

Merger example: AT&T – T-Mobile

Introduction

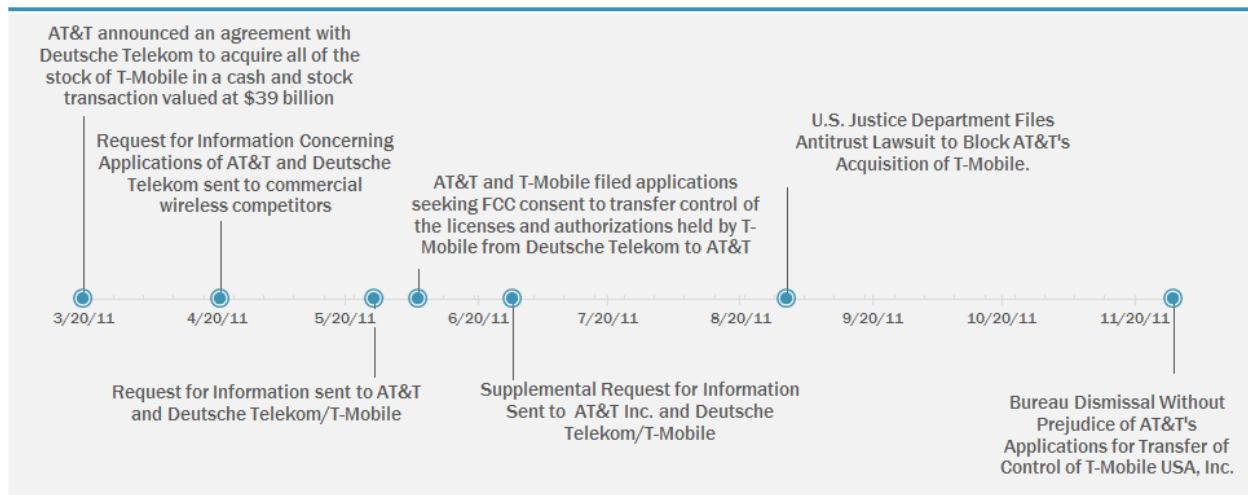
On March 20, 2011, AT&T and T-Mobile announced that they had entered into a definitive agreement to merge. AT&T would acquire T-Mobile in a cash and stock transaction valued at \$39 billion.

Under the Communications Act, Congress has charged the FCC to assign licenses and authorizations, including the ones used by wireless companies, broadcast radio and television and the authorizations to provide landline telephones. Congress also requires that the FCC approves any transfer of licenses to a different person or company, and changes in control of companies that holds licenses. For that reason, the FCC reviews all merger transactions that involve telecommunications companies to determine if the public interest, convenience and necessity will be served if approving the transaction.

The merging parties claimed large consumer and public interest benefits that included better service in the form of fewer dropped calls, faster speeds and better overall customer experience, and more mobile broadband access for more Americans.

Below is an abbreviated timeline of the AT&T and T-Mobile merger case:

AT&T and T-Mobile merger case timeline



The petition and all documents related to FCC's merger review can be found at:

<https://www.fcc.gov/proceedings-actions/mergers-transactions/att-and-t-mobile>

Market share data

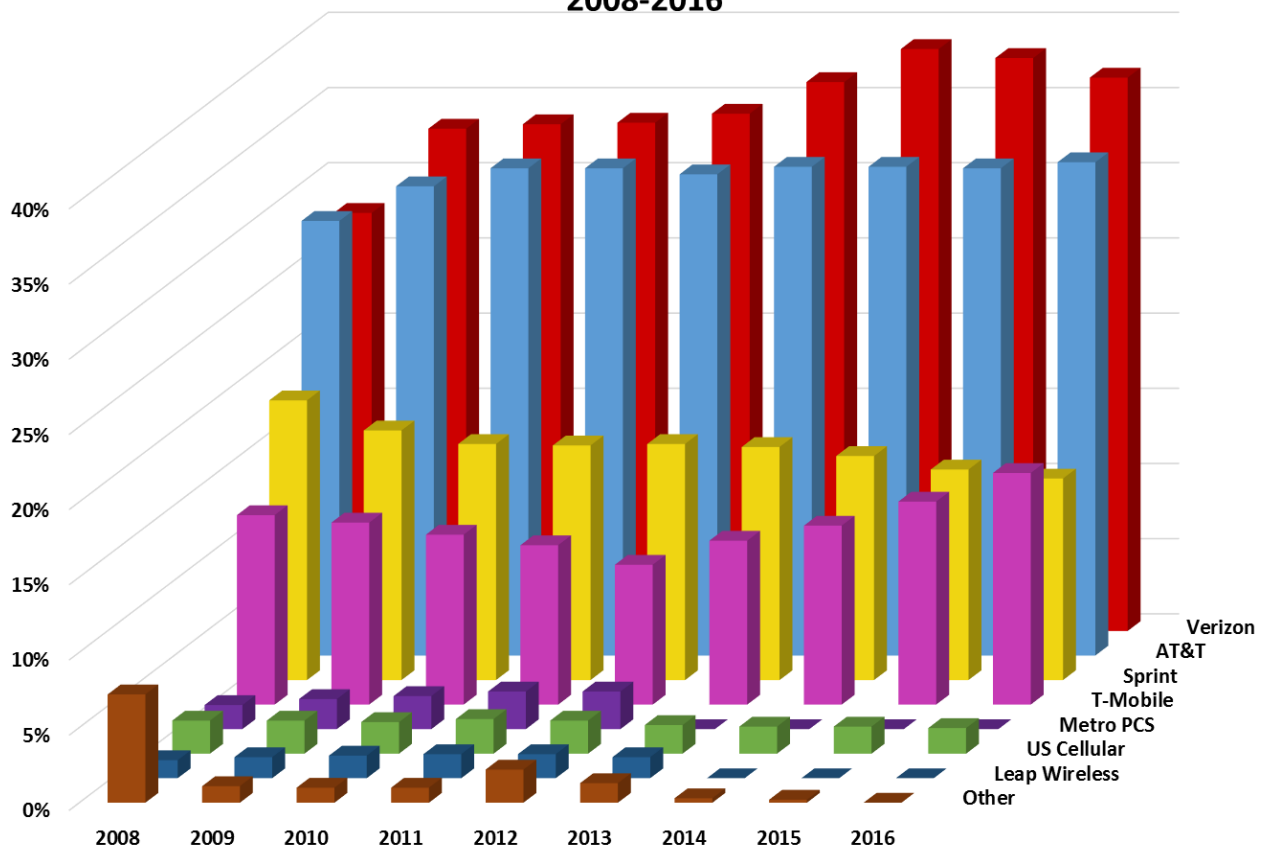
When the Antitrust Division of the Department of Justice reviews a merger between two providers of mobile wireless service, it assesses the competitive impact of the transfer, examining not only if competition would be harmed but also if competition would be enhanced.

According to the Horizontal Merger Guidelines issued by the U.S. Department of Justice and the Federal Trade Commission on Aug. 19, 2010, measures of market shares and market concentration are routinely considered as part of an evaluation of competitive effects.

This section presents market shares of wireless providers over time based on services revenues. As a general rule, changes in market shares may indicate the relative competitiveness of a company's product or service.

Overall, the share of the nationwide network carriers was increasing before the proposed transaction in 2011 and has continued to increase since then, in large part through acquisition of smaller regional providers.

Market Shares for Facilities-Based Mobile Wireless Providers Based on Service Revenues 2008-2016



Source: FCC Annual Mobile Wireless Competition Reports.

The proposed merger of AT&T and T-Mobile would have eliminated one of the four nationwide providers and would have made AT&T the largest wireless carrier, surpassing Verizon by far. One of the main concerns for the DOJ was that T-Mobile was perceived as a disruptive force, or “maverick,” which is an independent player that places competitive pressure – on prices and innovation, for example - on larger rivals and upsets the status quo.

**Market Shares for Mobile Wireless Service Providers Based on Service Revenues
2008-2016**

Nationwide Service Providers	2008	2009	2010	2011	2012	2013	2014	2015	2016
Verizon Wireless	27.8%	33.4%	33.7%	33.8%	34.4%	36.5%	38.7%	38.1%	36.8%
AT&T	28.9%	31.2%	32.4%	32.4%	32.0%	32.5%	32.5%	32.4%	32.8%
Sprint	18.6%	16.6%	15.7%	15.6%	15.7%	15.5%	14.9%	14.0%	13.4%
T-Mobile	12.6%	12.1%	11.3%	10.6%	9.3%	10.9%	11.9%	13.5%	15.4%
Total National Service Provider Market Share	87.9%	93.3%	93.1%	92.4%	91.4%	95.4%	98.0%	98.0%	98.4%
Regional Service Providers	2008	2009	2010	2011	2012	2013	2014	2015	2016
Metro PCS	1.6%	2.0%	2.2%	2.5%	2.5%	*	*	*	*
US Cellular	2.2%	2.2%	2.1%	2.3%	2.2%	1.9%	1.8%	1.8%	1.7%
Leap Wireless	1.2%	1.4%	1.5%	1.6%	1.6%	1.4%	*	*	*
Other	7.2%	1.1%	1.0%	1.0%	2.2%	1.3%	0.3%	0.2%	*
Total Regional Service Provider Market Share	12.2%	6.7%	6.8%	7.4%	8.5%	4.6%	2.1%	2.0%	1.7%

Source: FCC Annual Mobile Wireless Competition Reports.□

Looking at the case of T-Mobile in particular, its market share was showing a decreasing trend before the proposed merger (diminishing market power) but has shown great improvement since the failed transaction. This is in clear contrast to AT&T and T-Mobile’s claims made in their petition. As the parties’ economic expert, Dennis Carlton, explained in his declaration, “Finally, our review indicates that T-Mobile USA’s competitive significance is likely to decline in the absence of the proposed transaction due to its relative lack of success in attracting datacentric subscribers, its declining share, its high churn rate and its inability to define a clear path to deploying LTE, which analysts expect to be critical to offering key data services.”

Backup data: [Market shares from FCC Annual Mobile Wireless reports](#)

Market Concentration: HHI Chart

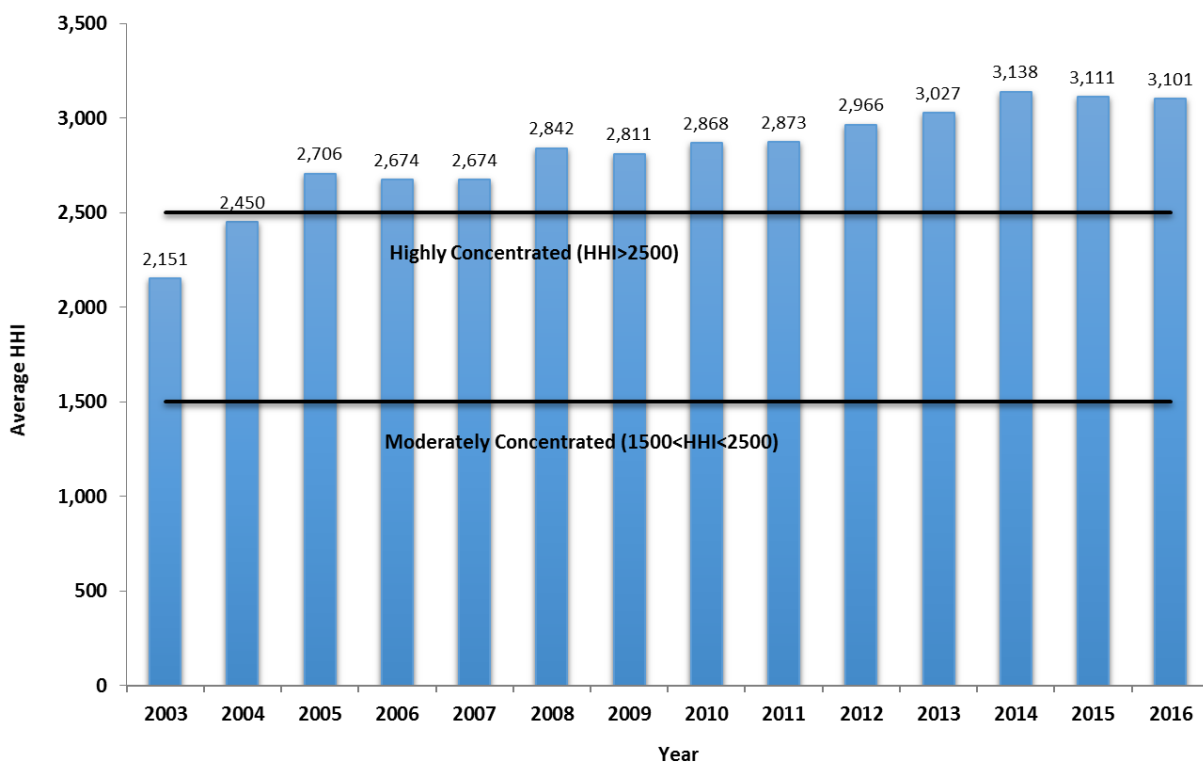
Market concentration is a useful measure to assess the likely competitive effects of a merger. In a merger review, agencies usually look at the post-merger level of market concentration and the change in concentration that would result from a merger.

The most used measure of market concentration is the Herfindahl-Hirschman Index (HHI). This is calculated by summing the squares of the individual firms' market shares, and thus gives proportionately greater weight to the larger market shares. The Horizontal Merger Guidelines classify markets into three types:

- Unconcentrated Markets: HHI below 1500
- Moderately Concentrated Markets: HHI between 1500 and 2500
- Highly Concentrated Markets: HHI above 2500

The chart below shows market concentration for the mobile wireless market using the average Herfindahl-Hirschman Index (HHI) calculated for 172 relevant Economic Areas defined by the U.S. Department of Commerce.

Mobile Wireless Market Concentration: Average HHI of EAs 2003-2011



Source: FCC Mobile Wireless Competition Reports 14th to 20th.

Note: Average HHI is the average Herfindahl-Hirschman Index of the 172 relevant Economic Areas (EA) defined in 1995.

According to the Horizontal Merger Guidelines, mergers resulting in highly concentrated markets that involve an increase in the HHI of between 100 points and 200 points potentially raise significant competitive concerns and often warrant scrutiny. Mergers resulting in highly concentrated markets that cause increases in the HHI of more than 200 points are presumed to be likely to enhance market power.

The increase in the HHI is equal to twice the product of the market shares of the merging firms. In this case, using the market shares of AT&T and T-Mobile before the proposed merger, the increase in HHI would have been 732 ($32.4 \times 11.3 \times 2 = 732.24$). This level and change of the HHI leads to a presumption of market power enhancement and requires the merging parties to present persuasive evidence showing offsetting efficiencies.

Backup data: [Market concentration from FCC Annual Mobile Wireless Reports](#)

Efficiency benefits claimed by merging firms

One of the main benefits of mergers are potential efficiencies or synergies resulting from combining the firms. These can result in cost savings that lead to lower prices or improved quality and service, hence making the merged firm better able to compete. Efficiencies can also cause new or improved products.

The Horizontal Merger Guidelines establish that agencies are not likely to challenge a merger that exhibits "...cognizable efficiencies (...) of a character and magnitude such that the merger is not likely to be anticompetitive in any relevant market." However only efficiencies that are "merger-specific," can be verified and do not arise from anticompetitive reductions in price or output would be credited when reviewing a merger transaction. Merger-specific efficiencies are those that cannot be achieved without the transaction by, for example, a contract or a less anticompetitive arrangement.

Efficiencies are not always easy to quantify and since they are derived mostly from information that is exclusively in hands of the merging firms, many times based on unique knowledge of processes, products and markets, verification can be challenging. To be taken into account, efficiencies cannot be vague or speculative.

Synergies arising from the proposed merger between AT&T and T-Mobile

In their petition to the FCC for the acquisition of T-Mobile, AT&T detailed that the transaction would result in substantial cost synergies, estimated to have a net present value of over \$39 billion, which was more than the value of the transaction. The synergies were identified as falling under four categories: network synergies, subscriber-related synergies, capital expenditure synergies and cost savings in the area of customer support and general and administrative costs.

Network synergies: In his declaration Sr Vice President of AT&T Inc., Rick Moore stated that as part of the integration of the networks, thousands of sites would be "phased out over several years (...) resulting in very substantial cost savings, including the elimination of lease, utility, maintenance, and other site related expenses.". AT&T's petition estimated these synergies at a net present value of at least \$10 billion.

Subscriber-related synergies: AT&T estimated that some of the savings related to moving away from the T-Mobile brand would come from more effective marketing and advertisement spending and lower costs from retail and customer service. The estimated net present value of these and other subscriber-related synergies was purported to be in excess of \$10 billion.

Capital expenditure synergies: The rationale provided for this type of synergies was that the combination of the two networks would free up capital that could be used in network investment, for example capital that would have been used to buy spectrum. It was also argued that equipment from sites that would be shut down could be redeployed to other sites. It was also argued that the transaction would allow for volume discounts for infrastructure and equipment purchases. These savings would amount to an estimated net present value of over \$10 billion.

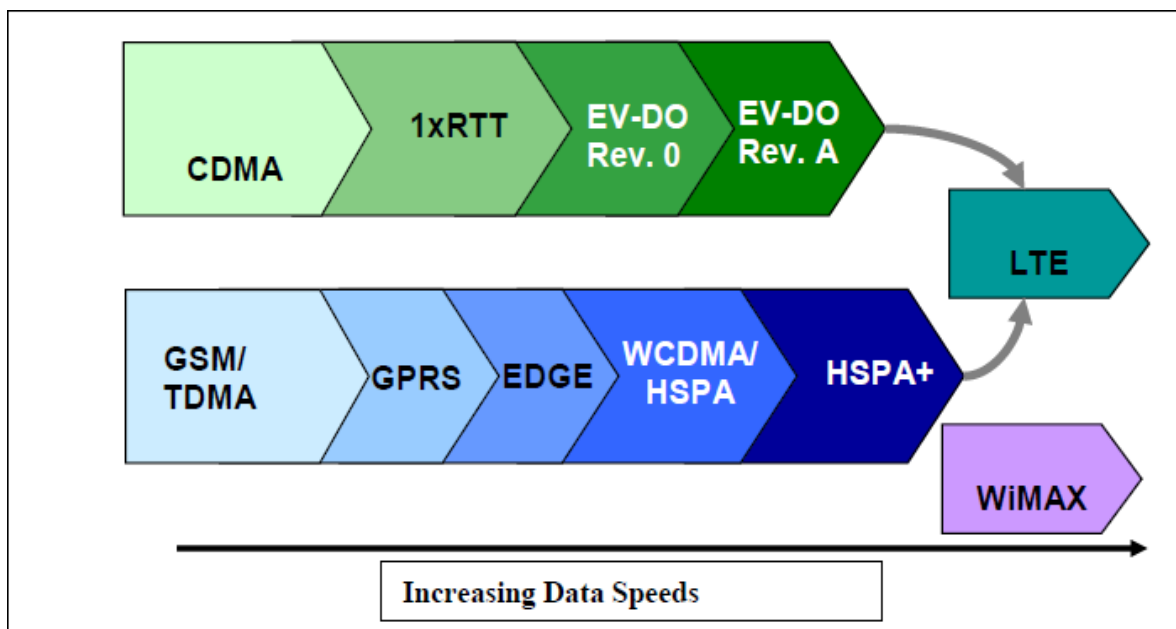
Customer support and general and administrative costs synergies: These are savings stemming from combining support functions like call centers and billing operations. The petition also mentions cost savings are expected from "...removing redundancy in corporate and overhead functions." The net present value for this category was also estimated in excess of \$10 billion.

Technology (3G, 4G, LTE)

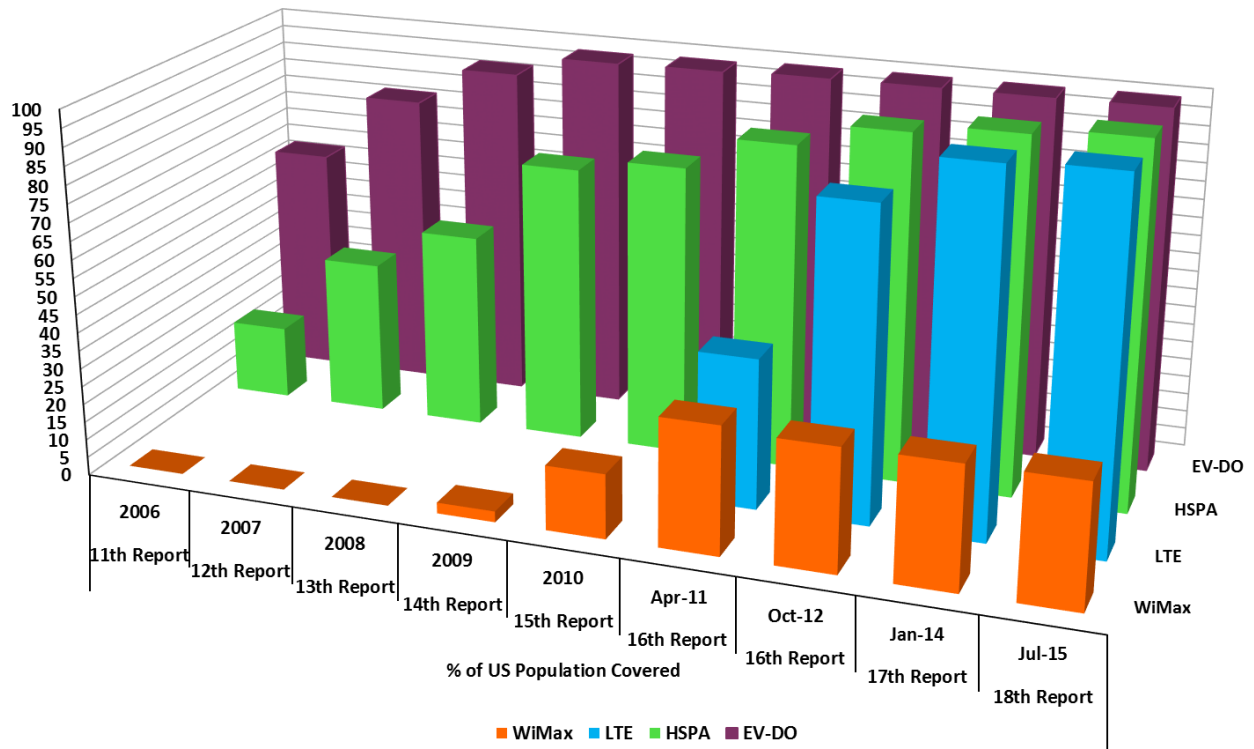
Congress passed legislation in 2010 emphasizing the importance of broadband, that year the FCC concluded in its Sixth Broadband Progress Report that broadband was not being deployed to all Americans in a reasonable and timely fashion.

AT&T's main argument to justify the acquisition of T-Mobile was the capacity constraint that its planned mobile broadband deployment was placing on its network. AT&T had committed to build a 4G LTE (Long Term Evolution) network and, according to its projections considering its available spectrum, they concluded that they would be available to reach 80% of the population by 2013. In the petition to merge they claimed that the merger would allow the companies to take advantage of combined spectrum and scale to be able to reach 97% of the population instead, which would represent covering an additional population of 55 million, including people in rural areas and small communities.

T-Mobile had also been an innovator in terms of network development and deployment. For instance, T-Mobile was the first company to roll out and market a nationwide network based on advanced HSPA+ technology and marketed as 4G. T-Mobile began upgrading its HSPA+ network and this network covered 200 million people as of the end of 2010. During 2011, T-Mobile further upgraded its HSPA+ network with more advanced technology that doubled the peak downstream rate. However, at the time of the petition T-Mobile claimed that it had "no clear path" to deploy LTE.



Estimated Mobile Wireless Data/Broadband Network Coverage by Census Block by Technology 2006 - 2015



Source: FCC Annual Mobile Wireless Competition Reports.

Spectrum

With the increase in mobile wireless data usage, access to spectrum has become perhaps the most important input for service providers. To meet demand, providers need to use more spectrum or complementary technology that expands the capacity of the spectrum. Different types of spectrum serve different purposes, for example lower frequency spectrum potentially allow for wider coverage with fewer cell sites, which is key in rural areas, and better in-building coverage, which is especially important in urban areas. Furthermore, higher-frequency spectrum may be effective for increasing capacity, particularly within smaller, more densely-populated geographic areas. For that reason, a provider is best positioned if it holds complementary spectrum bands.

Spectrum for a wireless service market can be obtained in different ways: it can be purchased at a FCC auction, purchased in the secondary market, and leased in the secondary market. In 2010 most of the lower frequency spectrum (below 1GHz), which was also the most valued, was held by Verizon and AT&T, the two largest providers.

According to the spectrum prices reflected in FCC's Sixteenth Mobile Wireless Competition Report from March 2103, a potential new provider that wanted to consolidate a relevant regional spectrum presence would have to disburse hundreds of millions of dollars, and it would need billions of dollars for a national spectrum footprint.

In their petition, AT&T claimed that T-Mobile had spectrum in many areas where they did not have any 700 MHz or AWS spectrum available for LTE. They further argued that the merger would "...create immense network and spectrum synergies that will alleviate the capacity constraints that the applicants would otherwise be left to address, far less efficiently and effectively, on their own...". The petition further states that this expanded capacity benefits would not apply only to the petitioners but they would extend also to consumers in general (for example it would be translated to less dropped and blocked calls).

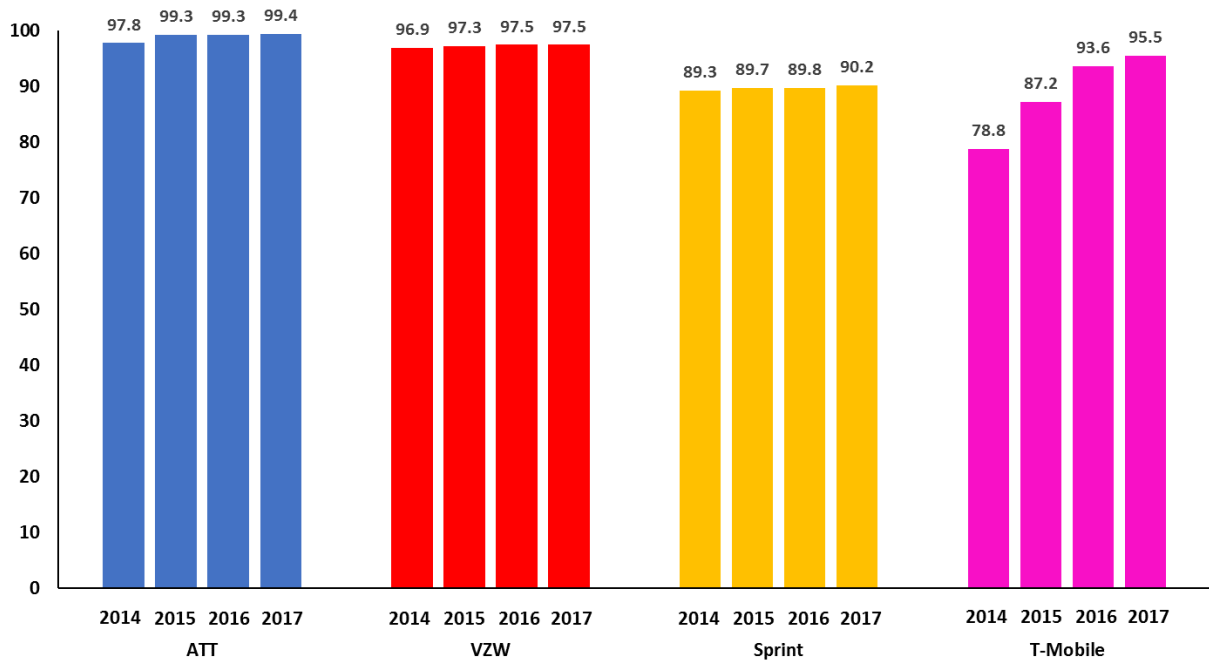
LTE Deployment

AT&T received criticism from numerous fronts on its claims of capacity constraints. Many opponents to the merger, like Sprint and Metro PCS, backed the statement from Gigi B. Sohn, the president of Public Knowledge in her appearance before the U.S. Senate Committee on the Judiciary Subcommittee on Antitrust, Competition Policy and Consumer Rights on May 11, 2011. In her presentation, Ms. Sohn stated that AT&T's spectrum shortages were self-inflicted since the company was making an inefficient use of its spectrum trying to operate in three different types of networks. As a result, the majority of its spectrum was being undersused. She further claimed that AT&T could achieve its LTE objectives by investing adequately in infrastructure and network and by giving incentives to users of less efficient technologies to migrate to LTE.

T-Mobile that had "no clear path" to LTE in 2011, after the failed merger transaction, announced plans to deploy an LTE network using spectrum licenses acquired from AT&T as part of the breakup of their agreement. As shown in the charts below by 2015 their LTE network covered over 85% of the population, and 95% at the beginning of 2017.

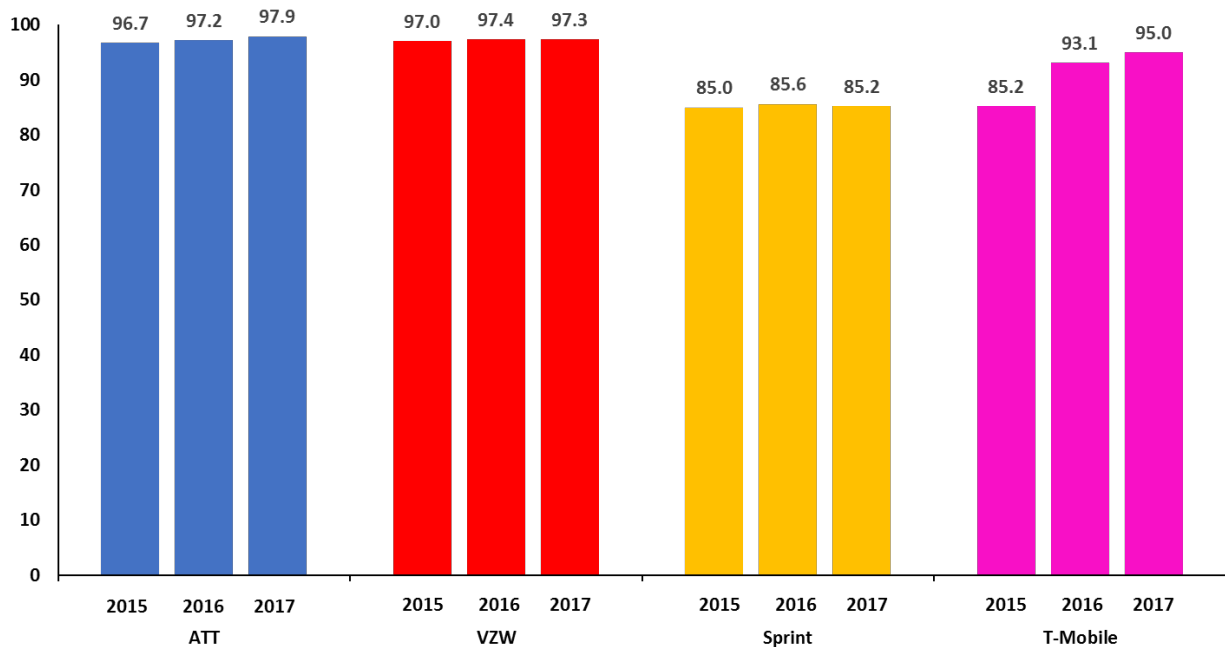
AT&T on its part, claimed that it would need the merger to be able to reach 97% of the population with its LTE network. In 2012 AT&T announced their spectrum strategy to be able to meet its LTE deployment goals which involved acquisition of spectrum from new auctions and in the secondary markets. The chart below shows that by 2016 they had exceeded their goal.

Estimated Mobile Wireless Broadband Coverage in the U.S. - Mosaik % of Total US POPs by Provider, 2014 - 2017



Source: FCC Annual Mobile Wireless Competition Reports.

Estimated LTE Broadband Coverage in the U.S. by Service Provider - Mosaik % of Total US POPs by Provider



Source: FCC Annual Mobile Wireless Competition Reports.

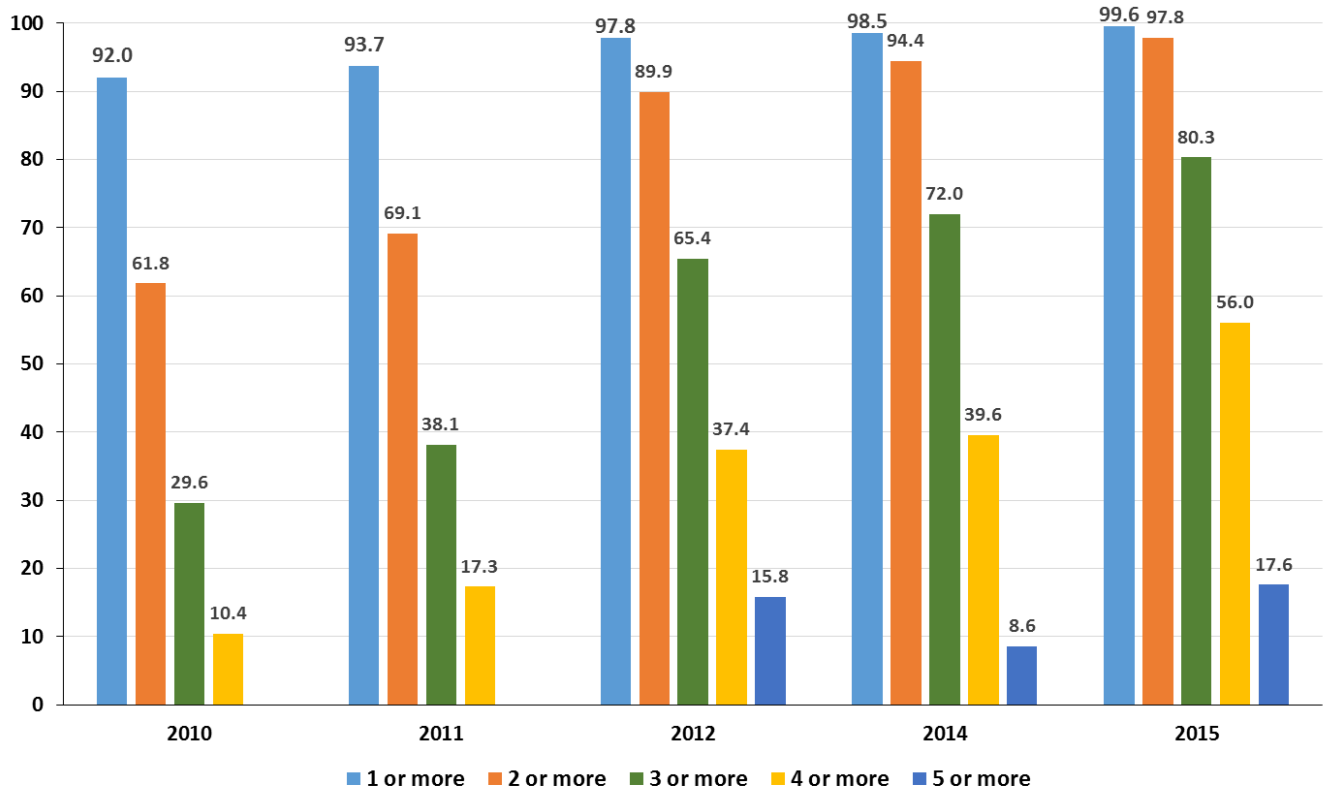
Backup data: [Deployment of 3G 4G LTE from Annual Mobile Wireless reports](#)

Rural Broadband Coverage

AT&T’s petition highlighted that the merger with T-Mobile would give the combined company the “scale, resources, and spectrum that will enable it to deploy LTE to more than 97 percent of Americans—approximately 55 million more Americans than under AT&T’s current plans.” However, opponents to the merger stressed that AT&T didn’t need T-Mobile to be able to bring LTE to rural areas. A shortage of spectrum was not the reason LTE was not deployed in rural areas, the reality is that lower densely populated areas are not as profitable and that is a challenge for all mobile wireless providers.

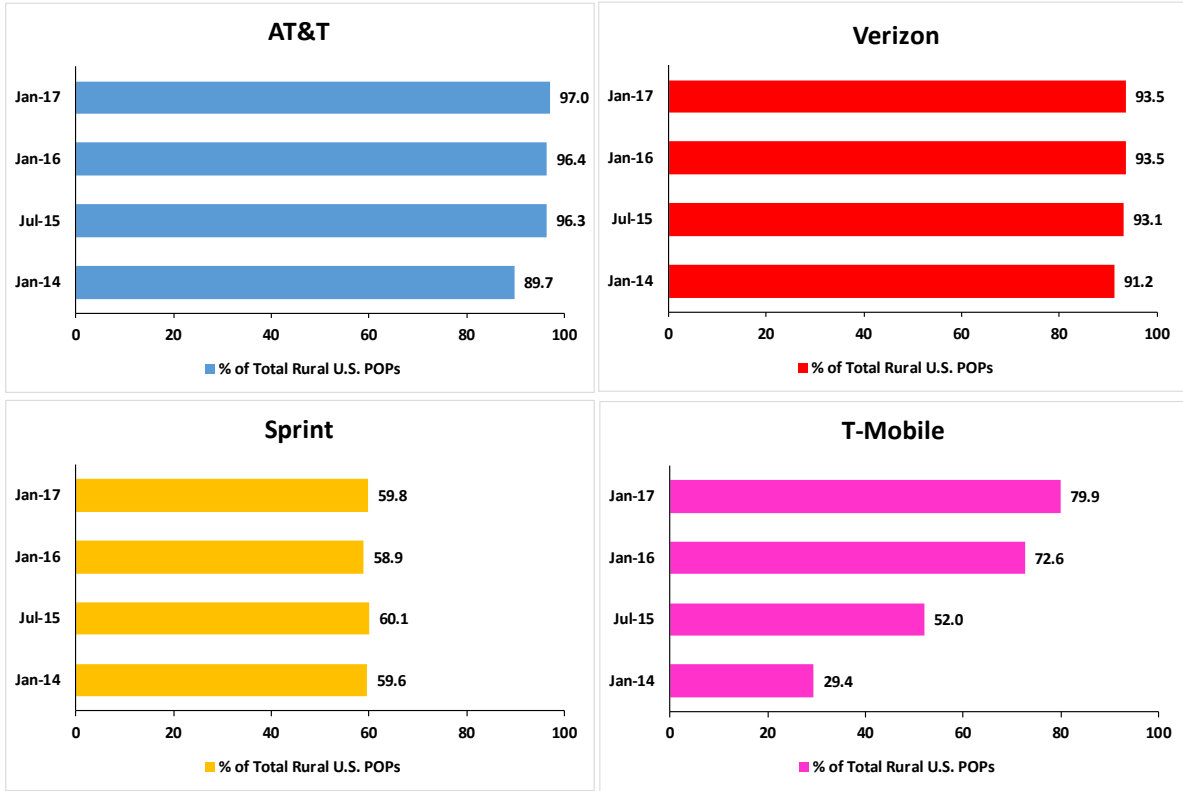
Estimated Coverage of Mobile Broadband Providers in Rural Areas

% of Rural U.S. Population Covered by Number of Mobile Broadband Providers 2010 - 2014



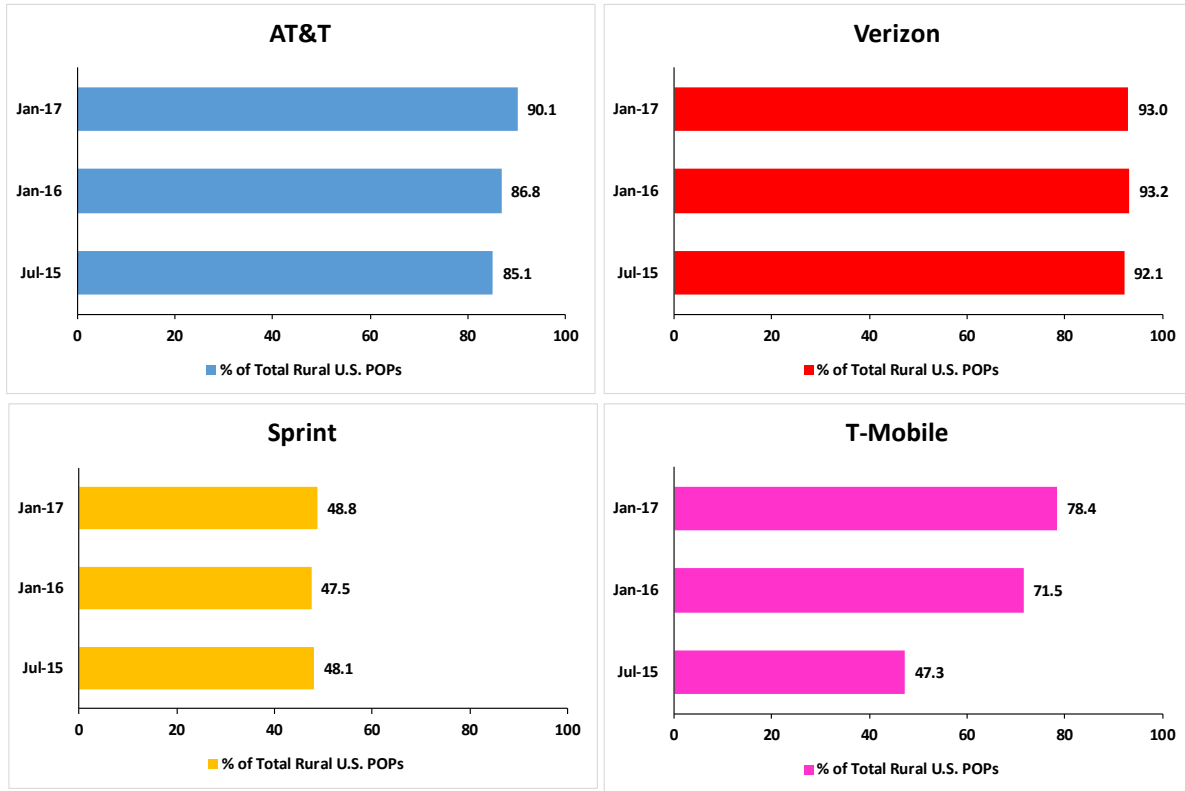
Source: FCC Mobile Wireless Competition Reports.

**Estimated Mobile Broadband (3G+) Coverage in Rural Areas by Provider - Mosaik, Centroid Method
2014 - 2017**



Source: FCC Annual Mobile Wireless Competition Reports.

**Estimated LTE Broadband Coverage in Rural Areas by Service Provider - Mosaik Centroid Method
2015 - 2017**



Source: FCC Annual Mobile Wireless Competition Reports.

Backup data: [Rural Broadband Coverage from Annual Mobile Wireless reports](#)

Follow up

On November 23, 2011, after signals from the FCC that it would follow the Antitrust Division of the DOJ's position in opposing the proposed merger, AT&T and T-Mobile withdrew their pending petition for transfer of control of T-Mobile to AT&T. On November 29 the Bureau dismissed without prejudice the application. As a result of the termination of the agreement, T-Mobile received \$4 billion in break up fees consisting of \$3 billion cash, spectrum, and roaming agreement valued at \$1 billion.

After agreeing to the termination of their purchase agreement, Randall Stephenson, AT&T's CEO, said in a press release on December 19, 2011 that "(...) customers will be harmed and needed investment will be stifled".

However, the pricing and quality indicators for mobile wireless usage presented below show an improvement after the abandonment of the AT&T – T-Mobile merger. In addition, the buildout of LTE occurred at the same pace as was forecast for the combined company, rather than following the "no clear path" scenario that had been forecast for T-Mobile. Thus, it appears the competition from the 4th independent carrier helped generate more competitive market outcomes.

The mobile wireless landscape changed substantially in recent years, not only through declining prices and increasing data speed and usage. Consumers have benefitted from important innovations in products and services that are signs of a more competitive market. Of particular interest are the changes in the plans offered that fostered the competition among providers. We cite two (out of many that ran around this time) articles below that discuss those changes like elimination of 2-year contracts, reintroduction of unlimited plans, offers to cover termination fees for customers to switch, among others.

<https://www.nytimes.com/2014/01/09/technology/personaltech/t-mobile-offers-to-cover-termination-fees-for-switchers.html>

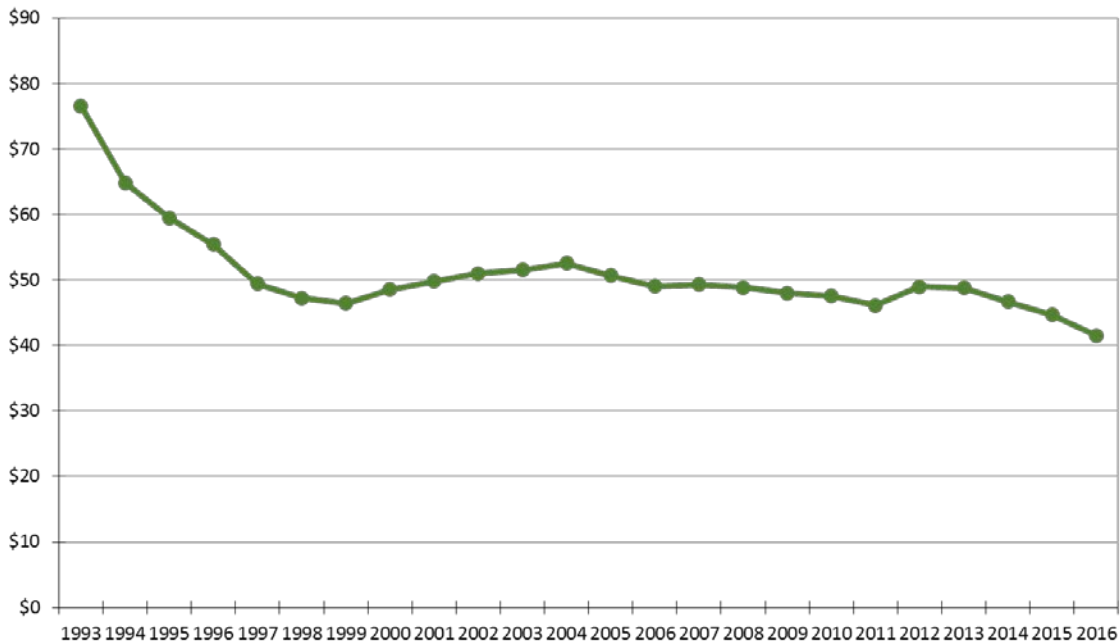
<http://www.betaboston.com/news/2015/08/19/as-phone-contracts-die-competition-comes-to-life/>

Average Revenue Per Unit

This measure reported by the CTIA (Cellular Telecommunications Industry Association) is an annualized monthly average revenue per reported (subscriber) unit. Given the complexity of the mobile wireless market, with multiple pricing plans and rate structures, ARPU is one of the main measures used to compare broad trends in pricing in the industry. Average revenue per connection and average revenue per MB have been falling in recent years. For example, between the years 2012 (when the FCC dismissed

AT&T and T-Mobile’s petition to merge) and the most recent data from 2016, the ARPU has decreased 15%.

Annualized Average Revenue Per Reported Subscriber Unit (ARPU): 1993–2016



Source: FCC 20th Annual Mobile Wireless Report.

It is important also to note that the ARPU now includes a lot of more capabilities than in 1993 when the data above starts. The ARPU price plotted here is not adjusted to account for drastically increasing quality, capacity, or services included in the plan. Most mobile wireless plans today include voice, text and data but also other services like roaming, hotspots and more, which makes the decreasing price trend even more impressive.

Average Revenue Per Unit by Service Provider

ARPU has decreased for all nationwide service providers as shown in the table below. Comparing the data between the fourth quarter of 2011 and the fourth quarter of 2016, the largest change was exhibited by Sprint with a decline of 26% and the smallest was Verizon with a still sizeable decline of 19% in ARPU.

**ARPU Estimates of Publicly Traded Facilities- Based Mobile Wireless Providers
4th Quarter 2011 – 4th Quarter 2016**

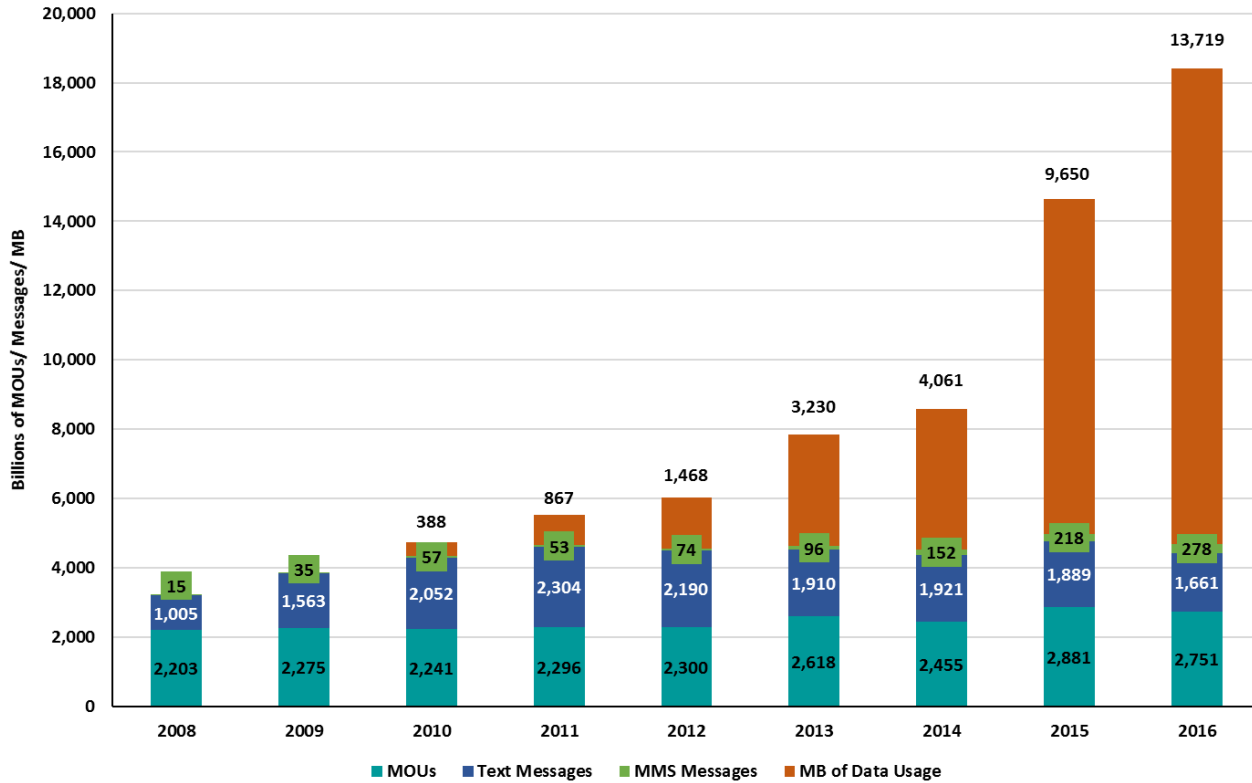
Nationwide Providers	4Q11	4Q12	4Q13	4Q14	4Q15	4Q16
AT&T	\$ 47.04	\$46.94	\$47.58	\$42.04	\$38.78	\$36.58
Verizon	\$ 46.55	\$47.57	\$47.50	\$45.52	\$40.99	\$37.52
Sprint	\$ 43.08	\$43.37	\$44.83	\$40.44	\$35.54	\$32.03
T-Mobile	\$ 44.29	\$40.24	\$36.91	\$35.56	\$34.53	\$33.80
Regional/Rural Providers		4Q12	4Q13	4Q14	4Q15	4Q16
US Cellular	\$ 49.74	\$50.89	\$50.21	\$53.58	\$49.32	\$49.03
MetroPCS	\$ 40.55	\$40.86	*	*	*	*
Leap	\$ 42.39	\$40.69	\$45.55	*	*	*
NTELOS	\$ 48.57	\$52.78	\$54.11	\$52.35	\$49.14	*
Cincinnati Bell	\$ 43.26	\$43.28	\$41.35	\$39.87	*	*

Source: FCC Annual Mobile Wireless Reports.

Consumer Usage

While data usage has undoubtedly increased as we discuss in more detail below, annual voice minutes and SMS text messaging trends seem to be reverting as those functions are being overtaken by internet apps such as Skype, Facetime, WhatsApp and Facebook messenger.

Annual Minutes, Messages, and Megabytes of Wireless Traffic

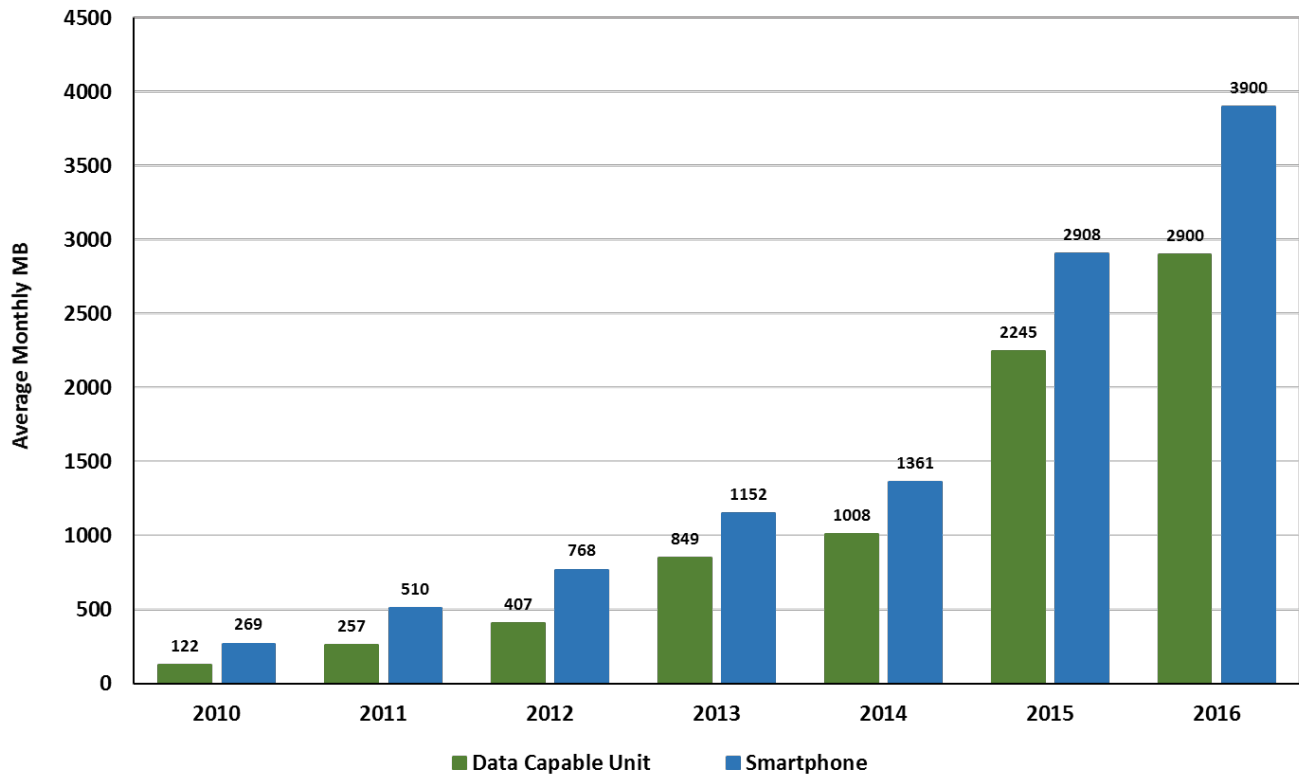


Source: FCC 20th Annual Mobile Wireless Report.

Mobile Data Usage

Mobile data usage has increased exponentially in the recent years, investment in networks and newer technologies have allowed faster download rates which contributed to this increase. Between 2010 and 2016 the data usage for smartphones has increased 1350% and for data capable units 2277%. The FCC Twentieth Mobile Wireless Competition Report states the data usage by smartphone subscribers rose to an average of 3.9GB per subscriber per month, which represents an increase of approximately 39% from year-end 2015 to year-end 2016.

Mobile Data Usage per Subscriber 2010 - 2016



Source: FCC 20th Mobile Wireless Competition Report.

Backup data: [ARPU and Data Usage from Mobile Wireless reports](#)

LTE Deployment

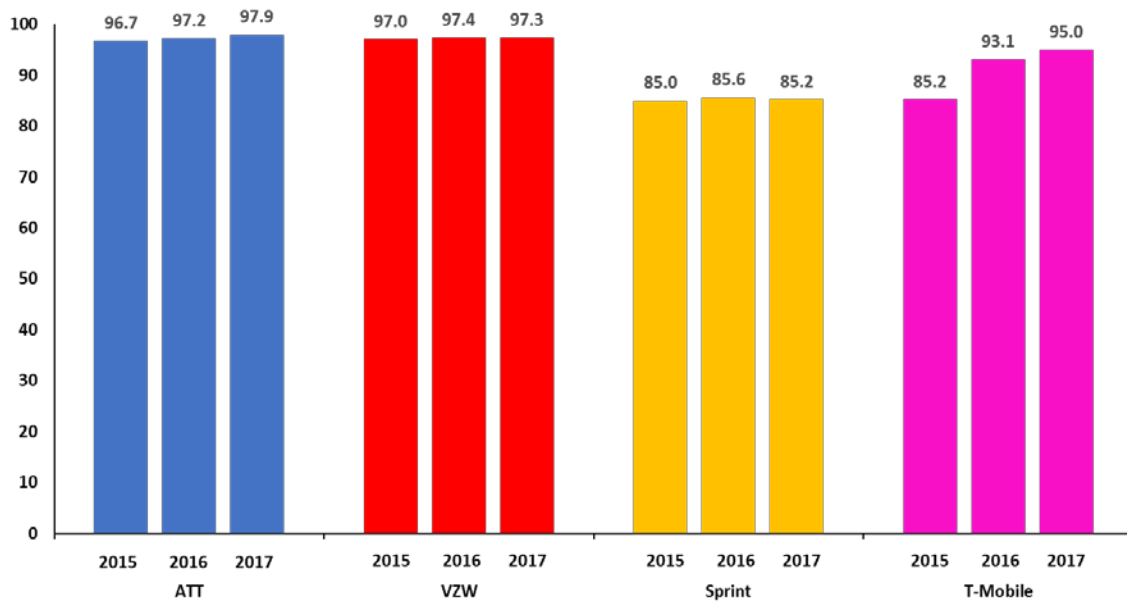
As stated before the main claim in the AT&T and T-Mobile petition was that the companies' plans for LTE deployment would be hindered without a merger.

The T-Mobile that was alleged to have "no clear path" to LTE in 2011, then announced plans to deploy an LTE network using spectrum licenses acquired from AT&T as part of the breakup of their agreement. As shown in the charts below, by 2015 their LTE network covered over 85% of the population, and by 2017 it covered 95%.

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goals which involved acquisition of spectrum from new auctions and in the secondary markets. The chart below shows that by 2016 they had exceeded their goal.

**Estimated LTE Broadband Coverage in the U.S. by Service Provider - Mosaik
% of Total US POPs by Provider**



Source: FCC Annual Mobile Wireless Competition Reports.

A note on lobbying

When the FCC reviews a merger transaction it offers a period to receive comments and oppositions to the application from interested parties. This Public Comment opportunity is an important channel for significant amounts of corporate lobbying.

<https://www.washingtonpost.com/business/2019/01/17/massive-new-study-traces-how-corporations-use-charitable-donations-tilt-regulations-their-favor/>