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September 19, 2017

Ajit Pai, Chairman
Federal Communications Commission
445 Twelfth Street SW
Washington, DC 20554

RE: WT Docket No. 17-69
WC Docket No. 17-108

Dear Chairman Pai:

You have placed on the agenda for next week's open meeting the Commission's 20th annual report to Congress on the state of competition in the U.S. mobile wireless industry (the "20th Report"). As has been your practice, in the name of increased transparency, you published a draft of that report prior to next week's vote. Yet that is where your transparency ended, sadly.

You have misused this draft, in your commentary on its purported findings, to falsely suggest a connection between investment and mobile broadband's proper classification as a Title II telecommunications service. As this letter illustrates, the draft and your comments on it omit key data, historical context, and relevant findings included in prior years' annual reports.

In remarks delivered last week at the Mobile World Congress Americas gathering, you noted that the draft finds wireless industry capital investment declined from 2015 to 2016. You winkingly attributed this decline to the Commission's February 2015 Title II reclassification decision and its adoption of the current open internet rules at that time.

Specifically, you said: "[T]he most concerning emerging issue we are seeing is that investment in wireless networks was down significantly in 2016. According to the UBS Wireless 411 report, in fact, investment was down 9%, a huge drop outside of a recession . . . . I think you know where I'm going next. In our *Restoring Internet Freedom* proceeding, the FCC is currently examining whether we should change our Internet regulations in order to encourage greater deployment and investment and bring digital opportunity to more Americans. CTIA has weighed in to express your concerns that the current rules hinder network investment."

Unfortunately, we do indeed know where you're going next. You are once again misleading the public in furtherance of your irrational vendetta against the congressionally mandated classification of transmission services as telecom services. The easily verifiable truth is that wireless industry investments peaked in 2013, as carriers completed the bulk of 4G LTE deployments. Both that peak, and the ongoing decline from it, predate the entire proceeding that led to the 2015 reclassification of broadband as a lightly regulated Title II service. What's more, this is by no means the only years-long downturn for the wireless sector: such periods of slower spending are natural – and, in the recent past, have likewise occurred outside of recessions.

This most recent example of your misleading statements on the broadband industry's investment levels and overall health are even more troubling than your typically disingenuous speeches, as the Commission's obfuscation on this important matter apparently now extends even into official reports to Congress. The draft deviates drastically from the more detailed (and more accurate) format the Commission's annual report has followed in recent years.

Figure 1, appended to the end of this letter, is a screenshot from the draft of the 20th Report you released on September 7, 2017. We note that this investment section in the draft text only references the change in the wireless industry's collective capital expenditures over the prior year, instead of reporting the change over the past several years. We also note that the sole chart only shows investments for the four national carriers since 2013, but without providing any illustration of the aggregate investment decrease reported in the text.

Figure 2, likewise appended to this letter, comes from the prior annual report (the "19th Report"). First, note that the 19th Report also showed a decline in wireless industry investment from 2014 to 2015, a period preceding the Title II reclassification that you (wrongly) blame for the 2016 decline. Also note that in the 19th Report, the Commission rightly cautioned against placing "too much emphasis on absolute capital expenditures at any given point in time," because of the "cyclical nature of such investments."[1] That language is mysteriously missing from the draft for the upcoming report. The 19th Report also detailed each carrier's investments in recent years, explaining that they are on different trajectories. And its accompanying chart on the four national carriers' investments covered a six-year period, not just a four-year period as the draft 20th Report does.

These missing passages, with their more expansive explanations, longer time courses, and rightful caution against placing too much emphasis on cyclical investment totals, also appeared in prior years' reports. In fact, such language has appeared in prior annual wireless competition reports stretching all the way back to 2003, during the first term of George W. Bush administration. We include either the entirety of the investment sections or excerpts from these sections for all editions between the 18th Report (*see* Figure 3) and the 8th Report (*see* Figure 13), inclusive.

For example, the 18th Report noted a single-year investment decline too (just as the 19th Report did), this time from 2013 to 2014. That, of course, also came well before the February 2015 reclassification vote. The 18th Report similarly cautioned against over-interpretation of an annual change in this aggregate total. And like the 19th Report, the 18 Report too included a chart covering a longer time period than the draft of the 20th Report does. Lastly, but perhaps most importantly, both the 19th Report and 18th Report referenced analysis in earlier editions that discussed the "lumpy" nature of investment in this industry due to its "cyclical nature of technological adoption."[2]

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[1] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, WT Docket No. 16-137, Nineteenth Report, 31 FCC Rcd 10534, ¶ 24 (2016) ("19th Report").

[2] *Id.* ¶ 24 n.57; *see also Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, WT Docket No. 15-125, Eighteenth Report, 30 FCC Rcd 14515, ¶ 107 n.306 (2015) ("18th Report").

Before partisans try to blame such passages on the Wheeler FCC, they should know that this language came straight from AT&T comments in the 2010 wireless report docket. As AT&T stated, "[T]here is no reason to expect capital expenditures to increase by the same amount year after year. Capital expenditures tend to be 'lumpy.' Providers make significant expenditures to upgrade and expand their networks in one year (*e.g.*, perhaps because a new generation of technology has just been introduced), and then focus the next year on signing up customers and integrating those new facilities into their existing networks, and then make additional capital expenditures later, and so on. Minor variations from year to year thus should not be surprising**,** much less an indication of declining competition. In any event, the data show that the decrease in overall capital expenditures may be attributable to a single provider – Sprint."[3]

If AT&T's sentiment in that comment sounds familiar, that is because it's the central argument Free Press has made in our pleas for sanity in the debate over Title II's investment impact. We've repeatedly noted that an industry aggregate investment total can be mildly informative at best and downright misleading in some cases. In this case specifically, looking to overall broadband investment since reclassification, you and others have manipulated the aggregate total and misled people as often as you could with it. You have done so primarily by ignoring the fact that AT&T's temporary decline in 2015 stemmed from early completion of its major "Project VIP" wired and wireless upgrade project. This decline at a single company "should not be surprising," to quote AT&T – and over-reliance on any aggregate totals without accounting for this natural, cyclical change in investment from year to year can mask the increases taking place at other companies and in whole other industry sub-sectors (notably, since reclassification, by cable company ISPs that greatly increased core network expenditures).[4]

In other words, AT&T's 2010 wireless competition comments on this score remain perfectly accurate, and it is curious that the Commission under your leadership would attempt to erase this context from this report to Congress. The 17th Report (issued in 2014), was virtually identical to the 18th Report in style and substance, containing the same cautionary language about variation in spending (*see* Figure 4). And in the annual wireless competition reports that preceded Chairman Wheeler's tenure, we see a slight change in presentation style, but no change in the breadth of information presented.

For example, in the 16th Report (*see* Figure 5) the FCC presented six years of data from both CTIA and the U.S. Census Bureau, showing that wireless industry investment was in decline before picking up again thanks to pre-LTE launch expansions. Not shown in the screen shot in Figure 5 are this 16th Report's three additional figures, which included CTIA's annual investment data from 2002–2012 (showing declines from 2002–2004 and then again from 2005–2008); CTIA's investment per customer measurements for 2006–2012 (also showing declines from 2006–2009, and from 2010–2011); and wireless capital intensities from 2006–2011, based on both CTIA and Census data (showing CTIA's finding of declines in this metric as well, from 2006–2010, and from 2010–2011). Also not shown in our excerpt is the discussion of "lumpy" investment patterns, which is found in the 16th as well as the prior year's annual report too (the "15th Report" – *see* Figure 6).

[3] Comments of AT&T, WT Docket No. 10-133, at 34 (filed July 30, 2010); *see also id.* at 39.
[4] *See, e.g.*, Comments of Free Press, WC Docket No. 17-108, at 140–142 (filed July 17, 2017).

The 14th Report also follows this same expansive style (*see* Figure 7). The 13th Report, which was the last one issued under Chairman Kevin Martin, was much shorter and lacked charts; but it did note a multi-year decline in investment over a four-year period (*see* Figure 8). That 13th Report, issued by Chairman Martin, followed the same style used in the 8th through the 12th Reports issued under Martin and by his predecessor, Chairman Powell (*see* Figures 9–13). These earlier reports vary from the later grouping in their references to capital investment, but they did provide data for a number of years rather than improperly fixating (as the current draft does) on a single year's change.

In sum, while the style of the investment section in prior years' annual wireless competition reports changed slightly when Commission leadership changed, your pending report to Congress on the state of wireless competition reduced the amount of information on investment in order to hide the reality of the situation. You seem to have deliberately obscured the facts and ignored the findings contained in prior reports, which routinely found extended periods of declining investment in years before the 2015 *Open Internet Order* vote. Those earlier reports also routinely offered context – provided by carriers such as AT&T itself – on the cyclical nature and year-to-year fluctuations in such investments. This year's report should do the same or better, rather than pretending there is some unusual decline and then attempting to pin it on Title II.

Respectfully submitted,

S. Derek Turner, Research Director
Matthew F. Wood, Policy Director
Free Press

cc: Rachael Bender
David Grossman
Daudeline Meme
Erin McGrath
Kevin Holmes
Travis Litman

Figure 1: 20th Report's Entire Investment Section

C. Investment

68. Over the past seven years, according to CTIA, wireless service providers in the United States have made capital investments of more than $200 billion.[236] According to the UBS Wireless 411 report, in 2016, wireless service providers spent an incremental $28.0 billion, which is a decline of approximately 9 percent from the $30.9 billion invested in 2015.[237] According to UBS, AT&T, Sprint, T-Mobile, and Verizon Wireless spent a combined $27.5 billion in 2016, $30.3 billion in 2015, and $31.2 billion in 2014, accounting for close to 100 percent of total industry capital investment as tracked by UBS in these time periods.[238] AT&T and Verizon Wireless consistently made more capital investments in absolute CAPEX dollars in each quarter than did either Sprint or T-Mobile. In 2016, AT&T, T-Mobile, and Verizon Wireless each had CAPEX of approximately 16 percent to 17 percent of service revenue.[239] CAPEX by Sprint, on the other hand, fell considerably in this time period, from approximately 17 percent of service revenue in 2015 to 7.5 percent in 2016.[240] Access to capital may be more constrained for some service providers, including smaller service providers.[241] Chart III.C.1 below shows annual capital expenditures by the four nationwide service providers since 2013.

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[236] CTIA Wireless Industry Indices Year-End 2016, at 60. CTIA's figure includes incremental investment in currently operational systems, including expenditures for building operating systems, land and capital leases, and all tangible non-system capital investment, but does not include the cost of spectrum licenses purchased at auctions or other acquisition processes or greenfield builds. In 2016, the incremental investment reported to CTIA amounted to $26.4 billion, down approximately 17% from 2015. CTIA Wireless Industry Indices Year-End 2016, at 12. CTIA's Capex for the period consisted of surveyed service providers comprising 97.9% of all estimated wireless subscriber connections in the industry.

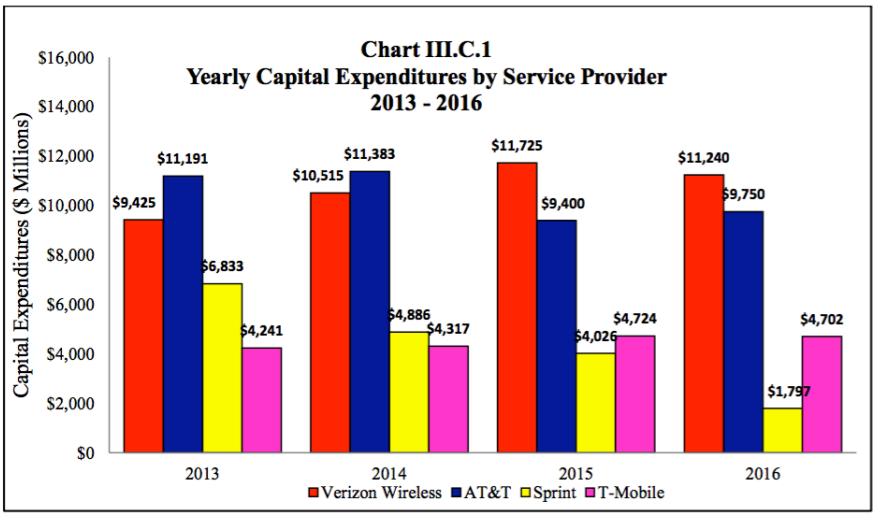
[237] UBS US Wireless 411, February 2017, Figure 38.

[238] UBS US Wireless 411, February 2017, Figure 38.

[239] UBS US Wireless 411, February 2017, Figure 36 and Figure 38.

[240] UBS US Wireless 411, February 2017, Figure 38.

[241] According to The Rural Broadband Association (NTCA), which consists exclusively of small, rural service providers, 61% of the rural service providers who were surveyed described the process of obtaining financing for their wireless projects as "somewhat difficult" or "very difficult." NTCA 2016 Wireless Survey Report, at 3, 10 (Jan. 2017),

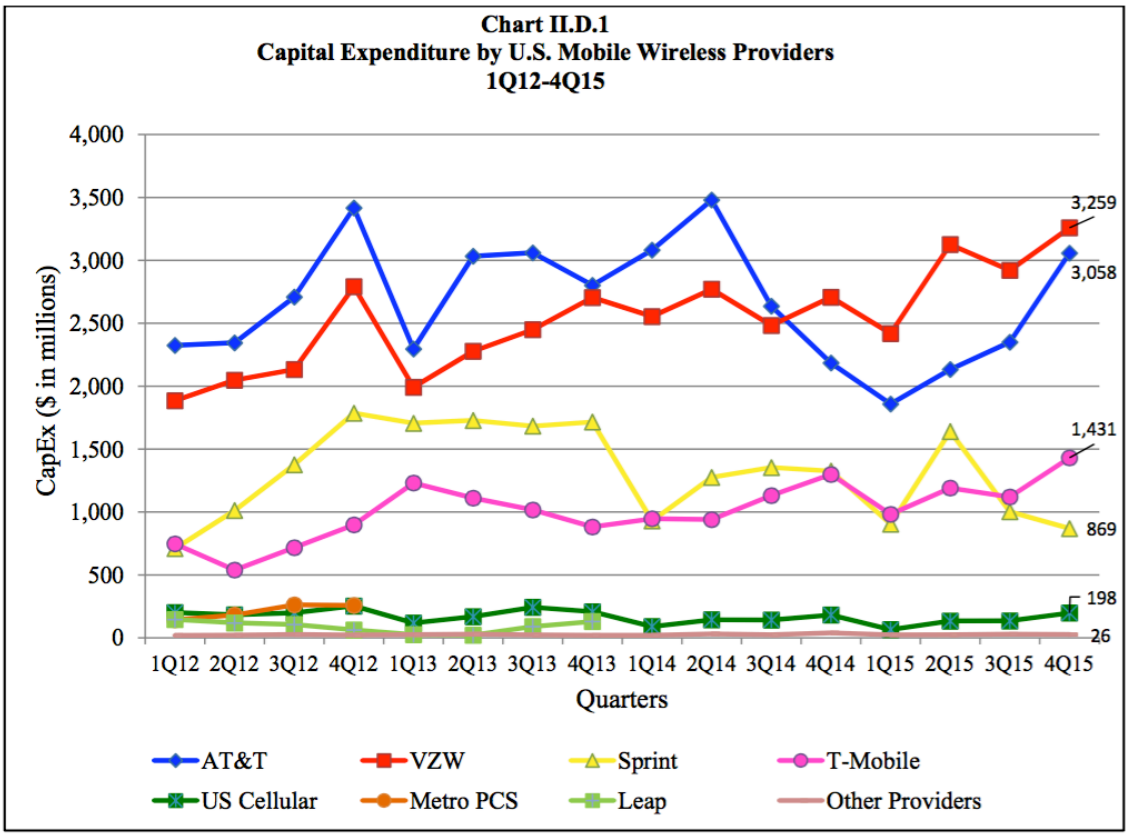


Source: UBS US Wireless 411, Version 59, Figure 72; Wireless 411, February 2017, Figure 38.

Figure 2: 19th Report's Entire Investment Section

D. Investment

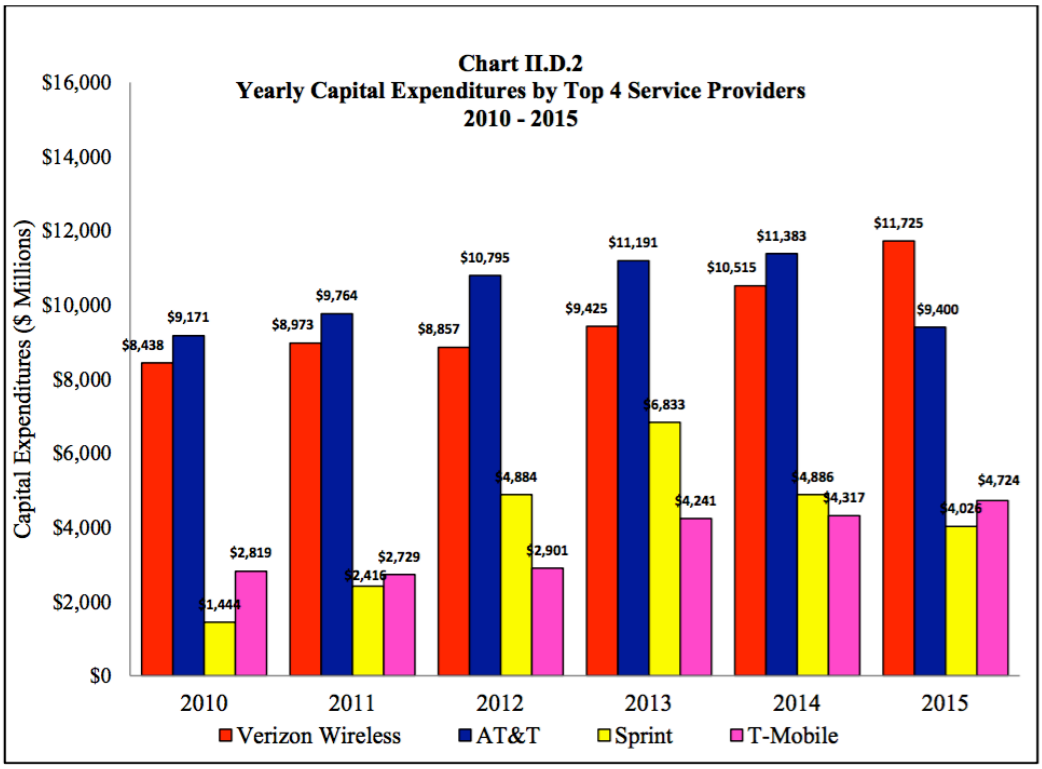
23. Service providers can expand their network coverage and capacity through increased investment in, and expansion of, their existing assets and infrastructure.[52] Service providers may make such strategic capital expenditure (CAPEX) decisions to differentiate their service offerings from those of their rivals by becoming the first to deploy a particular upgrade or new network technology. Over the past six years, wireless service providers in the United States have made capital investments of approximately $177 billion.[53]



Source: UBS US Wireless 411, Version 55, Figure 54; UBS US Wireless 411, Version 57, Figure 60; UBS US Wireless 411, Version 59, Figure 72. T-Mobile and MetroPCS merged in 2013; AT&T acquired Leap in 2014.

[52] Importantly, service providers also expand into new geographic areas and/or upgrade networks in existing markets after adding to their spectrum portfolios through participation in spectrum auctions and secondary market transactions, as discussed above.

[53] CTIA Wireless Industry Indices Year-End 2015, at 60. CTIA's figure includes incremental investment in currently operational systems, including expenditures for building operating systems, land and capital leases, and all tangible non-system capital investment, but does not include the cost of spectrum licenses purchased at auctions or other acquisition processes or greenfield builds.



Source: UBS US Wireless 411, Version 55, Figure 54; UBS US Wireless 411, Version 57, Figure 60; UBS US Wireless 411, Version 59, Figure 72.

24. As shown in Chart II.D.1 above, wireless service providers spent an incremental $30.9 billion in 2015, which is a decline of approximately 3.2 percent from the $31.9 billion invested in 2014.[54] Based on UBS data, AT&T, Sprint, T-Mobile, and Verizon Wireless spent a combined $30.3 billion in 2015 and $31.2 billion in 2014, accounting for close to 100 percent of total industry capital investment as tracked by UBS in these time periods. Chart II.D.1 shows that AT&T and Verizon Wireless consistently made more capital investments in absolute CAPEX dollars in each quarter than did either Sprint or T-Mobile. However, if calculated as a percentage of service revenues, as of the end of 2015, for example, Sprint and T-Mobile each invested approximately 18 percent to 19 percent of their total service revenues, as compared to approximately 16 percent for AT&T,[55] and approximately 17 percent for Verizon Wireless.[56] In addition, one should not place too much emphasis on absolute capital expenditures at any given point in time, as that will not provide the full picture of a service provider's investment strategy given the cyclical nature of such investments.[57]

25. Looking beyond the quarterly data in Chart II.D.1, we see the variation in capital expenditures by the four nationwide service providers during the last six years. Chart II.D.2 below presents annual capital expenditures for the four nationwide service providers from 2010 through the end of 2015. From 2010 through the end of 2014, AT&T and Verizon Wireless increased their nominal investment (with the exception of a dip in investment in 2012 for Verizon Wireless). In 2015, Verizon Wireless increased its capital investment, while AT&T's investment decreased. Sprint increased its capital investment from 2010 to 2013, but decreased its capital investment in 2014 and 2015, while T-Mobile's capital expenditures decreased between 2010 and 2011, and subsequently increased, with a sharp spike from 2012 to 2015. Variations in CAPEX may change across service providers for several reasons. First, service providers follow different technological migration paths, which may be on different timeframes. Recently, the industry has followed several technological migration paths for LTE upgrades, with each service provider implementing its own sequence of upgrades. According to analyst William Ho, T-Mobile, for example, had put into place an accelerated schedule on buildout and deploying LTE on its Lower 700 MHz A Block spectrum, whereas Sprint specifically targeted network congestion issues versus broad geographic coverage.[58] Second, service providers often base their investment decisions on an assessment of how network deployments and upgrades may affect future earnings. Third, the timing of network investments often has a strategic component vis-à-vis rivals, as noted above. Finally, access to capital may be more constrained for some service providers, and this may require reallocation of their investment.[59]

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[54] UBS US Wireless 411, Version 59, Figure 72.

[55] Note that AT&T's financials now report data for DIRECTV in their business segments, and the change from "Wireless" into "Business and Consumer Mobility" means that one cannot make a direct comparison against previously reported data.

[56] UBS US Wireless 411, Version 59, Figure 72.

[57] The *Sixteenth Report* noted that CAPEX in system/network assets may be cyclical or "lumpy" because technological change in the mobile wireless service industry is commercially implemented in successive generations of technologies. Consequently, CAPEX may vary between periods and fluctuations in measures of CAPEX are consistent with the cyclical nature of technological adoption in the mobile wireless service industry. *Sixteenth Report*, 28 FCC Rcd at 3842, para. 215.

[58] FierceWireless, Ho's Perspective: As T-Mobile and Sprint Catch Up to Verizon and AT&T on LTE Coverage, Capacity Comes Into Focus (May 19, 2015), http://www.fiercewireless.com/story/hos-perspective-t-mobile-and-sprint-catch-verizon-and-att-lte-coverage-capa/2015-05-19.

[59] According to The Rural Broadband Association (NTCA), which consists exclusively of small, rural service providers, 70% of the rural service providers who were surveyed described the process of obtaining financing for their wireless projects as "somewhat difficult" or "very difficult," while another 3% found it "virtually impossible." NTCA 2015 Wireless Survey Report, at p. 10 (Dec. 2015), https://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2015ntcawirelesssurvey.pdf.

Figure 3: 18th Report's Entire Investment Section

A. Investment

106. Service providers can expand their network coverage and capacity through increased investment in, and expansion of, their existing assets and infrastructure.[303] Providers may make such strategic capital expenditure ("CAPEX") decisions to differentiate their service offerings from those of their rivals by becoming the first to deploy a particular upgrade or new network technology. Over the past five years, wireless providers in the U.S. have made capital investments of approximately $146 billion.[304]

107. As shown in Chart VI.A.1, wireless providers spent an incremental $32.1 billion in 2014, which is a decline of approximately 3 percent from the $33.1 billion invested in 2013. Based on UBS data, AT&T, Verizon Wireless, Sprint, and T-Mobile spent a combined $13.9 billion in the first half of 2015 and $31.1 billion in 2014, accounting for close to 100 percent of total industry capital investment as tracked by UBS in these time periods. As seen in Chart VI.A.1, AT&T and Verizon Wireless consistently made more capital investments in absolute CAPEX dollars in each quarter than did either Sprint or T-Mobile. However, if calculated as a percentage of service revenues, as of the second quarter of 2015, for example, both Sprint and T-Mobile invested approximately 19 percent of their total service revenues, as compared to approximately 14 percent for AT&T, and approximately 18 percent for Verizon Wireless.[305] In addition, one should not place too much emphasis on absolute capital expenditures at any given point in time, as that will not provide the full picture of a service provider's investment strategy given the cyclical nature of such investments.[306]

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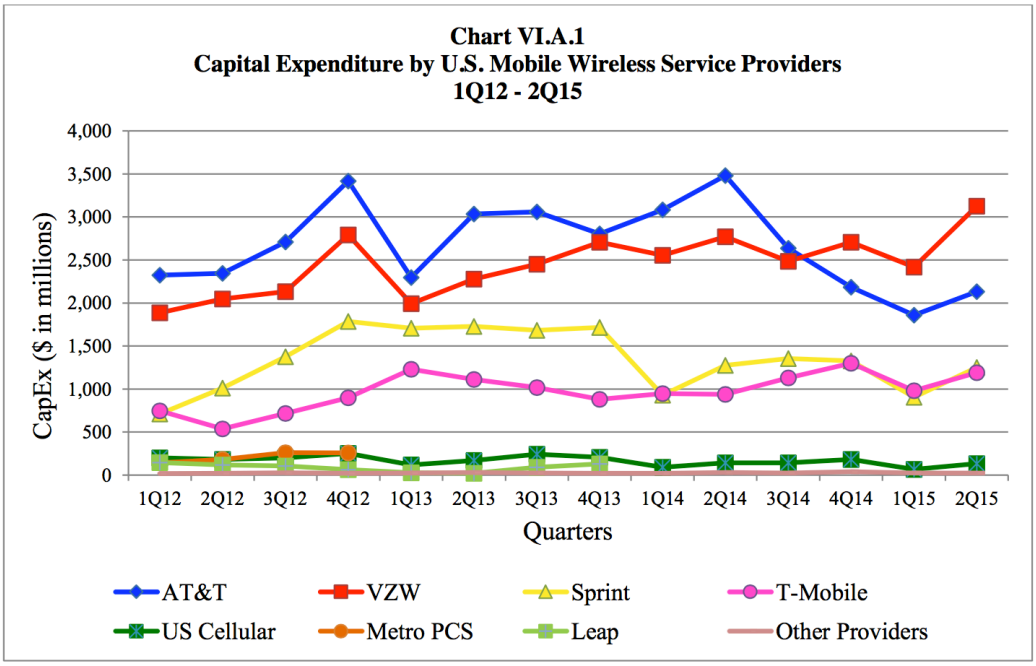
[302] *See Seventeenth Report*, 29 FCC Rcd at 15393 ¶ 168.

[303] Importantly, service providers also expand into new geographic areas and/or upgrade networks in existing markets after adding to their spectrum portfolios through participation in spectrum auctions and secondary market transactions, as discussed above.

[304] *See* CTIA Year-End 2014 Wireless Indices Report, Table 35, at p. 98. CTIA's figure includes incremental investment in currently operational systems, including expenditures for building operating systems, land and capital leases, and all tangible non-system capital investment, but does not include the cost of spectrum licenses purchased at auctions or other acquisition processes or greenfield builds.

[305] *See* UBS US Wireless 411: Version 57, Figure 62. This compares to percentages of approximately 20% for AT&T, approximately 13% for Sprint, approximately 18% for T-Mobile, and approximately 14% for Verizon Wireless, as of the first quarter of 2014. *See id.*

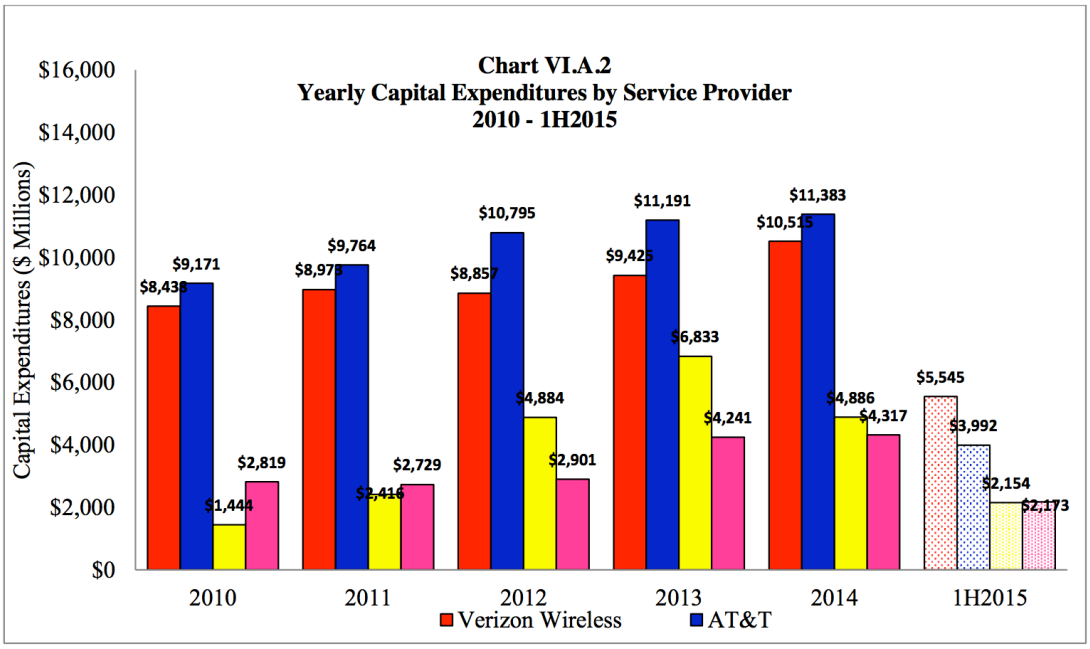
[306] The *Sixteenth Report* noted that CAPEX in system/network assets may be cyclical or "lumpy" because technological change in the mobile wireless service industry is commercially implemented in successive generations of technologies. Consequently, CAPEX may vary between periods and fluctuations in measures of CAPEX are consistent with the cyclical nature of technological adoption in the mobile wireless service industry. *See Sixteenth Report*, 28 FCC Rcd at 3842 ¶ 215.



Source: UBS US Wireless 411: Version 55, Figure 54. UBS US Wireless 411: Version 57, Figure 60. T-Mobile and MetroPCS merged in 2013; AT&T acquired Leap in 2014.

108. Looking beyond the quarterly data in Chart VI.A.1, we see the variation in capital expenditures by the four nationwide service providers during the last five and a half years. Chart VI.A.2 below presents annual capital expenditures for the four nationwide service providers from 2010 through the first half of 2015. From 2010 through the end of 2014, AT&T and Verizon Wireless increased their nominal investment (with the exception of a dip in investment in 2012 for Verizon Wireless). Sprint increased its capital investment from 2010 to 2013, but decreased its capital investment in 2014, while T-Mobile's capital expenditures decreased between 2010 and 2011, and then increased, with a sharp spike from 2012 to 2013. Variations in CAPEX may vary across service providers for several reasons. First, service providers follow different technological migration paths, which may be on different timeframes. Recently, the industry has followed multiple technological migration paths for LTE upgrades, with each service provider implementing its own sequence of upgrades. Second, service providers often base their investment decisions on an assessment of how network deployments and upgrades may affect future earnings. Third, the timing of network investments often has a strategic component vis-à-vis rivals, as noted above. Finally, access to capital may be more constrained for some service providers, and this may require reallocation of their investment.[307]

[307] According to NTCA – The Rural Broadband Association ("NTCA"), which consists exclusively of small, rural service providers, 62% of the rural providers who were surveyed described the process of obtaining financing for their wireless projects as "somewhat difficult" or "very difficult," while another 5% found it "virtually impossible." NTCA 2014 Wireless Survey Report, at pp. 3, 10 (Dec. 2014), available at https://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2014ntcawirelesssurvey.pdf.



Source: UBS US Wireless 411: Version 55, Figure 54. UBS US Wireless 411: Version 57, Figure 60.

Figure 4: 17th Report's Entire Investment Section

A. Investment

169. Mobile wireless service providers differentiate themselves in the marketplace by improving the customer network experience through improvements in capacity, coverage, and service quality. Providers have been able to expand into new geographic areas and/or upgrade networks in existing markets after adding to their spectrum portfolios through participation in spectrum auctions and secondary market transactions. Providers have also expanded their network coverage and capacity through increased investment in and expansion of their existing assets and infrastructure. In this section, we focus on non-spectrum-related investment, which is one of the ways in which wireless mobile providers compete in the marketplace. Some providers make strategic capital expenditure (CAPEX) decisions to differentiate their service offerings from those of rivals by becoming the first to deploy a particular upgrade or new network technology. Other providers wait for rivals to make the first move and then respond by upgrading their own networks.[366]

170. Wireless providers in the U.S. have spent more than $134 billion in capital investments during the past five years.[367] Incremental capital investment by wireless providers rose to $33.1 billion in 2013, a 10.1 percent increase from the $30.1 billion spent in 2012. Verizon Wireless, AT&T, Sprint, and T-Mobile spent a combined $16 billion in the first half of 2014 and $31.5 billion in 2013, accounting for more than 96 percent of total industry capital investment in these time periods.[368] AT&T and Verizon Wireless together spent $11.9 billion in the first half of 2014, over 71 percent of the industry total. [369] This had spent $20.6 billion on capital investment in 2013, which was over 63 percent of the industry total.[370] Chart VI.A.1 below shows the capital expenditures for the four national providers, as well as for selected regional providers, during the past few quarters. As seen from the chart, capital expenditures have continued to vary significantly amongst providers. AT&T and Verizon Wireless continued to invest more than Sprint or T-Mobile by wide margins. Apart from a temporary increase in 2Q12, neither AT&T nor Verizon Wireless significantly increased its capital expenditures between 2Q11 and 2Q14. For Sprint and T-Mobile, the 4Q12 increase appears to be more persistent, and both providers show higher levels of capital expenditure in 4Q13 compared to 2Q11. In its comments,[371] Verizon Wireless states that since 2000, it has invested more than $80 billion in its network, with capital expenditures of more than $26 billion in the last three years alone.

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[366] See *Sixteenth Report, 28 FCC Rcd at 3836* at ¶ 219

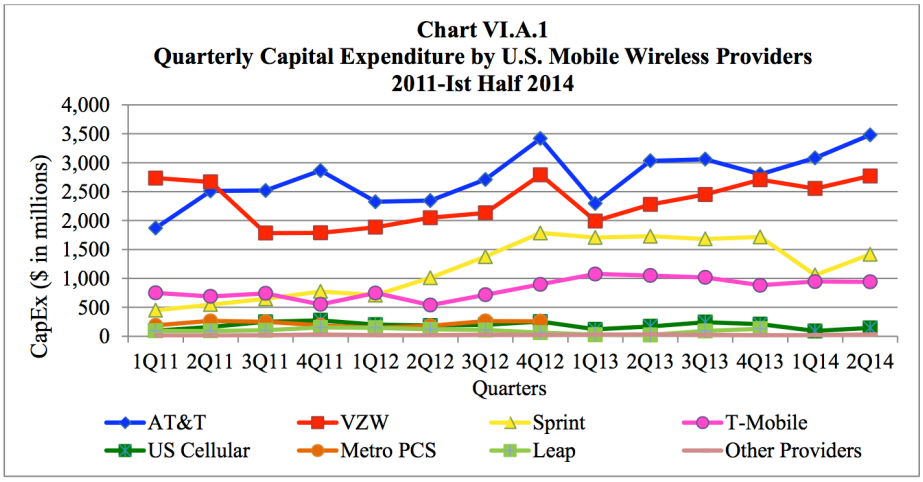
[367] *CTIA Year-End 2013 Wireless Indices Report*, at 96. CTIA's figure includes incremental investment in currently operational systems, including expenditures for building operating systems, land and capital leases, and all tangible non-system capital investment, but does not include the cost of spectrum licenses purchased at auctions or other acquisition processes or greenfield builds.

[368] UBS 411 Report, Version 51, April 2014. UBS 2Q 2014. T-Mobile includes MetroPCS

[369] *Id*

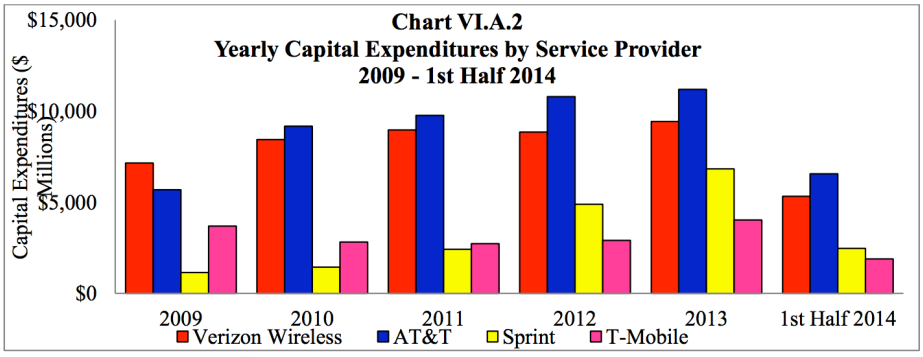
[370] *Id*

[371] See *Verizon Wireless Comments* at 26



Notes: Based on UBS Wireless 411 Report, Version 51 at 28. UBS 411 2Q 2014. Data in the chart is for second and fourth quarter. Metro PCS data are not available separately after the fourth quarter of 2012 as the T-Mobile and MetroPCS merger was consummated in early 2013. Leap is reported separately from AT&T as the AT&T and Leap merger was not consummated by the fourth quarter of 2013.

171. Looking beyond the short-term data in Chart VI.A.1, we see that an increase in capital expenditures has taken place over the last six years for the national providers.[372] In Chart VI.A.2 below we present annual capital expenditures for the four nationwide providers from 2009 – 21st half 2014.[373] AT&T steadily increased its nominal investment. Sprint more than doubled its investment from 2011– 2013. Capital expenditures by Verizon Wireless and T-Mobile have held fairly steady from 2010 – 2013, with a slight increase in 2013. However, there appears to be substantial variation in both the level and growth of CAPEX, even amongst national providers.



Source: Company SEC 10-K filings and *UBS Wireless 411, Version 51*, *UBS 411 Version 54*.

[372] For more details, see Appendix Table VI.A.i

[373] *US Wireless 411 Version 51,* March 2014

172. Variations in CAPEX may not be synchronized across providers for several reasons. First, providers follow different technological migration paths, which may be on different timeframes. Recently, the industry has followed distinct technological migration paths for LTE upgrades, with each provider implementing its own sequence of upgrades. As a result, CAPEX can vary from one service provider to the next. Second, providers often base their investment decisions on an assessment of how network deployments and upgrades affect future earnings. Third, the timing of network investments often has a strategic component vis-à-vis rivals, as discussed above. Finally, access to capital may be difficult for some providers, and this may hinder investment. According to NTCA, which consists exclusively of small, rural providers, 68 percent of the rural providers who were surveyed described the process of obtaining financing for their wireless projects as "fairly difficult" or "very difficult", while another 13 percent found it "virtually impossible".[374]

Figure 5: Excerpt from 16th Report

2. Investment

211. Capital expenditure, or "CAPEX," measures the amount of money invested in capital assets in the mobile wireless service industry. CAPEX in system/network assets provides a financial measure of network deployment that is an alternative to the engineering-oriented metrics such as network coverage, capacity, and throughput that are the results of CAPEX.

212. CAPEX includes expenditures on system/network assets and non-system assets such as buildings and vehicles. The data sources for capital investment in this *Report* include CTIA, the Census Bureau, and provider financial reports. Disaggregated data on system/network CAPEX and non-system CAPEX are not consistently available from all data sources. Spectrum licenses and expenditures, normally treated as intangible assets,[677] are not accounted for in capital assets.[678]

213. CTIA reports that incremental capital investment by wireless operators rose to $24.9 billion in 2010, a 22 percent increase from the $20.4 billion spent in 2009, and then increased another 1.7 percent to $25.3 billion in 2011.[679] The increases in 2010 and 2011 follow a one percent increase in capital investment by mobile wireless service providers in 2009, reversing the trend of declining investment in 2006 through 2008. Estimates by the U.S. Census Bureau likewise show an 11 percent increase in total wireless industry capital expenditures to $23 billion in 2010 following an 18 percent

[672] *See* Free Press Comments at 8; Leap Reply Comments at 5 (intending to defend the Commission's *Data Roaming Order* in the court.); MetroPCS Comments at 25; RCA Comments at 2-3, 15; NTCA Comments at 3. The *National Broadband Plan* recognizes the importance of data roaming to entry and competition for mobile broadband services. *National Broadband Plan,* at 49. Accordingly, it encourages the industry to adopt voluntary data-roaming arrangements and recommends that the Commission move forward promptly on its data roaming proceeding. *Id.*

[673] NTCA 2011 Wireless Survey Report, August 2011, at 3, 13.

[674] NTCA 2011 Wireless Survey Report at 13.

[675] AT&T Reply Comments at 18-19; Verizon Wireless Comments at 15.

[676] AT&T Reply Comments at 18-19.

[677] *See, e.g.* Sprint Nextel, Form 10-K.

[678] *CTIA Year-End 2010 Wireless Indices Report*, at 137-138. The CTIA figures also exclude capital investment in systems that have not yet initiated commercial service.

[679] *CTIA Year-End 2010 Wireless Indices Report*, at 137, 139; *CTIA Year-End 2011 Wireless Indices Report*, at 139, 141. CTIA's figure includes incremental investment in currently operational systems, including expenditures for building operating systems, land and capital leases, and all tangible non-system capital investment, but does not include the cost of spectrum licenses purchased at auctions or other acquisition processes or greenfield builds. *CTIA Year-End 2010 Wireless Indices Report*, at 137-138.

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decline to $20.7 billion in 2009.[680]

Table 33
Annual Capital Expenditures by Wireless Service Providers, 2006-2011[681]

	2006	2007	2008	2009	2010	2011
Census Bureau: Total Annual Capital Expenditures (in billions)	$27.9	$22.2	$25.3	$20.7	$23.0	NA
Census Bureau: Percent Change in Capital Expenditures from Previous Year	2.2%	(20.4%)	14.0%	(18.2%)	11.1%	NA
CTIA: Total Annual Incremental Capital Investment (in billions)	$24.4	$21.1	$20.2	$20.4	$24.9	$25.3
CTIA: Percent Change in Incremental Capital Investment from Previous Year	(3.2%)	(13.5%)	(4.3%)	1.0%	22.3%	1.7%

Figure 6: Excerpt from 15th Report

F. Investment

206. Investment, as measured by capital expenditure, and also referred to as "capital spending" or "CAPEX," is funds spent during a particular period to acquire or improve long-term assets, such as property, plant, or equipment.[613] In the mobile wireless industry, CAPEX primarily consists of spending to upgrade and expand networks to increase data connection speeds, enable more reliable service, and improve coverage.[614]

207. Over the past decade, mobile wireless service providers have invested significantly in wireless network structures and equipment.[615] Between 1999 and 2009, industry-wide capital investment by wireless providers exceeded $213 billion.[616] We note that CAPEX by mobile service providers can be

[612] Data provided by Sanford Bernstein Research.

[613] *A Dictionary of Finance and Banking* (2nd ed.), Oxford University Press, 1997, at 50-51. There are differing opinions on what constitutes capital spending versus non-capital spending.

[614] AT&T, SEC Form 10-K, filed Feb. 25, 2009, at 8, 24; Sprint Nextel, SEC Form 10-K, filed Feb. 27, 2009, at 17.

[615] *See* Section IV.B.1, Network Coverage and Technology Upgrades, *supra.*

[616] *See CTIA Year-End 2009 Wireless Indices Report*, at 137, based on cumulative capital investment figures. CTIA derived the cumulative capital investment figures for 2005-2009 by summing the final 2004 cumulative capital investment figure with subsequently reported incremental capital investment. The industry-wide capital expenditures figure reported in the *Fourteenth Report* of $240 billion for 1998-2008 was based on data from the Census Bureau.

"lumpy," meaning that it can vary significantly from one year to the next for a specific provider.[617] According to AT&T, providers may spend significant amounts to upgrade their networks in one year and then may focus on integrating their upgrades into their offerings and signing up new customers the following year.[618]

208. According to the U.S. Census Bureau, total wireless industry capital expenditures declined from $25.3 billion in 2008 (revised Census data) to $20.7 billion in 2009, a decline of approximately 18 percent. This amount accounted for 31 percent of overall capital expenditures in the telecommunications industry, 24 percent of information/communication sector capital expenditures, and two percent of total capital expenditures in the U.S. economy.[619] Data from CTIA, on the other hand, suggest that capital investment by mobile wireless service providers increased slightly in 2009, reversing the trend of declining investment in 2006 through 2008. CTIA reports that incremental capital investment by wireless operators totaled $20.4 billion in 2009,[620] a one percent increase from the $20.2 spent in 2008.[621]

Table 23
Annual Capital Expenditures by Wireless Service Providers[622]

	2004	2005	2006	2007	2008	2009
Census Bureau: Total Annual Capital Expenditures (in billions)	$24.0	$27.3	$27.9	$22.2	$25.3	$20.7
Census Bureau: Percent Change in Capital Expenditures from Previous Year	14.3%	13.8%	2.2%	(20.4%)	14.0%	(18.2%)
CTIA: Total Annual Incremental Capital Investment (in billions)	$14.1	$25.2	$24.4	$21.1	$20.2	$20.4
CTIA: Percent Change in Incremental Capital Investment from Previous Year	(12.0%)	78.8%	(3.2%)	(13.5%)	(4.3%)	1.0%

209. According to CTIA, while total incremental capital investment increased slightly in 2009, incremental investment per subscriber continued to decline in 2009, as shown in Chart 28. During 2009, capital investment per subscriber fell 4.5 percent to $73.24 from its 2008 level of $76.73. From 2005 to 2009, annual capital investment per subscriber fell 43 percent.

Figure 7: Excerpt from 14th Report

G. Investment

208. Investment, as measured by capital expenditures, also referred to as "capital spending" or "CAPEX," is funds spent during a particular period to acquire or improve long-term assets, such as property, plant, or equipment.[594]

209. Over the past decade, mobile wireless providers have invested significantly in wireless structures and equipment. Between 1998 and 2008, industry-wide capital expenditures by wireless providers exceeded $240 billion.[595] In the mobile wireless industry, CAPEX primarily consists of spending to upgrade and expand networks to increase data connection speeds, enable more reliable service, and improve coverage.[596]

210. Data from two sources reveal slightly different capital investment trends. As shown in Table 22, data from the Census Bureau suggests that, after decreasing by more than 20 percent between 2006 and 2007, capital expenditures by wireless providers rebounded in 2008, increasing by approximately 15 percent over the previous year to more than $25.5 billion. However, data from CTIA suggests that, while the mobile wireless industry has continued to invest in network expansions and upgrades, capital investment has been declining over the past four years. CTIA reports that incremental capital investment by wireless operators totaled $20.2 billion in 2008, a 4.4 percent decrease from the $21.14 spent in 2007 and a 20 percent decrease from the $25.2 billion spent in 2005.[597] CTIA also reports that capital investment during the first half of 2009 totaled $8.9 billion for the wireless industry, a 7.4 percent drop from the first half of 2008.[598]

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[592] Jonathan Chaplin, *et al.*, *Breaking View: VZ Pricing Changes Not Deflationary*, Credit Suisse, Equity Research, Jan. 15, 2010, at 1. However, since, as discussed above, Verizon Wireless may have introduced the new data plan requirement as a means of recovering the cost of steeper handset subsidies, ARPU is not necessarily a reliable indicator of the net effect of these changes. *See* Section IV.A, Price Rivalry: Developments in Mobile Service Pricing Plans, *supra*.

[593] Data provided by Macquarie Research.

[594] *A Dictionary of Finance and Banking* (2nd ed.), Oxford University Press, 1997, at 50-51. There are differing opinions on what constitutes capital spending versus non-capital spending.

[595] *See* U.S. Census Bureau, Annual Capital Expenditures Surveys, 1999-2008.

[596] AT&T Inc., SEC Form 10-K, filed Feb. 25, 2009, at 8, 24; Sprint Nextel, SEC Form 10-K, filed Feb. 27, 2009, at 17; CTIA NOI Comments at 32.

[597] *CTIA Year-End 2008 Wireless Indices Report*, at 124; CTIA PN Comments at 13; CTIA NOI Comments at 32.

[598] *CTIA Mid-Year 2009 Wireless Indices Report*, at 127.

Table 22
Annual Capital Expenditures by Wireless Service Providers[599]

	2004	2005	2006	2007	2008
Census Bureau: Total Annual Capital Expenditures (in billions)	$24.0	$27.3	$27.9	$22.2	$25.5
Census Bureau: Percent Change in Capital Expenditures from Previous Year	14.3%	13.9%	2.2%	(20.5%)	15.1%
CTIA: Total Annual Incremental Capital Investment (in billions)	$14.1	$25.2	$24.4	$21.1	$20.2
CTIA: Percent Change in Incremental Capital Investment from Previous Year	(12.0%)	78.8%	(3.2%)	(13.4%)	(4.6%)

211. According to CTIA, incremental capital investment per subscriber has been declining as well over the past four years and at greater rates than total investment, as shown in Chart 31. During 2008, capital investment per subscriber fell 11 percent to $76.73 from its 2007 level of $86.57. From 2005 to 2008, annual capital investment per subscriber fell 40 percent.

Figure 8: 13th Report's Entire Investment Section

2. Capital Expenditures

155. Capital expenditures, also referred to as "capital spending" and abbreviated as "capex," are funds spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[402] In the mobile telephone industry, capex primarily consists of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[403] One analyst estimated that wireless operators spent approximately $19.9 billion on capex during 2007,[404] which is less than the approximately $24.7 billion spent in each of 2006 and 2005, and less than the approximately $21.4 billion spent in 2004.[405] CTIA reports that the wireless industry spent $9.71 billion in capital expenditures in the first six months of 2007.[406]

3. Roaming

156. All mobile calling plans specify a calling area – such as a particular metropolitan area, a state, a region, the provider's entire network, or the entire United States – within which the subscriber can make a call without incurring additional charges. When a subscriber exits this area, or "roams," he or she may incur additional charges for each minute of use.[407] CTIA reported that "outcollect" roaming

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[398] *See Tenth Report*, 20 FCC Rcd at 15955, ¶ 124.

[399] *Id.*; USA Mobility, *Reliability of* ReFLEX, *available at* http://www.usamobility.com/pdf/ReFLEXreliability.pdf (last visited Dec. 16, 2007).

[400] *United Wireless Acquires Velocita Wireless, L.P.*, News Release, Velocita Wireless, July 2, 2007.

[401] Space Data Corp., *Overview of SkySite Network*, *available at* http://www.spacedata.net/technology.htm (last visited Dec. 16, 2008); *Tenth Report*, 20 FCC Rcd at 15923, ¶ 34.

[402] CNNMoney, *Money 101 Glossary*, *available at* http://money.cnn.com/services/glossary/c.html (last visited Dec. 16, 2008). There are differing opinions on what constitutes capital spending versus non-capital spending.

[403] *Eighth Report*, 18 FCC Rcd at 14818, ¶ 70.

[404] *US Wireless 411*, *supra* note 295, at 53.

Figure 9: 12th Report's Entire Investment Section

2. Capital Expenditures

154. Capital expenditures, alternatively called "capital spending" or abbreviated to "capex," are funds spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[358] In the mobile telephone industry, capex consists primarily of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[359] One analyst estimated that wireless operators spent approximately $24.7 billion on capex during 2006, unchanged from the amount spent in 2005, but higher than the 21.4 billion spent in 2004.[360] One analyst attributes this slowdown in capex growth to the "completion of network upgrades,

[352] W. David Gardner, *WiMax Networks Go Live in Nine Northeast Cities*, InformationWeek, June 13, 2007; *Horizon Trials WiMax*, Unstrung, June 12, 2007; *Horizon Wi-Com Selects Navini for Wireless Deployment*, News Release, Navini Networks, Jan. 15, 2007.

[353] *See Tenth Report*, at 15955.

[354] *Id*; USA Mobility, *Reliability of ReFLEX* (visited July 16, 2007) <http://www.usamobility.com/pdf/ReFLEXreliability.pdf>.

[355] *United Wireless Acquires Velocita Wireless, L.P.*, News Release, Velocita Wireless, July 2, 2007.

[356] *United Wireless Acquires Velocita Wireless, L.P.*, News Release, Velocita Wireless, July 2, 2007. United Wireless Holdings is an associate of Mobitex Technology AB, a Swedish-based company that supports the technology on which the Mobitex Network is based. Velocita plans to lease spectrum for its network from Sprint Nextel. *Id.*

[357] Space Data Corp., *Overview of SkySite Network* (visited July 11, 2007) <http://www.spacedata.net/technology.htm>; *Tenth Report*, at 15923.

[358] CNNMoney, *Money 101 Glossary* (visited Mar. 20, 2003) <http://money.cnn.com/services/glossary/c.html.>. There are differing opinions on what constitutes capital spending versus non-capital spending.

[359] *Eighth Report*, at 14818.

better utilization of existing infrastructure, aggressive manufacturer price discounts, sharing of network capacity, and more efficient technologies."[361]

3. Roaming

155. All mobile calling plans specify a calling area – such as a particular metropolitan area, a state, a region, the provider's entire network, or the entire United States – within which the subscriber can make a call without incurring additional charges. When a subscriber exits this area, or "roams," he or she may incur additional charges for each minute of use.[362] CTIA reported that "outcollect" roaming revenues[363] for the entire mobile telephone industry decreased again over the past year, from $3.8 billion in 2005 to $3.5 billion in 2006, a level not seen since 1998.[364] The contribution of roaming revenues to total service revenues continued its decline, from 4.1 percent in 2004 to 3.3 percent in 2005 to 2.8 percent in 2006, down from over 10 percent seven years ago.[365]

156. Roaming revenues account for a higher percentage of total service revenues for many rural and smaller regional providers than for nationwide carriers.[366] Rural Cellular, for example, derived 29 percent of its total wireless service revenues from roaming in the fourth quarter of 2006, while AT&T derived just 2 percent.

157. In August 2007, the Commission adopted a Report and Order clarifying that automatic roaming is a common carrier obligation for CMRS providers and stating that CMRS carriers are required to provide automatic roaming services to other carriers upon reasonable request and on a just, reasonable, and nondiscriminatory basis under Sections 201 and 202 of the Communications Act.[367] Automatic roaming allows mobile telephone subscribers to place calls while roaming as they do in their home coverage area, by simply entering a phone number and pressing "send." When a reasonable request is made by a technologically compatible CMRS carrier, a host CMRS carrier must provide automatic roaming to the requesting carrier outside of the requesting carrier's home market. The common carrier obligation to provide roaming extends to real-time, two-way switched voice or data services that are interconnected with the public switched network and utilize an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls. The Commission also extended the automatic roaming requirement to PTT and text messaging services, and sought comment on whether the roaming obligation should be extended to services that are classified as

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[360] *4Q06 Wireless 411*, at 67.

Figure 10: 11th Report's Entire Investment Section

2. Capital Expenditures

124. Capital expenditures, alternatively called "capital spending" or abbreviated to "capex," are funds spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[323] In the mobile telephone industry, capex consists primarily of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[324] One analyst estimated that the wireless industry spent roughly $25 billion on capex in 2005, an increase of 18 percent from the $22 billion spent in 2004, which in turn was on top of a 12 percent increase from 2003.[325] One

[319] *Id*; USA Mobility, *Wireless Messaging Network Advantages – Messaging Reliability* (visited June 22, 2006) <http://www.usamobility.com/bus_solutions/wireless_messaging/network_advantages/default.htm>.

[320] Mobitex Technology, *Velocita Wireless* (visited June 22, 2006) <http://www.mobitex.com/operators/reference_operators/4-2-18_cingular.asp>. In October 2004, Cingular Wireless spun off its Cingular Interactive unit, which included the Mobitex network, and the unit was acquired by an affiliate of Cerberus Capital Management, L.P., which changed its name to Velocita Wireless. In February 2006, Sprint Nextel completed its acquisition of Velocita Wireless. *Acquisition of Cingular Interactive Completed, Company Changes Name to Velocita Wireless*, News Release, Velocita Wireless, Oct. 26, 2004; *Sprint Nextel Completes Acquisition of Velocita Wireless*, News Release, Velocita Wireless, Feb. 28, 2006.

[321] *Motient Communications to Initiate Changes to DataTAC Network Coverage*, News Release, Motient, Feb. 10, 2006; *Tenth Report*, at 15955.

[322] *Id.*, at 15955-15956; Space Data Corp., Coverage Area (visited June 6, 2006) <http://www.spacedata.net/coverage.htm>.

[323] CNNMoney, *Money 101 Glossary* (visited Mar. 20, 2003) <http://money.cnn.com/services/glossary/c.html.>. There are differing opinions on what constitutes capital spending versus non-capital spending.

[324] *Eighth Report*, at 14818.

[325] Phil Cusick, Richard Choe, and Colin V. Morawski, *U.S. Wireless Services: Preview of First-Quarter 2006 Results*, Bear Stearns, Equity Research, Apr. 2006, at 70; *Tenth Report*, at 15956. It does not appear that this increase is due to Hurricane Katrina. For example, one measure of the hurricane's impact on expenditures, capex as a percentage of service revenues, is not appreciably different for carriers in the last half of 2005 than it was in previous periods. Phil Cusick, Richard Choe, and Colin V. Morawski, *U.S. Wireless Services: Preview of First-Quarter 2006 Results*, Bear Stearns, Equity Research, Apr. 2006, at 70. However, the hurricane did impose some (continued….)

analyst has argued that capex spent to expand coverage is now mostly over and that future capex will be spent largely on technological upgrades and capacity needs.[326]

3. Roaming

125. All mobile calling plans specify a calling area – such as a particular metropolitan area, a state, a region, the carrier's entire network, or the entire United States – within which the subscriber can make a call without incurring additional charges. When a subscriber exits this area, or "roams," he or she may incur additional charges for each minute of use. Sometimes these roaming charges go directly to the subscriber's carrier, and sometimes the charges are used to pay a carrier other than the subscriber's, on whose network the subscriber was roaming.[327] Roaming revenues account for a higher percentage of total service revenues for many rural and smaller regional carriers than for nationwide carriers.[328] In the *Tenth Report*, we noted that the roaming revenues of these carriers were under pressure as roaming rates have declined and nationwide carriers continued to expand into smaller communities.[329] In 2005, there was a reversal of this trend, as most of the regional and smaller carriers grew roaming revenues on a year-over-year basis for four consecutive quarters, with rural carriers showing particular improvement.[330]

126. Nevertheless, CTIA reported that roaming revenues for the entire mobile telephone industry decreased over the past year, from $4.2 billion in 2004 to $3.8 billion in 2005, roughly the level of 2003.[331] The contribution of roaming revenues to total service revenues continued its decline, from 4.1 percent in 2004 to 3.3 percent in 2005, down from over 10 percent six years ago.[332] One analyst explains that these trends are not surprising "given the fall in roaming rates as well as the consolidation activity in the wireless industry. Also, a smaller portion of revenues are classified as roaming, as compared to historical years, given the proliferation of much larger 'home' footprints and national pricing plans."[333]

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additional costs on many carriers. Colette M. Fleming *et al.*, *Wireless 411*, UBS Warburg, Equity Research, Jan. 3, 2006, at 12 ("*3Q05 Wireless 411*"), at 53 ("Hurricane-related charges adversely impacted cash costs in the third quarter of 2005 for many carriers. Cingular reported $96 million of charges due to significant damage in Louisiana, Mississippi, Alabama, and Texas markets. Verizon Wireless incurred hurricane-related costs of $44 million and Sprint Nextel recorded hurricane-related charges of $65 million for its wireless business.").

[326] *Ninth Report*, at 20656. *See, also*, *4Q05 Wireless 411*, at 14 ("We believe the trend of fewer cell site additions will continue given that the majority of capital expenditures will relate to capacity increases and 3G deployment (which will generally involve adding capacity and equipment upgrade to existing cell sites), as well as quality enhancements such as better in-building coverage.")

Figure 11: 10th Report's Entire Investment Section

2. Capital Expenditures

127. Capital expenditures, alternatively called "capital spending" or abbreviated to "capex," are funds spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[302] In the mobile telephone industry, capex consists primarily of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[303] One analyst estimated that the wireless industry spent roughly $22 billion on capex in 2004, an increase of 12 percent from the $19 billion spent in 2003, reversing a two-year trend of declining wireless capex.[304] One analyst has argued that capex spent to expand coverage is now mostly over and that future capex will be spent largely on technological upgrades and capacity needs.[305]

3. Roaming

128. All mobile calling plans specify a calling area – such as a particular metropolitan area, a state, a region, the carrier's entire network, or the entire United States – within which the subscriber can make a call without incurring additional charges. When a subscriber exits this area, or "roams," he or she may incur additional charges for each minute of use. Sometimes these roaming charges go directly to the subscriber's carrier, and sometimes the charges are used to pay a carrier other than the subscriber's, on whose network the subscriber was roaming.[306] This source of revenue is particularly important to many rural and smaller carriers.[307] However, roaming revenues are under pressure as roaming rates have declined and nationwide carriers continue to expand into smaller communities.[308]

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[300] *See Ninth Report*, at 20655.

[301] *Space Data Corporation Launches New Wireless Telemetry Service in West Texas Oil and Gas Fields*, Press Release, Space Data Corporation, Apr. 14, 2004; *Space Data's SkySite® Network Takes Off Over South-Central U.S.*, Press Release, Space Data Corporation, Oct. 19, 2004.

[302] CNNMoney, *Money 101 Glossary* (visited Mar. 20, 2003) <http://money.cnn.com/services/glossary/c.html.>. There are differing opinions on what constitutes capital spending versus non-capital spending.

[303] *Eighth Report*, at 14818.

[304] *US Wireless Matrix 4Q04*, at 38; *Ninth Report*, at 20656. While this report is retrospective, the Commission plans to examine in next year's report the possible impact of Hurricane Katrina on CMRS-related capital expenditures.

[305] *Ninth Report*, at 20656. *See, also*, *Wireless 411*, at 68.

Figure 12: 9th Report's Entire Investment Section

2. Capital Expenditures

143. Capital expenditures, alternatively called "capital spending" or abbreviated to "capex," are funds spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[371] In the mobile telephone industry, capex consists primarily of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[372] One analyst estimated that the wireless industry spent roughly $21 billion on capex in 2003, a decline of 16 percent from the $25 billion spent in 2002, on top of a 6 percent drop from 2001.[373] One analyst argued that capex spent to expand coverage is now mostly over and that future capex will be spent largely on technological upgrades and capacity needs.[374] We also note that wireless capex is rapidly approaching the level of wireline capex.[375]

3. Roaming

144. All mobile calling plans specify a calling area – such as a particular metropolitan area, a state, a region, the carrier's entire network, or the entire United States – within which the subscriber can make a call without incurring additional charges. When a subscriber exits this area, or "roams," he or she incurs additional charges for each minute of use. Sometimes these roaming charges go directly to the subscriber's carrier, and sometimes the charges are used to pay a carrier other than the subscriber's, on whose network the subscriber was roaming.[376] This source of revenue is particularly important to many rural and smaller carriers.[377]

145. CTIA reported that roaming revenues for the mobile telephony industry declined over the past year, from $3.9 billion in 2002 to $3.8 billion in 2003.[378] Roaming revenues as a percentage of total service revenue also continued to decline, from 6.1 percent reported in 2001 to 5.1 percent in 2002 followed by 4.3 percent in 2003.[379] One analyst attributes the decline in roaming revenues to "larger

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[371] CNNMoney, *Money 101 Glossary* (visited Mar. 20, 2003) <http://money.cnn.com/services/glossary/c.html.>. There are differing opinions on what constitutes capital spending versus non-capital spending.

[372] *Eighth Report*, at 14818.

[373] Luiz Carvalho *et al.*, *Wireless Capex Conference Supports Thesis*, Morgan Stanley, Equity Research, Feb. 4, 2004, at 2.

[374] *Wireless 411*, at 90 (citing carrier's SEC filings).

Figure 13: 8th Report's Entire Investment Section

(vi) Capital Expenditures

70. Capital expenditures, alternatively called "capital spending" or abbreviated to "capex," is the amount of money spent during a particular period to acquire or improve long-term assets such as property, plant, or equipment.[247] In the mobile telephone industry, capex consists primarily of spending to expand and improve the geographic coverage of networks, increase the capacity of existing networks so they can serve more customers, and improve the capabilities of networks (by allowing higher data transmission speeds, for example).[248] One analyst estimated that the wireless industry spent roughly $25 billion on capex in 2002, a decline of 7 percent from the $27 billion spent in 2001, but still 14 percent more than the $22.3 billion spent in 2000, and almost twice as much, $10 billion more, than was spent in 1999.[249] In fact, in 2002, carriers spent more on capex than in any other year with the exception of 2001.[250] As one analyst noted, "carriers are still investing heavily in their networks."[251] The analyst attributed the recent slowdown in capex spending to smaller subscriber growth, near completion of network expansions and upgrades, and lower network equipment prices.[252] Another analyst attributed the carriers' recent focus on profitability as contributing to the decline in capital spending.[253]

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[245] *Id.*

[246] Jay Lyman, *Switching Cell Phone Providers – Why Bother?*, WIRELESS NEWSFACTOR, Oct. 15, 2002 (citing Roger Entner of Yankee Group).

[247] CNNMoney, *Money 101 Glossary* (visited Mar. 20, 2003) <http://money.cnn.com/services/glossary/c.html.>. There are differing opinions on what constitutes capital spending versus non-capital spending.

[248] Verizon Wireless says that capacity capex now represents more than 50 percent of the company's total capex. Luiz Carvalho *et al.*, *Wireless Capex Conference Supports Thesis*, Morgan Stanley, Equity Research, Feb. 4, 2003, at 3. Sprint PCS also finds usage growth to be the main driver of capex. Luiz Carvalho *et al.*, *Wireless Capex Conference Supports Thesis*, Morgan Stanley, Equity Research, Feb. 4, 2003, at 2.

[249] Simon Flannery, Luiz Carvalho *et al.*, *US Telecom Team Quarterly Results Preview and '03 Outlook*, Morgan Stanley, Equity Research – Industry Report, Jan. 13, 2003, at 19; Ric Prentiss *et al.*, *4Q02 Wireless Preview: Holiday Punch Has Indeed Gone Flat*, Raymond James & Associates, Equity Research, Jan. 21, 2003, at 2. Since 1996, capital spending on wireless networks has grown at nearly three times the rate of growth of spending on wireline. Health of the Telecommunications Sector: A Perspective from Investors and Economists, before the House Subcommittee on Telecommunications and the Internet, 108 Cong. (Feb. 5, 2003) (statement of Blake Bath, Managing Partner, Lehman Brothers).

[250] Ric Prentiss *et al.*, *4Q02 Wireless Preview: Holiday Punch Has Indeed Gone Flat*, Raymond James & Associates, Equity Research, Jan. 21, 2003, at 2.

[251] Luiz Carvalho *et al.*, *Wireless Tracker: Cash Flow Matters Most*, Morgan Stanley, Equity Research, Dec. 11, 2002, at 6.

[252] *Id.*

[253] *NextGen VII*, at 49. *See also*, Reinhardt Krause, *AT&T Wireless Says It's Slashing Capital Spending By 40%*, INVESTOR'S BUSINESS DAILY, Jan. 29, 2003 ("By cutting capital spending, [AT&T Wireless] expects to become free cash flow positive in 2003").