
T-Mobile	$35.84	$37.51	$37.63	$38.20	$38.63
Sprint	$26.78	$27.12	$27.44	$33.97	$37.46
Sprint, adjusted	$26.78	$27.12	$27.44	$27.61	$29.92
TracFone	$20.00	$20.00	$20.00	$23.00	$24.00
U.S. Cellular	$31.66	$35.33	$35.54	$33.25	$32.42

Source: Company reports. All ARPU fourth quarter of each year.

[27] T-Mobile has only one segment, so we use their service revenues on the consolidated statement.

As we noted earlier, prepaid is a significant category because of its importance to those who cannot get credit easily or at all. AT&T and Verizon do not disclose a prepaid ARPU nor a breakdown of revenue that makes it possible to calculate it accurately. However, T-Mobile, Sprint, TracFone and US Cellular do each provide a prepaid ARPU. We show those in Figure 8. In contrast to total service ARPU, prepaid ARPU has increased somewhat.

In Figure 8 we show Sprint's prepaid ARPU both as the company reports it and as adjusted for the add-back of Lifeline subscribers.[28] When adjusted for the Lifeline disclosure distortion, Sprint's prepaid ARPU does not rise as sharply as the reported numbers make it seem. It does, however, still rise. TracFone does report its Lifeline subs, and they have decreased somewhat, as have subs in the Lifeline program as a whole. That may explain at least in part the increase in TracFone's ARPU.

By another measure, changing market share, the market has been competitive. TracFone's share has fallen from 35% of the prepaid subscribers at year-end 2014 (after both the MetroPCS and Leap acquisitions closed) to 30% at year-end 2017, presumably reflecting, at least in part, a decrease in Lifeline subscribers. Verizon's has fallen from 8.3% to 7%. T-Mobile's has risen from 22.0% to 26.8% in the same time-frame, while AT&T's has risen from 13.4% to 19.9%. US Cellular's has increased from 0.5% to 0.7%.

Will the wireless services market remain competitive?

Currently, as ARPU, net-add, and revenue-shift data indicate, the wireless services market is highly competitive, with T-Mobile in particular gaining share and revenue rapidly from other carriers. The key question about its potential merger with Sprint is whether—in addition to eliminating Sprint as an independent competitor—the merger will make T-Mobile a stronger or weaker competitor than it currently is and what the overall effect on competition of the merger will be.

Sprint and T-Mobile argue that as a combined entity, they would be in a position to provide more competition than separately. In its public interest filing at the FCC as well as in its presentation to analysts, T-Mobile argues that it acquired MetroPCS successfully, meeting or beating its original targets. It is not clear, however, that the two cases are similar enough to be predictive of success in a Sprint merger.

MetroPCS was much smaller relative to T-Mobile's size than Sprint is. MetroPCS had roughly a third the subscribers T-Mobile then had, while Sprint has roughly three quarters. MetroPCS was a fairly simple company in a single line of business, while Sprint is complex. Above all, MetroPCS, when acquired, was a healthy company which had been growing rapidly and was in good financial shape.

[28] Per its FY 2017 10K (March 2018), p. 37, Sprint stopped reporting all Lifeline subscribers, continues to serve them, and reports all Lifeline revenue in the wholesale category, even when it is the retail provider. For Q4 CY 2016, we used the subscriber and revenue numbers Sprint originally reported and for Q4 CY 2017 we moved one fourth of $323 million in revenue back to prepaid from wholesale along with the prepaid Lifeline subscribers. Because all of T-Mobile's Lifeline subscribers are wholesale, no adjustment is needed in this figure which deals with prepaid, but an adjustment was needed and provided in the figures that deal with total subscribers.

In contrast, Sprint has at best stagnated for a decade during which its original management made a series of disastrous decisions from which its current management has not, by its own admission, fully extricated it. There was the 2007 write down of the Nextel acquisition which devastated Sprint's balance sheet and told both its salesforce and its customers that Nextel customers don't matter to Sprint. There was the choice of WiMax instead of LTE and the placement of the WiMax network in the publicly-owned Clearwire, which made it very difficult to correct that error. There were years of radical underinvestment in the Sprint network as well as the Clearwire network, with much of the capital that was invested wasted on the wrong technology. As John Saw, Sprint's Chief Technology Officer, explains in his declaration, which is attached to T-Mobile's description of transaction and public interest filing at the FCC, Sprint is still facing significant financial and network challenges.[29]

Indeed, in 2006 just after Sprint acquired Nextel, Sprint was roughly the same size as AT&T and Verizon, while T-Mobile was less than half its size. At the end of 2006, AT&T and Verizon had roughly 59 and 61 million subscribers, respectively, Sprint had 53 million, while T-Mobile had 25 million. Today, Sprint has 60 million subscribers (adj), while T-Mobile has nearly 80 million (adj). In a market in which AT&T has grown subscribers by 141%, Verizon by 160%, and T-Mobile by 218%, Sprint has grown only 13%.

To its credit, Sprint's management under Softbank has increased capital investment, but as the T-Mobile S-4 registration statement filed on July 30th at the Securities and Exchange Commission (SEC) shows, much of that has recently gone to financing devices rather than building the network.[30] What is particularly striking, as Figures 3, 4, 5 and 7 show, is that while Sprint's ARPU has been cut radically, it has only recently begun to gain subscribers, has gained few, and those have mostly been wholesale, i.e. low revenue.

Obviously, none of this is news, and it can be interpreted in two ways. One, the approach T-Mobile is arguing, is that this is good news, because it means that there is lots of room for improvement. Alternately, there is the concern that—in addition to removing Sprint as a competitor--the struggle to integrate Sprint into T-Mobile might make T-Mobile a less effective competitor for several years after the merger. T-Mobile argues that it will be able to get $43 billion net present value (NPV) in synergies out of the merger, with most of that coming from operating-cost savings, especially network operating cost. Those figures are in the S-4 filed with the SEC, as well as in the public-interest filing at the FCC, and in the slides of the presentation to analysts that T-Mobile made on April 29th. The S-4 also has several other sets of estimates, which were made by either Sprint or T-Mobile and presented to the Boards of Sprint and/or T-Mobile. All of these sets of projections are worth exploring for the light they might shed on the merged entity's prospects.

First, the S-4 includes two sets of projections created by Sprint for itself for the years 2018-2022.[31] As the S-4 explains, both were created between January 2018 and the announcement of the merger on

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[29] T-Mobile, *Description of Transaction, Public Interest Statement, and Related Demonstrations*, *Redacted for Public Inspection*, June 18, 2018, attachment E, Declaration of John C. Saw, p. 4.

[30] T-Mobile US, Inc., *Form S-4 Registration Statement*, United States Securities and Exchange Commission, filed July 30, 2018, p. 50, Sprint historical financials. Hereafter referred to as S-4.

[31] S-4, p. 159 and p. 160.

April 29th.[32] The first, on p. 159 of the S-4, showed substantially improving levered free cash flow during 2018-2022. Sprint created a revised set of projections before April 29th and those show levered free cash flow improving to essentially breakeven in 2019 and then barely fluctuating around breakeven through 2022. The second set of projections shows slightly less improvement in revenue, and higher operating cost and capex than the first. The obvious question is why the more pessimistic projection and what does that deterioration mean for the prospects of the merged company?

T-Mobile also created a set of projections for Sprint, in their case from 2019-2026, as well as a set of projections for T-Mobile itself, also from 2019 to 2026. These, on pages 161 and 155 respectively, are on a stand-alone basis. T-Mobile's projection for Sprint expects positive unlevered free cash flow for stand-alone Sprint throughout the period from 2019-2026. However, compared to Sprint's own revised projections, T-Mobile's show service revenues slightly higher than Sprint itself does, total revenues lower than Sprint's own projections, lower capex and higher operating cost. All three of these sets of Sprint stand-alone projections, the two by Sprint and the one by T-Mobile, show a company that is viable but not thriving.

To compare the various sets of projections, we need to be able to compare cash flows. We lack access to the underlying assumptions behind the levered and unlevered free cash flows projected by Sprint and T-Mobile respectively. However, the projections they provided included the variables we need to derive a simple free cash flow (FCF) which highlights revenue, operating cost and capital expenditure (capex) patterns. We do so for each of these three sets of projections as well as the projection T-Mobile provides for the merged entity.

Keeping in mind that revenue minus cash operating cost = earnings before interest, taxes, depreciation and amortization (EBITDA) and EBITDA minus cash capital expenditures = simple free cash flow, we were able to derive the cash operating costs implicit in each set of projections as well as to derive FCF.

We note that for 2022, the original Sprint projection results in $14.8 billion FCF, the revised Sprint estimate result in $11.2 billion FCF, and the T-Mobile projection results in $9 billion FCF. Given the short time during which those estimates were made (between January and April) and the sharp deterioration, they raise questions about both the reliability of the estimates and the health of the company, even when one takes into account that two sets were internal and the other external, albeit with some access to Sprint's financials.

Another set of questions arises about the sources of synergy that T-Mobile expects from the deal. On p. 156 of the S-4 are outlined the synergies that are also described in the public interest statement and the presentation to analysts. These represent a pre-tax run-rate in the year ending 12/31/2026:

- Network synergies of $4.2 B, including network capex of $0.4 B
- Sales, service, and marketing synergies of $1.4 B
- Back office synergies of $1.1 B, including capex synergies of $0.1 B

[32] S-4, p. 158 and 160.

- Customer impact and other growth opportunities of $1.7 B, including $(0.5) B of customer impact and other growth opportunities capital expenditure synergies

Bottom line, in this summary of expected synergies T-Mobile projects a run rate by 2026 that consists primarily of operating-cost savings. That corresponds to the statement by G. Michael Sievert in his declaration in Appendix C to the public interest filing at the FCC: "Our merger with Sprint will create an estimated $43.6 billion in total net present value cost synergies, and New T-Mobile will use those synergies to fund an investment of nearly $40 billion to build a 5G network (and fund related projects) by 2024."[33] He explains that network synergies will result from decommissioning duplicative or unneeded network sites and from reduced capital expenditures, amounting to $25.7 billion out of the $43.6 billion NPV. According to Sievert, the sales, service and marketing synergies result from store consolidation, greater efficiency, and other operating savings, accounting for $11.2 billion of the $43.6 billion. Back office savings result in $6.1 billion of the NPV of $43.6 billion.

Slide 17 from the analyst presentation given on April 29th to announce the merger explains the same run rate synergies totaling roughly $6 billion run-rate offset by "costs to achieve" of $15 billion and resulting in the NPV of $43 billion. That slide also explains that "$6b+ run rate cost synergies attributable 93% of OpEx synergies and 7% of CapEx synergies, but excludes incremental opportunities in new segments of wireless and adjacent industries."

However, as noted above, in the S-4 there is also the expectation of growth opportunities, presumably new revenues, offset by $0.5 billion of capex, netting a run-rate of $1.7 billion in 2026 of growth synergies. That's not necessarily a contradiction, but it is very vague about the sources of those opportunities.

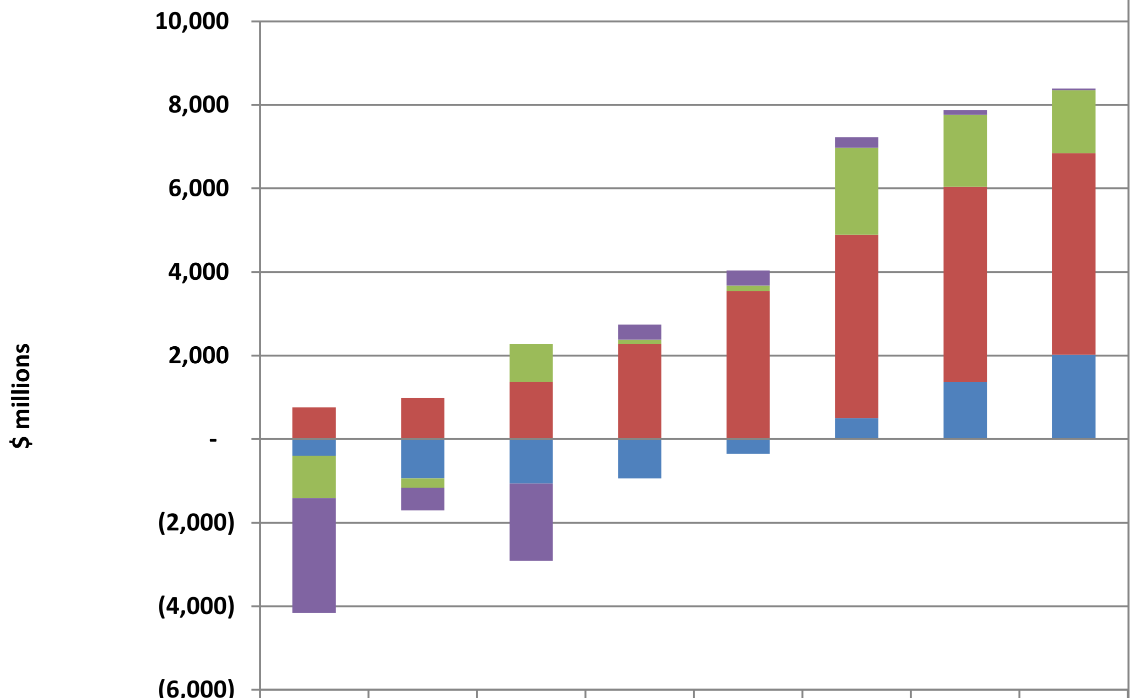
What is more difficult to reconcile is the relationship between this summary of synergies and the more detailed annual models T-Mobile projected for itself and Sprint standalone v. the annual model it projected for the merged entity. On page 156 of the S-4 is an abbreviated model, projecting the service revenues, total revenues, EBITDA, adjusted EBITDA, cash capital expenditures, and unlevered free cash flow for the merged T-Mobile/Sprint from 2019 through 2026. As we noted earlier, T-Mobile also included on pages 155 and 161 projections for itself and for Sprint, respectively, on a stand-alone basis.

Adding together the two standalone models for T-Mobile and Sprint on pages 155 and 161 shows the financials that T-Mobile expects the two companies to have if they do not merge. Contrasting that "added-together" model with the "merged" model on p. 156 which projects the financials of the merged company should reveal synergies (or offsetting cost) year-by-year, either through changes to revenues, to operating costs, or to capex.

[33] T-Mobile public interest filing, Appendix C, p. 5.

Figure 9

Source of Changes to Simple Free Cash Flow for merged T-Mobile and Sprint



	2019 E	2020 E	2021 E	2022 E	2023 E	2024 E	2025 E	2026 E
Cash capex	(2,743)	(541)	(1,855)	360	367	256	118	38
cash operating cost	(1,019)	(225)	906	99	128	2,076	1,722	1,502
Other revenues	759	985	1,374	2,281	3,545	4,394	4,675	4,825
Service revenues	(398)	(936)	(1,062)	(938)	(350)	503	1,367	2,024

Source: T-Mobile Sprint S-4 merger SEC registation statement

Figure 9 shows the result of making that comparison. We subtract the “added together” model which has no synergies from the “merged” model which presumably reflects the synergies expected from the merger.[34] For the year 2026 this results in a pretax run rate that has:

- Gains from cash operating cost savings of roughly $1.5 billion
- Capex that is roughly the same whether the companies are merged or not
- Gains that come from an extra $2 billion in service revenues and an additional $4.8 in other revenues, for a total increase of $6.8 billion in total revenues

[34] Revenue increases show as positive numbers, while cost and capex increases show as negative numbers, e.g. for 2019, other revenue increase shows as 759 and service revenue decrease shows as (398), while capex increase shows as (2743) and opex increase shows as (1019). The net result is a decrease in simple FCF of 759-398-2743-1019 =-3401.

Please note that these are raw numbers, not discounted net present values.

Looking at the earlier years of the model, from 2019 to 2021 capex is increased, by a total of $5.1 billion over the three years. Over the rest of the model that is offset by relatively small decreases resulting in a total over the life of the model of $4 billion total net increase in capex.

Similarly, in the first two years there is an increase in cash operating-cost totaling $1.2 billion, offset by substantial and generally increasing cash operating-cost savings over the life of the model, amounting in total to a net $5.2 billion in cash operating-cost savings over the life of the model.

Service revenues decline from 2019 through 2023 and then increase quite sharply, resulting over the life of the model in a total increase of $0.2 billion.

Other revenues increase beginning in 2019 and continue to increase steadily and sharply, resulting in a total of $22.8 billion revenue gain for the merged company v. the two separate entities.

The bottom line as measure by simple FCF (i.e. revenues – cash operating cost – capex), is a decrease of $3 billion in 2019 followed by steadily rising increases.

Summing it all up, over the life of the model the merged entity would gain $24.2 billion in additional FCF. Of that, $23 billion comes from revenue gains, almost all of which are from other revenues, i.e. not wireless service revenues. Cash operating cost savings over the life of the model contribute $5.2 billion to that additional FCF, while extra capex spending of $4 billion reduces FCF. In total:

$23 billion + $5.2 billion - $4 billion = $24.2 billion

In other words, the annual cash flow statements that are presented for merged entity v. the combined standalone companies indicate that almost all of the FCF increase results from an increase in revenues that are not wireless service revenues.

It is also worth noting that FCF decreases in the first three years thanks to lower wireless service revenues as well as higher capex and operating expenditures (opex). That is not surprising, since mergers tend to come with integration costs and often result in lower revenues while salesforces and marketers regroup and customers churn. Neither is it inconsistent with the slide in the analyst presentation which showed that "costs to achieve" would be required. It shows that the first few years—the ones that are easiest to predict because they are closest in time—are expected to be difficult.

The question, then, in terms of assessing the impact on competition is how will T-Mobile--and its largest owner Deutsche Telekom--react to that difficulty? T-Mobile's service revenues have grown steadily since 2013. Will it really accept five years of shrinking service revenues? or will it raise price? The latter carries some risk to subscriber growth in a price-elastic market, of course, but perhaps less risk with Sprint out of the picture as a competitor.

Key to that decision may be the projected massive increase in revenues other than service revenues, which begins immediately, which accounts for most of the FCF improvement in this model, and whose source is not explained. We have no visibility into the model by which T-Mobile arrives at the $43 billion in NPV so we cannot attempt to reconcile that model with the annual projections that are explicitly shown in the S-4 for each of the companies separately and then as merged. It would be helpful to have a more explicit reconciliation of the two to be able to assess whether the merger is likely to strengthen or weaken T-Mobile as a competitor.

Summary

The wireless services market is key to the lives of most Americans and to the nation's economy. Thanks to heavy capital investment by the carriers, the market is growing rapidly and beginning a technology transition that will deliver greater data speeds and higher quality. Consumers can choose among a variety of services and plans to find the one that best satisfies their needs. Prices are falling, especially for data. Price per megabit has been cut by roughly 90% in four years.

Whether competition will be as robust if T-Mobile acquires Sprint depends largely on the overall impact of the merger on competition in light of Sprint's disappearing from the market. T-Mobile today is a powerful competitor that is taking share rapidly.   If it is weakened or distracted for several years by the attempt to integrate Sprint, competition might suffer. The projections provided by T-Mobile in its S-4 filing at the SEC raise some questions about the likelihood of problems in the years right after the merger as well as questions about the sources of projected benefits in the outer years.