



**USTELECOM**  
THE BROADBAND ASSOCIATION

## **BROADBAND INVESTMENT CONTINUES TRENDING DOWN IN 2016**

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**Research Brief**  
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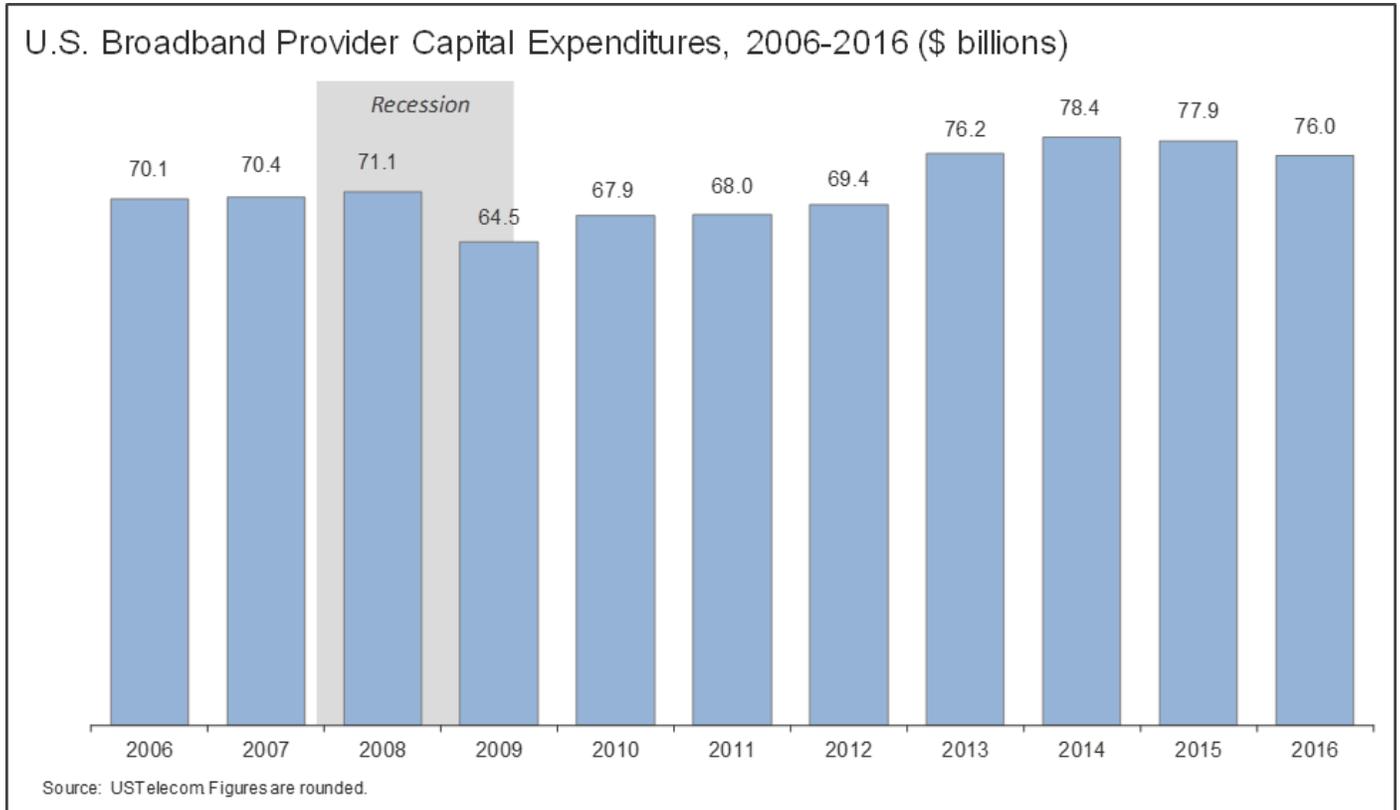
U.S. broadband providers invested approximately \$76.0 billion in network infrastructure in 2016 down from approximately \$77.9 billion in 2015 and \$78.4 billion in 2014. From 1996 through 2016, the broadband industry has made capital investments totaling \$1.6 trillion. The start of the decline, the first since the recession ended in 2009, coincided with FCC's 2015 decision to reclassify broadband providers as common carriers under Title II of the Communications Act. The data raise flags that warrant further investigation into whether Title II reclassification contributed to the decline in broadband capital investment.

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U.S. broadband providers invested approximately \$76.0 billion in network infrastructure in 2016 down from approximately \$77.9 billion in 2015 and \$78.4 billion in 2014 according to a new USTelecom analysis of company capital expenditures data (see Chart 1). USTelecom has published this data series annually for the last seven years and the data now cover 21 years of broadband provider capital investment. The data include minor historical revisions to the time series. From 1996 through 2016, the broadband industry has made capital investments totaling \$1.6 trillion (see Chart 2).

USTelecom’s capital expenditures data show that the decline first appearing in 2015 continued in 2016. Our revised estimates indicate that industry capital expenditures fell by approximately a half billion dollars from 2014 to 2015 and by nearly \$2 billion from 2015 to 2016. Annual spending was \$2.4 billion less in 2016 than at the recent peak of \$78.4 billion in 2014. The start of the decline – the first since the recession ended in 2009 – coincided with FCC’s 2015 decision to reclassify broadband providers as common carriers under Title II of the Communications Act. USTelecom has consistently stated that the relevant question with respect to the impact of Title II on investment is what investment would be over the long term under different regulatory scenarios, holding other factors constant. Many factors affect capital spending, such as competition, financial markets, taxes, government mandates, project timelines, and regulation. USTelecom does not attempt in this research brief to isolate and control for the various factors and therefore does not draw conclusions about the extent to which Title II may have caused the decline in capital investment. However, the decline in the series clearly raises a flag that warrants further investigation and analysis.

**Chart 1**



Other research suggests that Title II common carrier regulation may put downward pressure on broadband capital investment. USTelecom has [noted](#) that per capita broadband capital investment in the U.S. is greater than in Europe, which applies a heavier regulatory framework akin to common carriage. The University of Pennsylvania Law School has published [detailed empirical research](#) comparing investment in the U.S. and Europe, and found, among other things, that the U.S. provided a more favorable investment climate. The Progressive Policy Institute [compared](#) cable and telecom broadband providers’ capital investments during a period in which regulators classified telecom providers as utilities, controlling for common external factors, and PPI found that telecom providers’ capital investments grew more slowly.

Broadband investment remains critical to modernizing our nation’s network infrastructure and maintaining our international leadership. Getting policy right will be critical given the projected growth of demand for data usage. According to the Cisco Visual Networking Index, U.S. Internet Protocol traffic, after growing 3.4 times from 2011-2016, is expected to grow nearly 2.5 times again over the next five years. Traffic growth will be driven by consumer and business use of streaming media, faster 5G mobile networks, the growing Internet of Things, and cloud-based applications. These applications, the Internet connections they rely upon, and the mobile and data center infrastructures that deliver them will require constant broadband investment in capacity, speed, and reliability. To optimize the benefits for all American consumers and businesses, policymakers must seek to create an environment that encourages a return to growth in broadband investment.

## Chart 2

### Historical Capital Expenditures by U.S. Broadband Providers (\$ billion, 1996 -2016)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
55.3	65.3	72.1	91.8	118.1	111.5	72.0	57.0	57.5	62.1	70.1	70.4	71.1	64.5	67.9	68.0	69.4	76.2	78.4	77.9	76.0

Source: USTelecom

### Methodology

USTelecom collected capital expenditures data for wireline telecommunications, wireless telecommunications, and cable broadband providers in order to approximate an industry aggregate. The data exclude other providers, such as satellite providers, telecommunications resellers, and electric utilities. The data are nominal; USTelecom does not adjust for inflation or quality. Figures are rounded. Previous years may include minor revisions.

The majority of telecommunications data come from company financial statements, taking into account business segment reporting, accounting changes, mergers, and spin-offs. The analysis is subject to the reporting practices of individual companies. Capital expenditures may include investment in property, plant, and equipment, capitalized software, capitalized interest during construction, corporate, directory, and other capital expenditures, and intra-company eliminations. USTelecom made reasonable efforts to eliminate double counting, non-U.S. investment, and non-capital spending. USTelecom made estimates for non-reporting companies.

USTelecom also consulted additional market research and government sources for comparison, including the United States Census Annual Capital Expenditures Survey, the Yankee Group Global Capex Forecast 2010, the Skyline Marketing Capex Report 2010, data from the Cellular Telecommunications & Internet Association (CTIA), New Paradigm Resources Group, and the Association for Local Telecommunications Services (ALTS). Cable data are from the National Cable & Telecommunications Association (NCTA) citing SNL Kagan.

### **Technical Notes**

It was necessary to make several adjustments to the reported capital expenditures for 2014, 2015, and 2016 data to ensure that the series remained consistent over time and reflected actual change in the capital stock of the U.S. economy. The data also contain minor historical revisions.

### **AT&T Acquisitions and Reporting Changes since 2015**

In 2015, AT&T revised its financial reporting to reflect acquisitions of DirecTV and Mexican wireless operations, which occurred near the middle of 2015. To develop a consistent time series with appropriate comparisons to prior years, USTelecom excluded estimated capital expenditures for the newly acquired businesses, and rounded to the nearest half billion dollars. Based on public information, DirecTV invests approximately \$3 billion per year and the Mexican cellular business invests approximately \$750 million per year.

USTelecom estimates AT&T's 2015 capital expenditures excluding DirecTV and Mexican wireless were \$18 billion. For 2015, AT&T reported \$20.0 billion in capital expenditures, including capitalized interest. USTelecom backed out approximately \$2 billion for DirecTV and Mexican wireless operations, reflecting a half year of operations since the business units were acquired mid-year. For 2016, AT&T reported \$22.4 billion in capital expenditures, including capitalized interest. The DirecTV and Mexican cellular units were part of AT&T for the full year in 2016. Therefore, it is necessary to back out a full year of capital expenditures, approximately \$4 billion, for these units in 2016. As a result, USTelecom estimates AT&T's 2016 capital expenditures excluding DirecTV and Mexican wireless were \$18.5 billion.

### **Discontinuance of Wireline and Wireless Reporting**

AT&T no longer reports capital expenditures for wireline and wireless categories under its new organizational structure. The lines between wireline and wireless investment are blurring for integrated providers as wireline backhaul investments are essential to wireless service, and as devices increasingly shift between wireless and wireline networks. In 2015, we attempted to allocate AT&T's capital expenditures to wireline and wireless; however, such estimated allocations are increasingly imprecise, with potential for error. Similarly, Verizon has historically reported capital expenditures in categories for wireline, wireless, and other. As Verizon has acquired online services such as American Online, Yahoo!, and other services that do not fit into wireless and wireline categories, the other category for capital expenditures has grown. In the past, USTelecom has allocated Verizon's other capital spending proportionately to the wireless and wireline categories; but, as the other category has grown, this approach is prone to increasing imprecision. Given the disproportionate impact of AT&T and Verizon, which historically have represented approximately two-thirds of wireless capex and one-half or more of wireline telecom capex, USTelecom is discontinuing separate wireless and wireline reporting.

## Capitalized Wireless Phones

USTelecom excludes certain reported capital expenditures for wireless phones leased to customers. It was necessary to exclude capital expenditures for leased phones because otherwise total company-reported capital expenditures would not provide an apples-to-apples comparison over the course of our time series.

Under accounting rules, Sprint reports wireless phones purchased for leasing to customers as capital expenditures. Sprint's wireless phone leasing program ramped up at an extraordinary pace in 2015 and remained at approximately the same level in 2016. In order to maintain the consistency of the data series for all periods, USTelecom excludes the following amounts that Sprint reports for leased wireless phones in its capital expenditures: \$143 million in 2014, \$2.163 billion in 2015, and \$2.098 billion in 2016. Including such capital expenditures for leased phones would skew the data and inflate the perception of growth by \$2 billion dollars from 2014 to 2015. (For a detailed analysis of these changes and their impact on USTelecom's capital expenditures data, see Chart 3).

### *Discussion of Wireless Phone Accounting*

The traditional business practice among wireless companies has been the subsidized phone sale model, in which the provider purchases phones and sells them to its customers along with a service contract. Typically, the provider sells the phone at a steep discount, say \$200 for a \$600 device, or a \$400 subsidy. The provider and the customer enter into a contract for about two years, in which the customer agrees to pay a certain monthly subscription rate. That rate includes an amount sufficient to cover the cost of service and to pay off the subsidized cost of the phone over the term of the contract.

From an accounting perspective, under the subsidized phone model, the devices purchased by providers go into inventory the company records them as a cost of equipment sold once the customer takes ownership of the device. Under Sprint's leasing program, since it purchases phones to lease rather than sell to the customer, the devices become an asset of the company, which it records as capital expenditures.

Recently, wireless carriers have employed installment plans instead of either traditional subsidy plans or leasing programs. Under installment plans, consumers also own the devices and payback the cost in installments over time, similar to a loan. There are differences in accounting for subsidy plans and installment plans. For example, under subsidy plans, companies recognize revenue in periodic increments over the term of the contract; under installment plans, companies recognize revenue for the full sale price of the phone up front and collect "receivables" as consumers pay off their "loan." Regardless, like subsidy plans, wireless providers do not report phones sold under installment plans as capital expenditures and therefore they do not affect the USTelecom capital investment data series.

### *Excluding the Leased Phones Is Appropriate and Necessary*

Including leased wireless phones as capital expenditures makes sense from an accounting perspective, but not from an economic perspective. From the perspective of USTelecom's capital expenditures time series, in particular, it is appropriate and necessary to exclude capital expenditures resulting from the shift to phone leasing programs in 2014 and their acceleration in 2015 and thereafter. First, shifting phones from a cost of goods sold to a capital expenditure on financial statements reflects an accounting change and has no impact on the capital stock of the U.S. economy. The phones appear as

capital expenditures merely because leasing requires different accounting than selling. In any given period, U.S. wireless consumers would have had approximately the same quantity and quality of wireless phones regardless of whether they leased them or purchased them. The capital stock of the U.S. economy attributable to wireless phones in circulation is no different that it would be otherwise because Sprint chose to lease rather than sell some of its phones. This allows, of course, for potential marginal impacts on wireless phone adoption and market share resulting from the availability less expensive leased phones and shorter commitment periods. But the effects are likely minimal.

Second, USTelecom's capital expenditures series measures *change* over time and it is therefore essential to measure the same thing from one period to the next. It is improper to include the capitalized phones in USTelecom's time series because the capitalization of these phones does not reflect actual growth in the capital stock of the economy, just a shift in where this capital is measured. From the standpoint of economy as a whole, leased phones are a business asset and sold phones are a consumer asset. One could make a case for measuring all wireless phones, whether they are company assets or consumer durable goods; but that would require measuring all phones in all periods, not just a one-time shift of a subset of phones onto business financial statements due to a new leasing business practice. Including such a subset of leased phones would artificially skew the *change* in capital expenditures reflected in USTelecom's data and would create the false impression of growth from 2014 to 2015. In other words, including the phones would falsely imply that broadband providers' contribution to the national capital stock grew by \$2 billion more in 2015 than it actually did.

Finally, the exclusion of Sprint's leased phones from USTelecom's capital expenditures data is not to single out Sprint nor is it to criticize leasing phones as a business practice. Most other wireless providers do not lease phones. Those who lease phones do not report them as capital expenditures, e.g., T-Mobile's JUMP! On Demand. USTelecom's only objective with excluding Sprint's capitalized wireless phones is to develop a time series that accurately reflects change from one period to the next.

## Historical Revisions

USTelecom's 2016 broadband provider capital expenditures data series incorporates several adjustments to historical data. Collectively, these data revisions may affect period-to-period changes in the time series. (For a detailed analysis of these changes and their impact on USTelecom's capital expenditures data, see Chart 3)

### *Cable and Overbuilders*

The data contain historical revisions to USTelecom's source data for cable capex from 2010 to 2015. The data are from NCTA (citing SNL Kagan). USTelecom also removed capital expenditures of approximately \$300 million per year previously included for cable over-builders within a category for independent CLECs. Without this adjustment, investment by cable over-builders would be double-counted since the cable aggregate data incorporates those companies.

### *Windstream*

USTelecom adds the following capital expenditures associated with Windstream prior to 2016: (1) network expansion under federal broadband stimulus program of \$27.1 million in 2011, \$105.4 million in 2012, \$36.1 million in 2013, and \$13.3 million in 2014; (2) Network expansion under the FCC's CAF I

program of \$12.8 million in 2014 and \$73.9 million in 2015; (3) a revision of \$29.0 million in 2013; and (4) Uniti capital expenditures of \$44 million in 2015 (Uniti was formerly known as Communications Sales & Leasing, which was the network Real Estate Investment Trust (REIT) that Windstream spun off in 2015; it accounted for \$35 million in 2016.)

## Chart 3

2016 Adjustments to USTelecom Broadband Provider Capital Expenditure Estimates

	USTelecom Estimated Broadband Provider Capital Investment (Wireline, Wireless, and Cable, \$Billions)						
	2010	2011	2012	2013	2014	2015	
<b>2015 Series</b>							
Series Before Handset Adjustment	68.0	68.2	68.8	75.4	77.5	78.5	
Less Sprint Capitalized Handsets	-	-	-	-	(0.1)	(2.2)	
Final 2015 Series After Handset Adjustment	68.0	68.2	68.8	75.4	77.4	76.3	
<b>New 2016 Adjustments</b>							
Cable / CLEC							
Cable Data Series Revision	0.1	0.1	0.8	1.1	1.3	1.8	
Eliminate Duplication in CLEC and Cable Line Items	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	
Windstream							
ARRA Stimulus Expansion	-	0.022	0.105	0.036	0.013	-	
CAF I Expansion	-	-	-	-	0.013	0.074	
Data Revision	-	-	-	0.029	-	-	
Uniti (CS&L) REIT Spinoff	-	-	-	-	-	0.044	
	2010	2011	2012	2013	2014	2015	2016
<b>2016 Series</b>							
Series Before Handset Adjustment	67.9	68.0	69.4	76.2	78.5	80.1	78.1
Less Sprint Capitalized Handsets					(0.1)	(2.2)	(2.1)
Final 2016 Series After Handset Adjustment	67.9	68.0	69.4	76.2	78.4	77.9	76.0