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March 30, 2016

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20054

Via Electronic Filing

Re: GN Docket No. 14-28, *Protecting and Promoting the Open Internet*
GN Docket No. 10-127, *Framework for Broadband Internet Service*

Dear Ms. Dortch,

Free Press submits the accompanying report to retain a focus on the facts in the ongoing debate about the Commission's classification of broadband telecommunications under Title II of the Communications Act. Over a year ago, the Commission properly reclassified broadband Internet access service and adopted rules to ensure the Internet remains an open platform for speech and commerce. This letter focuses on the financial and operational performance of U.S. Internet Service Providers (ISPs) since then, ranging from the largest MSOs to small publicly traded Incumbent Local Exchange Carriers (ILECs); and from the market's most dominant mobile wireless carriers to small regional carriers serving some of our country's most geographically challenged areas.

There is an acute need to put these public facts in the record in response to statements from Commissioner Pai, who has inaccurately suggested on several occasions that "growth in broadband investment has [] flatlined."[1] With 2015 results now available, we can say ISP capital expenditures were higher in 2015 than 2014 despite the completion of several major upgrades in 2014.

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[1] *See* Remarks of FCC Commissioner Ajit Pai Before the Heritage Foundation, "The FCC and Internet Regulation: A First-Year Report Card," Feb. 26, 2016. Commissioner Pai appears to have solely sourced his inaccurate assertions about investment to tweets from industry-funded economist Hal Singer, who used a highly-selective and manipulated summary of publicly traded ISP capital expenditures. Singer's two chief errors were excluding AT&T's capitalized interest from its total capital expenditures (something not done for any other ISP, and against standard GAAP), and arbitrarily excluding Sprint's capital spend on leased devices, something not done for any other company (*e.g.*, a cable company's capital spent on set top boxes).

In addition to these inaccuracies, Commissioner Pai attributed to Singer the assertion that his falsely observed 2015 decline in investment was a "first-ever reduction in year-over-year investment by major ISPs that happened outside a recession." The premise of a decline is of course untrue, as we show herein; but Pai is also wrong to suggest that the ISP industry has not seen annual declines outside of a recession. According to data published by the U.S. Census Bureau in its Annual Capital Expenditures Survey (ACES), since 1998 there have been at least three declines in telecom/cable industry investment in non-recession years: from 2001 to 2002, from 2002 to 2004, and from 2006 to 2007 (inflation-adjusted values). (Due to changes in 2004 and 2008 in how ACES

Commissioner Pai, when confronted with the reality of his untrue statement, suggested in a Senate hearing that these verifiable facts are somehow untruths told by ISPs to their investors and the Securities and Exchange Commission.[2] This reflexive retreat to a wild explanation of the facts illustrates how far we've come in recent years in our public policy debates. It is perfectly reasonable to have strong disagreements about public policy, but conspiracy theories cannot displace confirmed realities. We can take away different meanings from a set of data, but it is dangerous when a sworn representative of the people is willing to invent his own data in order to conform to his worldview. Just as the fact that earth's temperature is rising should be met with a reasonable debate about the appropriate response, so too should the complicated realities about investment and competition in our telecommunications markets be met. We need reasoned debate about how to best increase consumer welfare in a concentrated market while maintaining technological progress and the Internet's openness.

To this letter, we attach a report with comprehensive and verifiable data concerning the ISP industry's performance during 2014 and 2015. These are facts collected from filings with the SEC that cannot be disputed. These facts show that one year after the FCC's historic vote, all of the broadband industry's apocalyptic predictions – about how reclassification of broadband as a Title II telecommunications service and the adoption of enforceable Net Neutrality rules would destroy the broadband market – have failed to materialize. Network investment is up. Revenues and profits are higher. And subscriber growth continues at a high level even as prices rise and the market nears saturation.

None of this should come as a surprise, as it reflects economic common sense and the sentiment ISPs themselves conveyed to the investment community prior to the FCC's vote. The reality is that investment levels and the general fiscal health of the broadband industry are determined by a variety of factors, with regulation generally very low on that list. The investment calculus is about profitability. It is driven by the general health of the economy, demand for faster broadband service, the level of market competition, technology advancements, the utility of prior deployments, tax incentives, interest rates, existing debt levels, and other factors far more impactful than whether ISPs faces theoretical regulatory consequences for anticompetitive behaviors they themselves claim they have no desire to pursue.

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tracks industry segments, comparisons between pre- and post-2004 and pre- and post-2008 are not possible.) According to Free Press's analysis of publicly traded telecom and cable company ISP SEC filings (published in Figure 2 of our July 2014 comments in these dockets), there were total capital expenditure declines (inflation-adjusted) outside of recession years from 2001 to 2002, 2002 to 2003, 2003 to 2004, 2006 to 2007, 2010 to 2011, and 2011 to 2012. The U.S. economy was in recession only from March 2001 to November 2001, and again from December 2007 to June 2009. Data released by CTIA shows wireless industry capital expenditure declines (inflation-adjusted) outside of recession years from 2001 to 2002, 2002 to 2003, 2006 to 2007, and 2012 to 2013. Data published by SNL Kagan on top cable industry company capital expenditures shows declines (inflation-adjusted) in non-recession years of 1997 to 1998, 2002 to 2003, 2003 to 2004, 2006 to 2007, 2010 to 2011, and 2012 to 2013. Thus, there appears to be no basis in fact for Commissioner Pai's assertion.

[2] *See* "Senate Commerce Leaders Raise Concerns About Wheeler's Set-Top Plans," *Communications Daily*, Mar. 3, 2016.

But while it is the case that aggregate ISP investment is higher (and higher at most individual firms) we stress that focusing on short-term aggregate movements in capital expenditures (or any other metric in isolation) is a very poor way to judge public policy decisions, particularly in this industry. Because of the cyclical, company-specific and technology-specific nature of the broadband industry's investments, the annual change in the aggregate total spent on capital expenditures is a very poor tool for measuring the industry's overall health. For example, what conclusion can one draw from an aggregate number comprised of data that shows some companies with large increases in capital spending, some with large decreases, and many others with smaller changes in either direction? Such a scenario is the norm in this industry, illustrating why aggregate change in annual capital spending is a terrible tool for measuring the industry's response to a singular change in public policy.

This is why it is important to pay attention to what individual companies are telling investors. For example, while AT&T's 2015 overall decline in capital investment stands out from the rest of the industry, it is a result the company repeatedly told Wall Street to expect as the company completed its so-called "Project VIP" DSL and wireless upgrades. With nationwide 4G LTE coverage completed in 2014, there was simply no need for AT&T to maintain that level of capital spending. AT&T's temporary increase and subsequent temporary decline highlights the most absurd aspect of the anti-Net Neutrality brigade's investment argument: its flatly ridiculous underlying assumption that capital investments must always go up, or that the amount spent annually on equipment is somehow a useful marker of a policy's net benefit.

There's no mystery as to how or why the industry's capital spending changed during the past year, and it is pure folly to attribute any of 2015's results to the Commission's Open Internet rules. The truth is that 2015's final results held close to the guidance these companies gave one year ago. Likewise, the words spoken by these companies to their investors – before, during and after the Commission's vote – clearly reflect an industry for which the status quo was not disturbed whatsoever by this action. Judging by these company statements (to their investors and the SEC, where unlike in their lobbying the truth is paramount), the broadband market remains very healthy one year after the Commission's Title II and Net Neutrality vote. Numerous companies are telling Wall Street to expect continued network upgrades and the future higher earnings that such investments will bring. Others are explaining how prior upgrade projects are nearing completion, and thus how capital spending will ramp down in the near-term. Not one single publicly traded ISP is telling Wall Street that the Commission's policy change is impacting the company's capital investments. Indeed, the subject was not raised to our knowledge on a single company's year-end 2015 investor call.

These are the facts. What the Commission and other decision makers do with this information is their prerogative. Free Press's view is that in today's weak-duopoly market – where cable continues to enjoy insurmountable natural monopoly advantages –the biggest issue facing the Commission is how to reduce consumer harms resulting from ISPs exercising market power. The Open Internet rules of course address some of these concerns, while Title II provides a much-needed legal foundation for preventing and remedying others. Once all the facts are laid bare, we hope that the Commission understands that future threats to the U.S. broadband market come not from Net Neutrality regulation, but from the consequences of market power abuses that are likely to arise as the industry becomes more concentrated and less competitive.

In the attached report, we offer a complete recounting of all of the major publicly traded U.S. ISPs 2014 and 2015 financial and operational results. We encourage the Commission to conduct its own analysis, as it is far to easy for adherents to the anti-consumer protection philosophy to dismiss this information based on nothing more than unfounded *ad hominem* attacks. If and when the Commission – or any other party interested in the truth – conducts its own analysis on the matter of capital investment, it will see that from 2014 to 2015:

- Total capital expenditures by publicly traded broadband Internet Service Providers (ISPs) increased by nearly $3 billion in 2015, 4 percent above 2014 levels (see Table 1 in the attached letter).

- Capital expenditures by publicly traded U.S. wireless carriers were up 3 percent in 2015.

- Capital expenditures at major publicly traded U.S. cable companies in 2015 were 6 percent higher than 2014 investments.

- Capital expenditures at publicly traded telephone company ISPs in 2015 were 4 percent higher than in 2014.

These are the aggregate results for total capital expenditures. But we strongly encourage parties interested in a more complete understanding of this market to pay close attention to the individual company results, focusing on the facts about prior deployments and expectations about the future of their businesses. In doing so, it is our hope that we can move past the prior fear mongering about basic Title II protections, and onto a substantive debate about the best public policies to maintain broadband provider's expected returns and their successful status quo while guarding against market power abuses.

Respectfully submitted,

/s/ S. Derek Turner

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NOTE: Original Report Released 2/26/16.
Updated Report Released 3/30/16 with Subsequently Reported Company Financial Results and Summaries of Individual Company Statements

Same As it Ever Was:
The U.S. Broadband Market Continues to Thrive One Year After the FCC's Historic Network Neutrality Vote

Abstract:

All of the broadband industry's apocalyptic predictions, about how FCC reclassification of broadband as a Title II telecommunications service and the adoption of enforceable Net Neutrality rules would destroy the broadband market, have failed to materialize one year after the FCC's historic vote. Network investment is up. Revenues and profits are higher. And subscriber growth continues at a high level even as prices rise and the market nears saturation. None of this should come as a surprise, as it reflects economic common sense and the sentiment ISPs themselves conveyed to the investment community prior to the FCC's vote. These facts concerning the continued growth of the broadband market may explain why the ISPs themselves have dropped their hollow investment threats, leaving only dead-enders like FCC Commissioner Pai to continue to falsely claim that investment is down. Policymakers must understand that future threats to the U.S. broadband market come not from regulation, but from the consequences of market power abuses that are likely to arise as the industry becomes more concentrated and less competitive.

Introduction

On February 26, 2015, after years of contentious debate, the Federal Communications Commission voted to reclassify broadband as a telecommunications service and adopt rules protecting Network Neutrality. This action preserved the Internet's successful status quo as an open platform. The decision ensured that if an ISP attempted to deny broadband users' rights or abuse its market power by playing favorites, the FCC would use its clear, congressionally granted authority to stop such harmful behavior.

While many industry analysts viewed the FCC's actions correctly, ISP lobbyists and their paid loyalists in Washington predicted total doom. The most oft-repeated scare tactic leading up to the FCC's vote was that reclassification and the adoption of enforceable Net Neutrality rules would destroy the ISPs' incentives to invest in their networks. However, they never explained why the mechanism for keeping the Internet as an open platform – which has been a cash cow for ISPs – would harm the broadband market. This is because the gloomy predictions about investment and profit declines were nothing more than a scare tactic, one eagerly embraced as a talking point by industry and their political supporters.

The reality is that investment and the general fiscal health of the broadband industry is determined by a variety of factors, with regulation generally very low on that list. The investment calculus is about profitability. It is driven by the general health of the economy, demand for faster broadband service, the level of market competition, technology advancements, the utility of prior deployments, tax incentives, interest rates, existing debt levels, and other factors far more impactful than whether ISPs faces theoretical regulatory consequences for anticompetitive behaviors they themselves claim they have no desire to pursue.

Over the past decade the broadband industry has grown tremendously, with cable ISPs capturing the majority of the growth as DSL declines (just as dial-up access did before it). Barriers to new entry for network providers are as high as they've ever been, as the upgrade costs for cable incumbents continue to decline. Profits and profit margins are at historic, monopoly-like levels, and they continue to grow as ISPs exercise market power in an increasingly uncompetitive market. In sum, this is a great market to be in for the sellers, and no rational ISP is going to leave profit on the table simply because the FCC decided to restore people's legal protections to communicate without unjust interference.

Below, we examine a variety of market factors and how they have changed in the year since the FCC's vote. While each company is different – as we should expect – there are general trends that indicate the overall market is progressing as it was prior to the policy change. Industry's gloomy predictions have yet to materialize – and they never will. This is because basic common carrier duties are a fundamental component of the Internet economy's success. The real threats to the market are greedy gatekeeper market power abuses that Net Neutrality prohibits.

Summary of Results

Capital Investment

- Total capital expenditures by publicly traded broadband Internet Service Providers (ISPs) increased by nearly $3 billion in 2015, 4 percent above 2014 levels (see Table 1 below).

- Capital expenditures by publicly traded U.S. wireless carriers were up 3 percent in 2015.
    - Investments by Verizon Wireless, Sprint and T-Mobile were up 12 percent, 42 percent and 9 percent respectively. These more than offset AT&T's decline in wireless capital expenditures, which was due only to its 2014 completion of its nationwide 4G LTE upgrade.

- Capital expenditures at major publicly traded U.S. cable companies in 2015 were 6 percent higher than 2014 investments.
    - Comcast led U.S. cable companies with 14 percent growth in capital expenditures. These increases offset smaller declines at Charter and Cablevision, whose spending returned to more normal levels after they completed deployment of new set-top boxes and digital upgrades in 2014 (and as we note below, excluding set-top box purchases, network investment at these two companies was higher in 2015, as it was at all other major publicly traded cable ISPs).
    - Nearly half of these cable company capital expenditures were on customer premise equipment (*e.g.*, set-top boxes). Most of these companies also separately reported investments in their network infrastructure, which includes capital used to extend new lines, upgrade or rebuild existing lines, and purchase new core networking hardware (*e.g.*, cable modem terminal systems).
        - Such cable industry network infrastructure investment in 2015 was 9 percent higher than it was in 2014, driven by continued network upgrades at Comcast, Time Warner Cable, Charter, Cablevision, Mediacom and Suddenlink (see Table 2 below). While Comcast and Charter long ago completed their all digital and DOCSIS3.0 system upgrades, they continued to invest in targeted gigabit-to-the-home fiber deployments and pushed fiber deeper into their networks in preparation for 2016's rollout of DOCSIS3.1 service.

- Capital expenditures at publicly traded telephone company ISPs in 2015 were 4 percent higher than in 2014.
    - These companies showed no consistent pattern, with some dramatically increasing capital spending while others continued to slow spending as their businesses shrink in the face of the cable industry's dominance. For example, companies like Frontier, Windstream and Cincinnati Bell all saw substantial increases in capital investment (25 percent, 23 percent and 56 percent respectively), with targeted fiber-to-the-home and fiber-to-the-node deployments responsible for much of these increases. But other companies saw substantial declines. Verizon ramped down wireline capital spending by 12 percent from 2014 levels as it completed its prior FiOS deployment commitments.
    - AT&T's wireline capital spending was 12 percent higher in 2015 than 2014. However, a substantial portion of this increase was due to the addition of DirecTV to the company's portfolio in late July 2015. AT&T has not released *pro forma* accounting of its capital expenditures, and also changed how it reports spending by segment, making an exact apples-to-apples comparison difficult (the data below in table 1 shows exactly how each company reported to the Securities and Exchange Commission, with AT&T's wireline/wireless split based on comments to investors). However, based on the company's public statements, we estimate that AT&T's wireline capital spending in 2015 after excluding the impact of the DirecTV acquisition increased $580 million over 2014 levels, meaning a 6 percent increase. This is consistent with AT&T's acceleration of its Gigapower deployments during the second half of 2015.

- Based on these estimates, after excluding the impact of DirecTV, overall telephone company ISP capital investments in 2015 were 1 percent higher than in 2014.

Figure 1: Capital Expenditures by Publicly Traded Broadband Providers (2014-2015)

Capital Expenditures ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast (cable)	$1,145,000	$1,493,000	$1,644,000	$1,872,000	$1,445,000	$1,676,000	$1,851,000	$2,062,000	$6,154,000	$7,034,000	$880,000	14%	$580,000	12%	$397,000	11%
Time Warner Cable	$834,000	$1,240,000	$1,105,000	$918,000	$1,134,000	$1,263,000	$1,103,000	$946,000	$4,097,000	$4,446,000	$349,000	9%	$49,000	2%	$26,000	1%
Charter	$539,000	$570,000	$569,000	$543,000	$351,000	$432,000	$509,000	$548,000	$2,221,000	$1,840,000	-$381,000	-17%	-$193,000	-11%	-$55,000	-5%
Cablevision	$186,075	$239,118	$204,752	$261,733	$166,631	$214,674	$222,664	$212,427	$891,678	$816,396	-$75,282	-8%	-$55,838	-13%	-$31,394	-7%
Suddenlink	$95,443	$103,189	$114,900	N/C	$134,943	$113,489	$108,400	N/A	*$313,532*	*$356,832*	*$43,300*	*14%*	*$3,800*	*2%*	*-$6,500*	*-6%*
Mediacom	$57,368	$66,029	$78,776	$55,498	$62,990	$76,850	$71,726	$76,679	$257,671	$288,245	$30,574	12%	$24,952	17%	$14,131	18%
Wide Open West	$52,900	$70,500	$61,800	$66,700	$55,600	$54,700	$64,500	$57,100	$251,900	$231,900	-$20,000	-8%	-$22,700	-17%	-$6,900	-11%
Cable ONE	$46,966	$38,815	$45,301	$46,318	$37,417	$37,013	$28,972	$52,734	$177,400	$156,136	-$21,264	-12%	-$11,715	-14%	-$9,913	-22%
GCI	$28,174	$52,376	$44,321	$51,238	$49,332	$42,632	$42,598	$41,438	$176,109	$176,000	-$109	0%	-$21,267	-14%	-$11,523	-12%
TOTAL TOP CABLE	$2,984,926	$3,873,027	$3,867,850	$3,814,487	$3,436,913	$3,910,358	$4,001,860	$3,996,378	$14,540,290	$15,345,509	$805,219	6%	$353,232	3%	$315,901	4%
Verizon (wireline)	$1,385,000	$1,345,000	$1,464,000	$1,556,000	$1,077,000	$1,134,000	$1,202,000	$1,636,000	$5,750,000	$5,049,000	-$701,000	-12%	-$393,000	-9%	-$182,000	-6%
AT&T (wireline)	$2,712,370	$2,638,240	$2,410,400	$2,080,220	$2,184,050	$2,629,760	$2,890,250	$3,351,150	$9,841,230	$11,055,210	$1,213,980	12%	$1,742,300	24%	$1,750,780	39%
CenturyLink	$670,000	$731,000	$712,000	$930,000	$616,000	$656,000	$767,000	$830,000	$3,043,000	$2,869,000	-$174,000	-6%	-$120,000	-5%	-$45,000	-3%
Frontier	$145,407	$156,763	$193,122	$193,000	$180,000	$206,000	$240,000	$237,000	$688,292	$863,000	$174,708	25%	$140,115	26%	$90,878	24%
Windstream	$153,000	$205,800	$193,900	$233,800	$189,300	$255,000	$300,100	$310,900	$786,500	$1,055,300	$268,800	34%	$232,500	37%	$183,300	43%
TDS Telecom	$31,900	$45,200	$51,600	$79,400	$36,900	$53,000	$56,500	$72,600	$208,100	$219,000	$10,900	5%	$5,900	3%	-$1,900	-1%
Fairpoint	$28,077	$34,901	$28,797	$27,714	$26,430	$28,298	$28,193	$33,238	$119,489	$116,159	-$3,330	-3%	-$1,683	-2%	$4,920	17%
Cincinatti Bell	$34,300	$41,200	$45,300	$61,200	$57,900	$74,600	$73,200	$77,900	$182,000	$283,600	$101,600	56%	$78,000	53%	$44,600	42%
Shenandoah Telecom. Co.	$17,196	$15,608	$18,393	$17,035	$9,500	$15,635	$14,509	$30,000	$68,232	$69,644	$1,412	2%	$9,108	18%	$9,081	26%
TOTAL TOP ILEC	$5,177,250	$5,213,712	$5,117,512	$5,178,369	$4,377,080	$5,052,293	$5,571,752	$6,578,788	$20,686,843	$21,579,913	$893,070	4%	$1,693,240	11%	$1,854,659	18%
Verizon (wireless)	$2,554,000	$2,771,000	$2,483,000	$2,707,000	$2,419,000	$3,126,000	$2,921,000	$3,259,000	$10,515,000	$11,725,000	$1,210,000	12%	$1,345,000	17%	$990,000	19%
AT&T (wireless)	$3,082,000	$3,480,000	$2,829,600	$2,345,780	$1,786,950	$2,066,240	$2,364,750	$2,741,850	$11,737,380	$8,959,790	-$2,777,590	-24%	-$1,482,540	-17%	-$68,780	-1%
Sprint	$1,488,000	$1,246,000	$1,143,000	$1,568,000	$2,047,000	$2,346,000	$1,735,000	$1,601,000	$5,445,000	$7,729,000	$2,284,000	42%	$1,725,000	44%	$625,000	23%
T-Mobile	$947,000	$940,000	$1,131,000	$1,299,000	$982,000	$1,191,000	$1,120,000	$1,431,000	$4,317,000	$4,724,000	$407,000	9%	$372,000	11%	$121,000	5%
US Cellular	$89,581	$143,927	$142,452	$181,655	$66,460	$133,666	$134,818	$198,111	$557,615	$533,055	-$24,560	-4%	-$1,439	0%	$8,822	3%
nTELOS	$13,961	$29,883	$23,867	$39,289	$22,941	$24,167	$28,110	$21,070	$107,000	$96,288	-$10,712	-10%	-$19,692	-21%	-$13,976	-22%
TOTAL TOP WIRELESS	$8,174,542	$8,610,810	$7,752,919	$8,140,724	$7,324,351	$8,887,073	$8,303,678	$9,252,031	$32,678,995	$33,767,133	$1,088,138	3%	$1,938,329	8%	$1,662,066	10%
TOTAL TOP WIRED ISP	$8,162,176	$9,086,739	$8,985,362	$8,992,856	$7,813,993	$8,962,651	$9,573,612	$10,575,166	$35,227,133	$36,925,422	$1,698,289	5%	$2,046,472	8%	$2,170,560	12%
TOTAL TOP ISP	$16,336,718	$17,697,549	$16,738,281	$17,133,580	$15,138,344	$17,849,724	$17,877,290	$19,827,197	$67,906,128	$70,692,555	$2,786,427	4%	$3,984,801	8%	$3,832,626	11%

Source: Company SEC filings. Italicized and underlined values represent comparisons for Suddenlink that exclude fourth quarter 2014 and 2015 values for the companies that have not reported complete results, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results for all quarters except 4Q 2015 are as reported for each quarter and include capital expenditures for its Eastern network assets, discontinued as of 11/15/15. nTelos 4Q 2015 results include value of capital expenditures spent on discontinued eastern territory network from 10/1/15 to 11/15/15, as reported on p. 57 of 2015 10-K. AT&T's results are as reported, and include spending on the DirecTV segment as of July 28, 2015. See main text for a discussion of estimates that exclude the impact of the DirecTV acquisition on AT&T's capital investments.

Figure 2: Network Investment* by Publicly Traded Cable Broadband Providers (2014-2015)

Network Investment* ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast (cable)	$245,000	$394,000	$389,000	$459,000	$302,000	$438,000	$405,000	$554,000	$1,487,000	$1,699,000	$212,000	14%	$155,000	12%	$111,000	13%
Time Warner Cable	$332,000	$602,000	$487,000	$427,000	$482,000	$596,000	$461,000	$432,000	$1,848,000	$1,971,000	$123,000	7%	-$27,000	-2%	-$21,000	-2%
Charter	$160,000	$199,000	$210,000	$229,000	$137,000	$199,000	$237,000	$272,000	$798,000	$845,000	$47,000	6%	$70,000	11%	$70,000	16%
Cablevision	$55,684	$91,230	$64,600	$84,964	$58,605	$86,684	$77,749	$89,673	$296,478	$312,711	$16,233	5%	$13,312	6%	$17,858	28%
Suddenlink	$12,228	$17,761	$29,998	N/C	$41,741	$24,246	$25,551	N/A	*$59,987*	*$91,538*	*$31,551*	*53%*	*$2,038*	*4%*	*-$4,447*	*-15%*
Mediacom	$18,682	$23,743	$37,711	$15,527	$17,286	$29,808	$27,488	$23,676	$95,663	$98,258	$2,595	3%	$3,991	5%	-$2,074	-4%
TOTAL TOP CABLE	$823,594	$1,327,734	$1,218,309	$1,199,964	$1,038,632	$1,373,738	$1,233,788	$1,371,349	$4,585,128	$5,017,507	$432,379	9%	$217,341	6%	$171,337	7%

* Includes capital expenditures for line extensions, upgrades/rebuilds, and scalable infrastructure. Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for Suddenlink, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held).

Revenues

- Total revenues brought in by publicly traded broadband companies increased by more than $22 billion in 2015, 5 percent above 2014 levels (see Table 3 below).

- High-Speed Internet revenues at the cable and fixed-line telephone companies that report this information increased 10 percent in 2015, or nearly $4.5 billion above 2014 levels (see Table 4 below).

- Publicly traded U.S. wireless carrier revenues were up 2 percent in 2015.
  - o Verizon Wireless brought in $91.6 billion in revenues in 2015, a 5 percent increase above 2014 levels. T-Mobile saw 8 percent revenue growth, earning $2.5 billion more in 2015 than 2014. AT&T earned $73.4 billion in wireless revenues in 2015, which was almost identical to its 2014 showing. Conversely, Sprint saw a $2.7 billion decline, a result due to its aggressive efforts to increase market share.

- Cable company revenues were 5 percent higher in 2015.
  - o High-Speed Internet revenues at the top U.S. cable company ISPs grew by 11 percent in 2015. Most of these companies attributed this growth to price increases and customers migrating to more expensive (and more profitable) service tiers. These revenue increases, which come at a time when operating costs are stable or even declining for some cable ISPs, helped push the collective broadband operating profit margin for the industry to historic highs, above 60 percent.

- Revenues at publicly traded telephone company ISPs in 2015 were 11 percent higher than in 2014.
  - o The above includes all revenues at these companies. Among those telephone companies that separate out revenues by business segments, their High-Speed Internet revenues grew by 9 percent in 2015.
    - ▪ We note that while none of this High-Speed Internet revenue growth at the major telephone companies was impacted by AT&T's acquisition of DirecTV, a portion of AT&T's overall revenue growth, and nearly all of its wireline segment revenue growth was due to this merger. These additional DirecTV revenues also account for nearly all of the growth in telephone company total revenues. This result is consistent with the general slow growth at traditional fixed-line telephone companies that has occurred for many years.

Figure 3: Revenues at Publicly Traded Broadband Providers (2014-2015)

Revenues ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast (cable)	$10,757,000	$11,029,000	$11,041,000	$11,313,000	$11,430,000	$11,729,000	$11,740,000	$11,980,000	$44,140,000	$46,879,000	$2,739,000	6%	$2,066,000	6%	$1,366,000	6%
Time Warner Cable	$5,582,000	$5,726,000	$5,714,000	$5,790,000	$5,777,000	$5,926,000	$5,922,000	$6,072,000	$22,812,000	$23,697,000	$885,000	4%	$690,000	4%	$490,000	4%
Charter	$2,202,000	$2,259,000	$2,287,000	$2,360,000	$2,362,000	$2,430,000	$2,450,000	$2,512,000	$9,108,000	$9,754,000	$646,000	7%	$486,000	7%	$315,000	7%
Cablevision	$1,575,586	$1,628,137	$1,626,187	$1,631,036	$1,614,771	$1,653,393	$1,612,601	$1,628,978	$6,460,946	$6,509,743	$48,797	1%	$9,612	0%	-$15,644	0%
Suddenlink	$575,025	$579,942	$583,606	N/C	$588,250	$608,016	$605,112	N/A	*$1,738,573*	*$1,801,378*	*$62,805*	*4%*	*$49,580*	*4%*	*$21,506*	*4%*
Mediacom	$408,292	$415,632	$415,469	$420,688	$419,997	$431,751	$431,593	$437,731	$1,660,081	$1,721,072	$60,991	4%	$49,286	4%	$33,167	4%
Wide Open West	$312,100	$319,800	$323,200	$309,200	$312,300	$305,800	$297,700	$301,300	$1,264,300	$1,217,100	-$47,200	-4%	-$47,400	-5%	-$33,400	-5%
Cable ONE	$208,546	$205,111	$199,687	$201,468	$202,909	$202,698	$198,215	$203,443	$814,812	$807,265	-$7,547	-1%	-$1,910	0%	$503	0%
GCI	$216,283	$224,399	$240,725	$228,791	$231,089	$247,528	$258,573	$241,344	$910,198	$978,534	$68,336	8%	$53,530	8%	$30,401	6%
TOTAL TOP CABLE	$21,836,832	$22,387,021	$22,430,874	$22,254,183	$22,938,316	$23,534,186	$23,515,794	$23,376,796	$88,908,910	$93,365,092	$4,456,182	5%	$3,354,698	5%	$2,207,533	5%
Verizon (wireline)	$9,406,000	$9,384,000	$9,324,000	$9,560,000	$9,208,000	$9,153,000	$9,009,000	$9,473,000	$37,674,000	$36,843,000	-$831,000	-2%	-$633,000	-2%	-$402,000	-2%
AT&T (wireline)	$14,610,000	$14,645,000	$14,620,000	$15,174,000	$14,390,000	$14,711,000	$20,906,000	$23,371,000	$59,049,000	$73,378,000	$14,329,000	24%	$14,549,000	33%	$14,483,000	49%
CenturyLink	$4,538,000	$4,541,000	$4,514,000	$4,438,000	$4,451,000	$4,419,000	$4,554,000	$4,476,000	$18,031,000	$17,900,000	-$131,000	-1%	-$44,000	0%	$78,000	1%
Frontier	$1,154,046	$1,147,265	$1,140,874	$1,330,305	$1,371,000	$1,368,000	$1,424,000	$1,413,000	$4,772,490	$5,576,000	$803,510	17%	$586,556	16%	$365,821	15%
Windstream	$1,464,900	$1,466,000	$1,455,500	$1,443,100	$1,418,600	$1,421,100	$1,498,600	1,427,000	$5,829,500	$5,765,300	-$64,200	-1%	-$17,900	0%	$27,000	1%
TDS Telecom	$262,416	$270,850	$273,157	$281,889	$279,985	$294,813	$299,374	$283,871	$1,088,312	$1,158,043	$69,731	6%	$52,162	6%	$28,199	5%
Fairpoint	$230,557	$225,597	$228,120	$217,122	$213,974	$214,098	$221,569	$209,824	$901,396	$859,465	-$41,931	-5%	-$25,348	-4%	-$13,849	-3%
Cincinatti Bell	$322,500	$319,900	$327,500	$308,300	$292,900	$285,800	$299,800	$289,300	$1,278,200	$1,167,800	-$110,400	-9%	-$80,800	-8%	-$46,700	-7%
Shenandoah Telecom. Co.	$80,452	$81,416	$82,268	$82,810	$84,287	$85,701	$85,212	$87,285	$326,946	$342,485	$15,539	5%	$11,704	5%	$2,944	2%
TOTAL TOP ILEC	$32,068,871	$32,081,028	$31,965,419	$32,835,526	$31,709,746	$31,952,512	$38,297,555	$41,030,280	$128,950,844	$142,990,093	$14,039,249	11%	$14,398,374	15%	$14,522,415	22%
Verizon (wireless)	$20,851,000	$21,453,000	$21,807,000	$23,449,000	$22,302,000	$22,586,000	$22,980,000	$23,734,000	$87,560,000	$91,602,000	$4,042,000	5%	$2,591,000	4%	$1,458,000	3%
AT&T (wireless)	$17,866,000	$17,930,000	$18,337,000	$19,265,000	$18,186,000	$18,304,000	$18,185,000	$18,748,000	$73,398,000	$73,423,000	$25,000	0%	-$295,000	-1%	-$669,000	-2%
Sprint	$8,875,000	$8,789,000	$8,488,000	$8,973,000	$8,282,000	$8,027,000	$7,975,000	$8,107,000	$35,125,000	$32,391,000	-$2,734,000	-8%	-$2,141,000	-8%	-$1,379,000	-8%
T-Mobile	$6,875,000	$7,185,000	$7,350,000	$8,154,000	$7,778,000	$8,179,000	$7,849,000	$8,247,000	$29,564,000	$32,053,000	$2,489,000	8%	$1,586,000	7%	$592,000	4%
US Cellular	$925,811	$957,773	$1,000,419	$1,008,744	$965,245	$975,667	$1,068,906	$987,035	$3,892,747	$3,996,853	$104,106	3%	$64,672	2%	$46,778	2%
nTELOS	$122,082	$117,795	$119,638	$128,319	$120,206	$108,324	$97,540	$90,278	$487,834	$416,348	-$71,486	-15%	-$69,610	-19%	-$60,139	-24%
TOTAL TOP WIRELESS	$55,514,893	$56,432,568	$57,102,057	$60,978,063	$57,633,451	$58,179,991	$58,155,446	$59,913,313	$230,027,581	$233,882,201	$3,854,620	2%	$1,736,062	1%	-$11,361	0%
TOTAL TOP WIRED ISP	$53,905,703	$54,468,049	$54,396,293	$55,089,709	$54,648,062	$55,486,698	$61,813,349	$64,407,076	$217,859,754	$236,355,185	$18,495,431	8%	$17,753,072	11%	$16,729,948	15%
TOTAL TOP ISP	$109,420,596	$110,900,617	$111,498,350	$116,067,772	$112,281,513	$113,666,689	$119,968,795	$124,320,389	$447,887,335	$470,237,386	$22,350,051	5%	$19,489,134	6%	$16,718,587	7%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for Suddenlink, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results for all quarters except 4Q 2015 are as reported for each quarter and include revenues from its Eastern network assets, discontinued as of 11/15/15. nTelos 4Q 2015 results include revenues earned from its discontinued eastern territory assets from 10/1/15 to 11/15/15, as reported on p. 56 of 2015 10-K. AT&T's results are as reported, and include spending on the DirecTV segment as of July 28, 2015. See main text for a discussion of estimates that exclude the impact of the DirecTV acquisition on AT&T's capital investments.

Figure 4: High-Speed Internet Access Revenues at Publicly Traded Broadband Providers (2014-2015)

Data Revenues ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast (cable)	$2,750,000	$2,819,000	$2,840,000	$2,912,000	$3,044,000	$3,101,000	$3,129,000	$3,197,000	$11,321,000	$12,471,000	$1,150,000	10%	$856,000	10%	$574,000	10%
Time Warner Cable	$1,965,000	$2,034,000	$2,068,000	$2,117,000	$2,193,000	$2,253,000	$2,306,000	$2,377,000	$8,184,000	$9,129,000	$945,000	12%	$717,000	12%	$498,000	12%
Charter	$616,000	$638,000	$652,000	$670,000	$717,000	$743,000	$762,000	$781,000	$2,576,000	$3,003,000	$427,000	17%	$326,000	17%	$221,000	17%
Cablevision	$346,899	$354,376	$355,976	$359,077	$362,872	$370,170	$370,736	$374,941	$1,416,328	$1,478,719	$62,391	4%	$46,418	7%	$30,624	4%
Suddenlink	$179,907	$183,989	$188,410	N/C	$206,316	$215,401	$220,908	N/A	*$552,306*	*$642,625*	*$90,319*	*16%*	*$63,910*	*17%*	*$32,498*	*17%*
Mediacom	$118,105	$120,709	$121,345	$123,658	$128,044	$132,595	$135,495	$139,428	$483,817	$535,562	$51,745	11%	$41,806	11%	$29,920	12%
Cable ONE	$65,107	$66,098	$66,296	$68,217	$69,056	$74,480	$73,074	$77,876	$265,718	$294,486	$28,768	11%	$24,819	12%	$16,437	12%
GCI	$87,613	$88,475	$92,208	$94,959	$96,446	$98,895	$100,245	$104,099	$363,255	$399,685	$36,430	10%	$27,597	15%	$17,177	9%
TOTAL TOP CABLE	$6,128,631	$6,304,647	$6,384,235	$6,344,911	$6,816,734	$6,988,541	$7,097,458	$7,051,344	$25,162,424	$27,954,077	$2,791,653	11%	$2,103,550	11%	$1,419,656	11%
AT&T (wireline)	N/A	N/A	$1,414,000	$1,482,000	N/A	N/A	$1,685,000	$1,740,000	$5,522,000	$6,601,000	$1,079,000	20%	N/A	N/A	$529,000	18%
CenturyLink	N/A	N/A	$1,845,000	$1,850,000	N/A	N/A	$1,863,000	$1,896,000	$7,393,000	$7,479,000	$86,000	1%	N/A	N/A	$64,000	2%
Frontier	$461,496	$462,730	$468,796	$554,945	$575,000	$584,000	$589,000	$589,000	$1,947,967	$2,337,000	$389,033	20%	$275,529	19%	$154,259	15%
Windstream	$525,200	$535,000	$547,800	$552,500	$554,500	$561,800	$577,400	577,900	$2,160,500	$2,271,600	$111,100	5%	$81,800	8%	$55,000	5%
Fairpoint	$42,343	$44,089	$44,851	$44,207	$43,271	$44,455	$46,018	$44,876	$175,490	$178,620	$3,130	2%	$2,202	2%	$1,836	2%
Cincinatti Bell	$83,000	$84,200	$84,100	$83,600	$81,200	$78,800	$81,300	$81,500	$334,900	$322,800	-$12,100	-4%	-$10,300	-6%	-$4,900	-3%
TOTAL TOP ILEC	N/A	N/A	$4,404,547	$4,567,252	N/A	N/A	$4,841,718	$4,929,276	$17,533,857	$19,190,020	$1,656,163	9%	N/A	N/A	$799,195	9%
TOTAL TOP WIRED ISP	N/A	N/A	$10,788,782	$10,912,163	N/A	N/A	$11,939,176	$11,980,620	$42,696,281	$47,144,097	$4,447,816	10%	N/A	N/A	$2,218,851	10%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for the Suddenlink, in order to maintain comparability. AT&T wireline and Cablevision data revenues exclude business segments. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). AT&T's reported results for data revenues were not impacted by the DirecTV acquisition.

Subscribers

- The U.S. market continued to add subscribers at a healthy pace, with the total number of wired connections increasing by nearly 3 million in 2015, or 4 percent growth in the providers' customer base totals (see Table 5 below).

- All of the wired connection growth accrued to cable company ISPs, while mobile wireless carriers continued adding lines at an even higher pace.

    - Cable company ISPs enjoyed 7 percent broadband subscriber growth in 2015, adding more than 3 million lines.

    - The telephone company ISP sector however lost customers as DSL subscribers continued to switch to cable modem service. Overall, the publicly traded incumbent telephone company ISPs lost nearly 200,000 lines, a 0.5 percent decline. Those companies that have deployed fiber-optic-based broadband (*e.g.*, Verizon's FiOS fiber-to-the-home service, AT&T's U-Verse fiber-to-the-node VDSL service) did see continued subscriber growth for these higher-speed products, but this growth was more than offset by declines in these companies' traditional DSL business.

    - Publicly traded U.S. wireless carriers added nearly 23 million lines in 2015, showing 7 percent growth from 2014.

        - T-Mobile lead all carriers in absolute and relative growth, adding 8.3 million connections in 2015, a 15 percent growth rate above 2014. AT&T added 8.1 million domestic wireless lines (7 percent growth), though a large portion of these were not primary customer lines, but connected devices (*e.g.*, cars) and tablets.

Figure 5: High-Speed Internet Subscriptions at Publicly Traded Broadband Providers (2014-2015)

Internet Subscribers	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change
Comcast (cable)	21,068,000	21,271,000	21,586,000	21,962,000	22,369,000	22,548,000	22,868,000	23,329,000	21,962,000	23,329,000	1,367,000	6%
Time Warner Cable	11,889,000	11,965,000	12,073,000	12,253,000	12,581,000	12,770,000	13,016,000	13,313,000	12,253,000	13,313,000	1,060,000	9%
Charter	4,788,000	4,850,000	4,956,000	5,072,000	5,208,000	5,294,000	5,443,000	5,572,000	5,072,000	5,572,000	500,000	10%
Cablevision	2,788,000	2,779,000	2,756,000	2,760,000	2,767,000	2,781,000	2,784,000	2,809,000	2,760,000	2,809,000	49,000	2%
Suddenlink	1,162,500	1,164,200	1,198,000	NC	1,249,400	1,248,600	1,272,600	N/A	*1,198,000*	*1,272,600*	*74,600*	*6%*
Mediacom	984,000	987,000	997,000	1,013,000	1,041,000	1,051,000	1,067,000	1,085,000	1,013,000	1,085,000	72,000	7%
Wide Open West	757,000	770,000	730,000	727,800	722,000	713,100	712,300	$712,500	727,800	712,500	-15,300	-2%
Cable ONE	484,168	482,725	486,142	488,454	496,579	497,036	496,865	501,241	488,454	501,241	12,787	3%
GCI	130,400	129,800	131,200	133,200	135,800	136,700	138,500	140,000	133,200	140,000	6,800	5%
TOTAL TOP CABLE	44,051,068	44,398,725	44,913,342	*44,409,454*	46,569,779	47,039,436	47,798,265	*47,461,741*	45,607,454	48,734,341	3,126,887	7%
Verizon (wireline)	9,031,000	9,077,000	9,146,000	9,205,000	9,246,000	9,221,000	9,223,000	9,228,000	9,205,000	9,228,000	23,000	0%
AT&T (wireline)	16,503,000	16,448,000	16,486,000	16,028,000	16,097,000	15,961,000	15,832,000	15,778,000	16,028,000	15,778,000	-250,000	-2%
CenturyLink	6,057,000	6,055,000	6,063,000	6,082,000	6,117,000	6,108,000	6,071,000	6,048,000	6,082,000	6,048,000	-34,000	-1%
Frontier	1,873,000	1,932,000	1,953,376	2,373,893	2,387,000	2,407,000	2,434,000	2,462,000	2,373,893	2,462,000	88,107	4%
Windstream	1,170,000	1,154,000	1,142,000	1,131,600	1,132,400	1,120,800	1,109,600	1,095,100	1,131,600	1,095,100	-36,500	-3%
TDS Telecom	318,600	321,900	363,300	364,800	365,900	367,200	369,200	368,000	364,800	368,000	3,200	1%
Fairpoint	331,538	333,421	327,793	319,915	316,640	315,320	313,982	311,130	319,915	311,130	-8,785	-3%
Cincinatti Bell	270,000	270,300	270,500	269,900	272,700	275,100	281,300	287,400	269,900	287,400	17,500	6%
Shenandoah Telecom. Co.	60,782	60,803	63,334	64,101	66,020	65,953	67,454	68,776	64,101	68,776	4,675	7%
TOTAL TOP ILEC	35,614,920	35,652,424	35,815,303	35,839,209	36,000,660	35,841,373	35,701,536	35,646,406	35,839,209	35,646,406	-192,803	-0.5%
Verizon (wireless)*	103,330,000	104,637,000	106,156,000	108,211,000	108,582,000	109,548,000	110,760,000	112,108,000	108,211,000	112,108,000	3,897,000	4%
AT&T (wireless)**	116,014,000	116,634,000	118,650,000	120,554,000	121,772,000	123,902,000	126,406,000	128,640,000	120,554,000	128,640,000	8,086,000	7%
Sprint	54,887,000	54,553,000	55,037,000	55,929,000	57,141,000	57,668,000	58,578,000	58,359,000	55,929,000	58,359,000	2,430,000	4%
T-Mobile	49,075,000	50,545,000	52,890,000	55,018,000	56,836,000	58,908,000	61,220,000	63,282,000	55,018,000	63,282,000	8,264,000	15%
US Cellular	4,684,000	4,653,000	4,674,000	4,760,000	4,775,000	4,779,000	4,807,000	4,876,000	4,760,000	4,876,000	116,000	2%
nTELOS	468,000	458,100	457,200	448,900	414,700	378,900	343,700	302,000	448,900	302,000	-146,900	-33%
TOTAL TOP WIRELESS***	328,458,000	331,480,100	337,864,200	344,920,900	349,520,700	355,183,900	362,114,700	367,567,000	344,920,900	367,567,000	22,646,100	7%
TOTAL TOP WIRED ISP	79,665,988	80,051,149	80,728,645	80,248,663	82,570,439	82,880,809	83,499,801	83,108,147	81,446,663	84,380,747	2,934,084	4%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for the companies that have not reported complete results, in order to maintain comparability. * Verizon does not disclose wholesale and connected device line totals. ** AT&T's results only include domestic subscriptions. *** wireless carrier subscriber totals represent all subscriptions. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results for all quarters except 4Q 2015 are as reported for each quarter and include subscribers to its Eastern network assets, discontinued as of 11/15/15. nTelos 4Q 2015 results represent total subscribers as of 12/31/15, which were slightly higher than the 299,911 subscribers as of 11/15/15.

Profits

- Broadband industry profits, as measured by operating cash flows, operating income, and Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), were all higher in 2015 compared to the prior year. There is zero evidence that the FCC's February 2015 policy changes have in any way impacted the broadband industry's profitability. This of course should come as no surprise, given the increasingly uncompetitive nature of the industry, the industry's declining technology costs and increased demand for broadband.
  - Operating cash flow at the top publicly traded broadband providers increased 17 percent in 2015 (see Figure 6). Verizon lead all ISPs with an $8.3 billion increase, accounting for nearly half of the entire industry's increase.
    - Operating cash flows encompass the cash generated from operating activities. This value adds to the firm's net income the cash flow from depreciation and amortization of capital equipment, the value of deferred taxes, joint venture income, and other items. It is a useful measure of a firm's fiscal health, though differences in capital structure could make meaningful comparisons across firms and industries difficult.

- Operating income at the top publicly traded broadband providers increased 54 percent in 2015 (see Figure 7). Verizon and AT&T lead all ISPs with $13 billion increases each. These increases however are impacted by each company's one-time accounting charges unique to the fourth quarter of 2014.

    - Operating income is the amount of revenues generated by the business less operating expenses. It does not include certain expenses such as interest or taxes, but does account for depreciation and amortization. It is therefore a very useful measure of a firm's fiscal health, but does not capture the impact of debt interest or special tax circumstances.

- EBITDA at the top publicly traded broadband providers increased 27 percent in 2015 (see Figure 8). AT&T lead all ISPs with a nearly $15 billion increase in EBITDA, though a portion of this was due to its incorporation of DirecTV. Most ISPs enjoyed substantial increases in EBITDA, with only a few firms experiencing small declines.

    - EBITDA represents a firm's profits before the impact of interest payments, taxes and depreciation/amortization charges. It is therefore a useful proxy for a firm's profitability that enables comparisons across firms in different industries and with unique tax or capital asset structures.

Figure 6: Operating Cash Flow at Publicly Traded Broadband Providers (2014-2015)

Operating Cash Flow ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast	$4,486,000	$3,061,000	$4,755,000	$4,643,000	$5,245,000	$3,589,000	$4,979,000	$4,965,000	$16,945,000	$18,778,000	$1,833,000	11%	$1,074,000	9%	$546,000	6%
Time Warner Cable	$1,397,000	$1,695,000	$1,448,000	$1,810,000	$1,508,000	$1,698,000	$1,500,000	$1,833,000	$6,350,000	$6,539,000	$189,000	3%	$78,000	2%	$75,000	2%
Charter	$577,000	$632,000	$520,000	$630,000	$528,000	$531,000	$689,000	$611,000	$2,359,000	$2,359,000	$0	0%	$49,000	3%	$150,000	13%
Cablevision	$283,505	$423,187	$321,276	$349,104	$215,339	$368,704	$335,781	$338,263	$1,377,072	$1,258,087	-$118,985	-9%	-$50,819	-5%	$3,664	1%
Suddenlink	$177,152	$173,798	$156,709	NC	$149,934	$173,671	$197,897	N/A	*$507,659*	*$521,502*	*$13,843*	*3%*	*$41,061*	*12%*	*$41,188*	*26%*
Mediacom	$99,859	$136,669	$98,361	$118,718	$130,604	$128,717	$128,381	$137,874	$453,607	$525,576	$71,969	16%	$41,224	12%	$49,176	23%
Wide Open West	$26,200	$86,600	$15,000	$73,700	$23,600	$79,000	$21,600	$88,800	$201,500	$213,000	$11,500	6%	$14,100	8%	$21,700	24%
Cable ONE	$56,167	$58,136	$37,654	$53,876	$55,770	$61,467	$77,490	$51,686	$205,833	$246,413	$40,580	20%	$40,977	27%	$37,646	41%
Verizon	$7,139,000	$7,665,000	$8,353,000	$7,474,000	$10,169,000	$8,737,000	$9,520,000	$10,504,000	$30,631,000	$38,930,000	$8,299,000	27%	$5,269,000	22%	$4,197,000	27%
AT&T	$8,799,000	$8,070,000	$8,724,000	$5,745,000	$6,738,000	$9,160,000	$10,797,000	$9,185,000	$31,338,000	$35,880,000	$4,542,000	14%	$6,603,000	29%	$5,513,000	38%
CenturyLink	$1,380,000	$1,129,000	$1,428,000	$1,251,000	$1,336,000	$1,145,000	$1,475,000	$1,196,000	$5,188,000	$5,152,000	-$36,000	-1%	$8,000	0%	-$8,000	0%
Frontier	$312,864	$328,255	$300,947	$328,006	$249,000	$367,000	$345,000	$340,000	$1,270,072	$1,301,000	$30,928	2%	$94,792	10%	$56,047	9%
Windstream	$319,800	$361,800	$431,000	$354,700	$243,800	$136,200	$376,300	$270,300	$1,467,300	$1,026,600	-$440,700	-30%	-$364,700	-32%	-$139,100	-18%
TDS Telecom +US Cellular	$104,937	$210,705	$180,569	-$101,399	$355,306	$183,125	$188,487	$62,776	$394,812	$789,694	$394,882	100%	$144,513	50%	$172,093	217%
Fairpoint	$18,757	$36,984	$23,295	$42,027	$791	$28,846	$37,855	$44,509	$121,063	$112,001	-$9,062	-7%	$8,904	9%	$17,042	26%
Cincinatti Bell	$37,800	$56,000	$27,000	$54,400	$6,300	$26,400	$62,000	$16,200	$175,200	$110,900	-$64,300	-37%	-$32,800	-24%	-$3,200	-4%
GCI	$64,902	$74,118	$81,197	$37,986	$74,717	$64,836	$86,957	$27,445	$258,203	$253,955	-$4,248	-2%	-$14,063	-7%	-$4,781	-4%
Shenandoah Telecom. Co.	$32,597	$33,979	$24,762	$23,655	$23,821	$36,449	$22,853	$36,198	$114,993	$119,321	$4,328	4%	$13,104	16%	$10,634	22%
Sprint	$522,000	$679,000	$1,028,000	-$233,000	$976,000	$128,000	$1,669,000	$806,000	$1,996,000	$3,579,000	$1,583,000	79%	$1,129,000	77%	$1,680,000	211%
T-Mobile	$759,000	$970,000	$1,062,000	$1,355,000	$489,000	$1,161,000	$1,531,000	$2,233,000	$4,146,000	$5,414,000	$1,268,000	31%	$1,538,000	45%	$1,347,000	56%
nTELOS	$18,494	$28,484	$32,157	$10,353	$15,438	$9,202	-$6,037	-$14,452	$89,488	$4,151	-$85,337	-95%	-$82,281	-116%	-$62,999	-148%
TOTAL TOP ISP	$26,612,034	$25,909,715	$29,047,927	$24,020,126	$28,533,420	$27,812,617	$34,034,564	$32,732,599	$105,589,802	$123,113,200	$17,523,398	17%	$15,602,012	20%	$13,699,110	26%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for the companies that have not reported complete results, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results are as reported for each quarter, and have not been adjusted to account for the discontinuance of its Eastern network assets (discontinued as of 11/15/15).

Figure 7: Operating Income at Publicly Traded Broadband Providers (2014-2015)

Operating Income ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast	$3,568,000	$3,804,000	$3,745,000	$3,787,000	$3,890,000	$4,105,000	$4,001,000	$4,002,000	$14,904,000	$15,998,000	$1,094,000	7%	$772,000	7%	$471,000	6%
Time Warner Cable	$1,092,000	$1,163,000	$1,151,000	$1,226,000	$1,084,000	$1,029,000	$1,001,000	$1,125,000	$4,632,000	$4,239,000	-$393,000	-8%	-$385,000	-11%	-$251,000	-11%
Charter	$240,000	$236,000	$218,000	$277,000	$249,000	$269,000	$273,000	$323,000	$971,000	$1,114,000	$143,000	15%	$134,000	18%	$101,000	20%
Cablevision	$207,083	$255,893	$252,446	$205,836	$223,751	$244,464	$183,116	$197,140	$921,258	$848,471	-$72,787	-8%	-$89,455	-13%	-$78,026	-17%
Suddenlink	$68,797	$56,181	$58,042	NC	$79,727	-$19,118	$62,712	N/A	*$183,020*	*$123,321*	*-$59,699*	*-33%*	*-$70,629*	*-62%*	*$4,670*	*8%*
Mediacom	$88,287	$91,508	$86,625	$100,166	$92,422	$100,208	$94,296	$107,803	$366,586	$394,729	$28,143	8%	$24,008	9%	$15,308	8%
Wide Open West	$37,700	$33,900	$36,600	$30,300	$51,000	$52,400	$48,500	$53,000	$138,500	$204,900	$66,400	48%	$53,100	53%	$34,600	52%
Cable ONE	$39,367	$43,442	$36,598	$44,406	$35,933	$35,789	$38,996	$51,025	$163,813	$161,743	-$2,070	-1%	$1,364	1%	$9,017	11%
Verizon	$7,160,000	$7,685,000	$6,890,000	-$2,136,000	$7,960,000	$7,821,000	$7,535,000	$9,744,000	$19,599,000	$33,060,000	$13,461,000	69%	$12,661,000	102%	$12,525,000	263%
AT&T	$6,278,000	$5,616,000	$5,402,000	-$5,469,000	$5,456,000	$5,712,000	$5,923,000	$7,532,000	$11,827,000	$24,623,000	$12,796,000	108%	$13,618,000	245%	$13,522,000	20182%
CenturyLink	$653,000	$655,000	$619,000	$483,000	$649,000	$549,000	$656,000	$751,000	$2,410,000	$2,605,000	$195,000	8%	$199,000	11%	$305,000	28%
Frontier	$226,025	$224,342	$197,031	$172,543	$163,000	$193,000	$207,000	$182,000	$819,941	$745,000	-$74,941	-9%	-$11,916	-2%	$19,426	5%
Windstream	$167,800	$167,200	$151,600	$20,500	$119,900	$79,300	$178,500	$131,700	$507,100	$509,400	$2,300	0%	$50,200	15%	$138,100	80%
TDS Telecom +US Cellular	$20,685	-$49,090	-$125,415	-$36,044	$282,629	$32,121	$93,434	-$11,113	-$189,864	$397,071	$586,935	309%	$324,991	154%	$243,780	151%
Fairpoint	-$22,114	-$9,567	-$28,922	-$32,671	-$24,668	$59,318	$72,429	$62,513	-$93,274	$169,592	$262,866	282%	$265,420	373%	$196,535	319%
Cincinatti Bell	$56,900	$35,600	$16,000	$7,300	$37,100	$29,700	$36,200	$25,000	$115,800	$128,000	$12,200	11%	$32,000	54%	$37,900	163%
GCI	$30,265	$38,414	$49,336	$25,547	$741	$39,203	$45,473	$20,794	$143,562	$106,211	-$37,351	-26%	-$7,827	-7%	-$8,616	-12%
Shenandoah Telecom. Co.	$15,680	$15,793	$14,144	$16,326	$18,526	$18,750	$15,089	$21,721	$61,943	$74,086	$12,143	20%	$9,297	20%	$6,340	21%
Sprint	$420,000	$519,000	-$192,000	-$2,540,000	$318,000	$501,000	-$2,000	-$197,000	-$1,793,000	$620,000	$2,413,000	135%	$2,515,000	114%	$2,533,000	-93%
T-Mobile	-$28,000	$962,000	$49,000	$433,000	$117,000	$597,000	$513,000	$838,000	$1,416,000	$2,065,000	$649,000	46%	$504,000	35%	$869,000	180%
nTELOS	$11,863	$9,904	$10,323	$4,811	$33,217	$10,510	-$4,857	-$426	$36,901	$38,444	$1,543	4%	-$19,811	-79%	-$20,417	-135%
TOTAL TOP ISP	$20,331,338	$21,553,520	$18,636,408	-$3,379,980	$20,836,278	$21,458,645	$20,970,888	$24,959,157	$57,141,286	$88,224,968	$31,083,682	54%	$30,578,742	83%	$30,673,617	201%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for the companies that have not reported complete results, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results are as reported for each quarter, and have not been adjusted to account for the discontinuance of its Eastern network assets (discontinued as of 11/15/15).

Figure 8: EBITDA at Publicly Traded Broadband Providers (2014-2015)

EBITDA ($ thousands)	1Q 2014	2Q 2014	3Q 2014	4Q 2014	1Q 2015	2Q 2015	3Q 2015	4Q 2015	2014	2015	Change '14 to '15	% Change	Change From 2Q	% Change	Change From 3Q	% Change
Comcast	$5,640,000	$5,879,000	$5,633,000	$5,833,000	$6,096,000	$6,334,000	$6,079,000	$6,130,000	$22,985,000	$24,639,000	$1,654,000	7%	$1,198,000	7%	$743,000	6%
Time Warner Cable	$1,915,000	$2,001,000	$2,013,000	$2,109,000	$1,980,000	$2,075,000	$1,946,000	$2,084,000	$8,038,000	$8,085,000	$47,000	1%	-$18,000	0%	-$92,000	-2%
Charter	$743,000	$758,000	$758,000	$807,000	$757,000	$670,000	$803,000	$870,000	$3,066,000	$3,100,000	$34,000	1%	$20,000	1%	$108,000	7%
Cablevision	$418,362	$517,099	$476,225	$454,921	$456,753	$514,090	$401,959	$419,950	$1,866,607	$1,792,752	-$73,855	-4%	-$112,246	-8%	-$109,237	-12%
Suddenlink	$216,889	$210,039	$205,377	NC	$210,720	$118,162	$203,796	N/A	*$632,305*	*$532,678*	*-$99,627*	*-16%*	*-$93,458*	*-22%*	*-$1,581*	*-1%*
Mediacom	$156,031	$160,005	$154,920	$165,503	$158,509	$166,068	$160,741	$173,496	$636,459	$658,814	$22,355	4%	$19,877	4%	$13,814	4%
Wide Open West	$109,000	$111,500	$109,900	$107,700	$109,700	$112,700	$109,600	$111,900	$438,100	$443,900	$5,800	1%	$5,100	2%	$3,900	2%
Cable ONE	$73,146	$77,245	$71,015	$75,618	$72,293	$71,258	$75,207	$83,387	$297,024	$302,145	$5,121	2%	$5,974	3%	$11,961	8%
Verizon	$12,283,000	$11,847,000	$11,052,000	$1,428,000	$11,947,000	$11,772,000	$11,563,000	$13,795,000	$36,610,000	$49,077,000	$12,467,000	34%	$12,803,000	53%	$12,878,000	103%
AT&T	$11,109,000	$11,507,000	$9,959,000	-$816,000	$10,085,000	$10,463,000	$12,117,000	$13,906,000	$31,759,000	$46,571,000	$14,812,000	47%	$15,836,000	77%	$16,880,000	185%
CenturyLink	$1,769,000	$1,741,000	$1,721,000	$1,618,000	$1,691,000	$1,609,000	$1,706,000	$1,811,000	$6,849,000	$6,817,000	-$32,000	0%	$46,000	1%	$178,000	5%
Frontier	$507,705	$497,678	$482,916	$508,087	$504,000	$528,000	$532,000	$501,000	$1,996,386	$2,065,000	$68,614	3%	$72,319	5%	$41,997	4%
Windstream	$506,800	$510,400	$499,900	$375,500	$458,600	$386,600	$536,500	$809,700	$1,892,600	$2,191,400	$298,800	16%	$347,000	25%	$470,800	54%
TDS Telecom +US Cellular	$283,091	$190,317	$116,264	$189,076	$523,841	$278,839	$343,912	$235,307	$778,748	$1,381,899	$603,151	77%	$362,401	73%	$273,879	90%
Fairpoint	$32,172	$45,289	$27,786	$29,705	$30,813	$115,233	$128,878	$119,448	$134,952	$394,372	$259,420	192%	$260,779	254%	$190,835	332%
Cincinatti Bell	$103,700	$286,200	$58,200	$64,600	$94,800	$344,100	$180,700	$104,300	$512,700	$723,900	$211,200	41%	$220,100	54%	$162,200	132%
GCI	$72,520	$81,151	$90,478	$67,905	$40,709	$45,521	$91,862	$54,748	$312,054	$232,840	-$79,214	-25%	-$47,403	-20%	-$11,773	-7%
Shenandoah Telecom. Co.	$31,632	$32,903	$31,516	$33,910	$35,358	$36,956	$34,380	$39,819	$129,961	$146,513	$16,552	13%	$12,826	13%	$8,773	13%
Sprint	$1,714,000	$1,798,000	$1,106,000	-$1,213,000	$1,778,000	$2,090,000	$1,745,000	$1,669,000	$3,405,000	$7,282,000	$3,877,000	114%	$3,813,000	225%	$3,521,000	3291%
T-Mobile	$1,021,000	$2,079,000	$1,173,000	$1,544,000	$1,196,000	$1,673,000	$1,669,000	$2,204,000	$5,817,000	$6,742,000	$925,000	16%	$750,000	16%	$1,156,000	43%
nTELOS	$29,858	$29,741	$28,767	$23,881	$47,087	$25,030	$10,330	$16,182	$112,247	$98,629	-$13,618	-12%	-$30,847	-37%	-$26,136	-50%
TOTAL TOP ISP	$38,734,906	$40,359,567	$35,768,264	$13,406,406	$38,273,183	$39,428,557	$40,437,865	$45,138,237	$128,269,143	$163,277,842	$35,008,699	27%	$35,470,422	40%	$36,401,432	74%

Source: Company SEC filings. Italicized and underlined values represent comparisons that exclude fourth quarter 2014 and 2015 values for the companies that have not reported complete results, in order to maintain comparability. N/C = Not comparable. N/A = Not available (to account for Altice's acquisition of Suddenlink, which is now privately held). nTelos results are as reported for each quarter, and have not been adjusted to account for the discontinuance of its Eastern network assets (discontinued as of 11/15/15).

Equity Values

- While stock prices are a very poor metric for measuring the impact of public policy decisions – because changes in equity valuations are determined by a host of factors unique to each firm – ISP industry stocks have generally outperformed the broader market indices in the time following the reports that the FCC would reclassify and following implementation of the Net Neutrality order.

- Since the FCC's February 2015 vote, the cable, ILEC and wireless sector stocks have collectively increased in value (as measured by SNL Kagan's industry-specific indices), while all the major market indices (DOW, S&P 500, and NASDAQ) have lost value (see Figure 9).

  - Certain cable companies saw substantial growth in equity value after the FCC's vote, but this is largely due to merger-related increases in valuations. However, Comcast, whose own merger plans were scuttled in the spring of 2015, still outperformed the broader market indices.

  - While incumbent telephone companies' equities outperformed the broader market, this trend was not seen among those companies that do not offer wireless services. These companies' valuations shifted wildly over the past year, and are due to the existential growth challenges facing companies that have largely chosen to milk dying DSL instead of investing in fiber optic services that can better compete with cable company capacity.

- Wireless industry equities generally outperformed the broader market, with T-Mobile enjoying a double-digit percentage growth in the value of its stock. Sprint however continues to struggle, a phenomenon that dates back to its acquisition of Nextel.

Figure 9: Changes in ISP Stock Values

Industry Sector	Company	Percent Change in Stock Price (Closing Value to Closing Value)					
		1/13/14 – 2/23/16	5/14/14 – 2/23/16	11/7/14 – 2/23/16	2/3/15 – 2/23/16	2/25/15 – 2/23/16	6/11/15 – 2/23/16
Cable MSO	Comcast	10.3%	15.5%	4.3%	3.8%	-3.5%	-2.1%
	Time Warner Cable	43.1%	40.1%	31.9%	32.6%	22.5%	5.6%
	Charter	29.9%	28.1%	11.5%	10.4%	-4.3%	0.3%
	Cablevision	93.8%	90.0%	71.1%	65.2%	74.5%	35.0%
	SNL Kagan Cable MSO Index	12.4%	21.7%	10.9%	10.2%	1.7%	-1.1%
Incumbent Telecom	AT&T	10.3%	1.0%	5.2%	7.0%	7.4%	5.3%
	Verizon	7.7%	5.5%	-0.5%	5.9%	2.9%	6.0%
	CenturyLink	-5.2%	-22.3%	-25.8%	-26.1%	-21.6%	-10.6%
	Frontier	8.1%	-15.6%	-21.1%	-30.8%	-36.1%	1.4%
	Fairpoint	10.8%	-0.2%	-4.3%	-12.0%	-20.0%	-29.0%
	Cincinnati Bell	-11.8%	-16.8%	-7.9%	-0.6%	-7.7%	-19.7%
	SNL Kagan Incumbent LEC Index	8.3%	1.8%	0.4%	4.0%	3.0%	4.4%
Wireless-Only	Sprint	-67.5%	-67.2%	-37.5%	-34.3%	-40.5%	-36.8%
	T-Mobile	11.4%	10.2%	27.7%	17.2%	12.5%	-5.0%
	SNL Kagan Wireless Carrier Index	2.5%	-1.8%	1.9%	5.4%	3.4%	3.0%
Broad Market	Dow Jones Industrial Average	1.1%	-1.1%	-6.5%	-7.0%	-9.8%	-8.9%
	S&P 500	5.6%	1.7%	-5.4%	-6.3%	-9.1%	-8.9%
	NASDAQ	9.5%	9.8%	-2.8%	-4.7%	-9.3%	-11.4%

Note: *Verizon v FCC* decision rendered on 1/14/14. President Obama's statement endorsing reclassification made on 11/10/14. On 2/4/15 the FCC announced that it would make a decision on Net Neutrality at the upcoming February open meeting. The FCC's vote was held on 2/26/15. The FCC's reclassification Declaratory Ruling and Network Neutrality Order was effective on 6/12/15.

Discussion of Company-Specific Results, Comments and Forecasts

Perhaps the most absurd aspect of the anti-Net Neutrality brigade's investment argument is the underlying assumption that capital investments must always go up, or that the amount spent annually on equipment is somehow a useful marker of a policy's net benefit. This is a capital-intensive industry, but one in which the infrastructure has an incredibly lengthy shelf-life. It is also an industry in which technology advances impact capital spending in a cyclical manner. Thus, individual companies will have some years where they bump up capital spending, and some years where their spending declines as they reap the benefits of their prior deployments.

As Free Press documented in our July 2014 comments in the FCC's Open Internet proceeding, telecom and cable industry capital spending rose sharply during the 1990s, then collapsed as the tech stock bubble burst at the turn of the century. Capital spending picked back up in 2004, and peaked again in 2006. This mid-aughts leveling off was largely driven by incumbent telephone companies slowing their spending as they completed deployments of first generation DSL, as well as wireless companies completing their first phase of nationwide infrastructure builds. From 2007–2008, wireless carriers spent more on capital projects as demand for wireless data services increased, even as ILEC wireline spending continued to decline industry-wide. The late-2008/early-2009 recession predictably saw a decline in capital spending, which picked up again in 2010 as AT&T expanded its U-Verse deployment. Since this time, overall industry capital expenditures (inflation-adjusted) have bounced up and down as certain companies and certain industry segments undertake and complete new deployments.

Because of the cyclical, company-specific and technology-specific nature of the broadband industry's investments, the annual change in the aggregate total spent on capital expenditures is a very poor tool for measuring the industry's overall health. For example, what conclusion can one draw from an aggregate number comprised of data that shows some companies with large increases in capital spending, some with large decreases, and many others with smaller changes in either direction? Such a scenario is the norm in this industry, illustrating why aggregate changes in annual capital spending is a terrible tool for measuring the industry's response to a singular change in public policy. This is why it is important to pay attention to what individual companies are telling investors. For example, while AT&T's 2015 overall decline in capital investment stands out from the rest of the industry, it is a result the company repeatedly told Wall St. to expect, as the company completed its so-called "Project VIP" DSL and wireless upgrades. With nationwide 4G LTE coverage completed in 2014, there was simply no need for AT&T to maintain that level of capital spending.

Yet a handful of lawmakers and paid-for pundits insist on measuring the impact of a policy on the entire Internet economy simply by looking at aggregate investment totals and very selective anecdotes of certain broadband providers. Judging by the words of the companies themselves, as stated to investors and to the Securities and Exchange Commission, the broadband market remains very healthy one year after the FCC's Title II and Net Neutrality vote. The anti-Net Neutrality crew is so desperate to find bad news where there is none that they have now taken to claiming broadband providers are lying to their investors. In reality though, numerous companies are telling Wall Street to expect continued network upgrades and the future higher earnings that such investments will bring. Others are explaining how prior upgrade projects are nearing completion, and thus how capital spending will ramp down in the near-term. Not one single publicly traded ISP is telling Wall Street that the FCC's policy change is impacting the company's capital investments. Indeed, the subject was not raised on any company's year-end 2015 investor call.

Below, we offer excerpts from each ISP's public statements, made prior to the FCC's vote and one year hence. There's no mystery as to how or why the industry's capital spending changed during the past year, because 2015's final results held close to the guidance these companies gave one year ago. As these statements show, the company-specific changes in capital investments detailed above in Table 1 are easily explained: increases reflect higher spending on network investment and consumer premise equipment (CPE) upgrades; decreases reflect completion of prior deployments and completed rollouts of upgraded CPE for those companies. Guidance for 2016 indicates that capital expenditures will be higher at many companies as they continue their upgrades, and lower at others as they complete their projects.

Cable Company ISPs

Comcast

As noted in Table 1, Comcast ramped up capital spending by 14 percent in 2015, driven both by increased spending on its X1 set-top boxes, as well as its continued efforts to push fiber deeper into its network. Comcast explained this in its year-end 2015 10-K report to the SEC:

> The following are the more significant developments in our businesses during 2015: An increase in Cable Communications segment capital expenditures of 14.3% to $7 billion primarily due to our continued investment in the following initiatives: the accelerated deployment of our IP and cloud-enabled video platform, referred to as our X1 platform, which is available in all of the markets in which we operate, and our Cloud DVR technology, which is available in substantially all of our markets; the deployment of wireless gateways to more than 70% of our residential high-speed Internet customers; the improvement of our network infrastructure to increase network capacity; the expansion of our business services, including the creation of the new enterprise service offering designed to serve certain Fortune 1000 companies and other large nationwide enterprises with multiple locations.

In Comcast's fourth quarter 2015 investor call, the company explained its plans for 2016, stating "[i]n 2016, we will continue to invest in each of these areas as they are driving positive results in our business. As a result, cable CapEx as a percent of cable revenue is expected to remain flat to 2015 at approximately 15 percent." This implies an increase in cable capex, since revenues are expected to grow "through modest rate adjustments, growth in high-margin businesses like high-speed data and Business Services . . . ."

Time Warner Cable

Though Time Warner Cable (TWC) was somewhat slow to undertake all-digital upgrades of its systems, 2015 saw the company make up substantial ground. As TWC told investors on its fourth quarter call, "[f]ull-year capital spending of $4.45 billion, including $946 million in Q4, was up 8.5% from 2014, due to customer relationship growth, as well as investments to improve network reliability, upgrade older customer-premise equipment, and expand our network to additional residences, commercial buildings and cell towers."

Because TWC is currently seeking approval for a merger with Charter, the company is not giving 2016 capital guidance. However, TWC CEO Rob Marcus told investors that "the things that drove capital spending in 2015 continue to be high priorities for us. And what I mean in particular are, we're going to continue to spend to drive growth. And what I mean by that is continue to spend on line extensions both residential and commercial, in other words adding buildings to our network. We will continue to spend on cell tower backhaul in that area. We are going to continue to spend to accommodate the growth that we're driving into units, which means spending on CPE, and on adding network capacity. Because not only are we getting units but customers are using our services more, so that means we need to spend on capacity."

It thus appears that TWC has no qualms about investing in its broadband business, even after the FCC voted to restore and preserve consumers' basic legal protections to communicate without undue interference.

Charter

Charter's overall capital spending was down in 2015 compared to 2014. But as we noted above, its network investments were higher. This result can be explained by the fact that Charter previously undertook a system-wide all-digital upgrade in 2014, which brought with it a substantial expense for new set-top boxes. Now that this project is complete, Charter's overall spending is down.

As Charter CEO Tom Rutledge explained two years ago on the company's fourth quarter 2013 investor call, "the most important objective in 2014 is to transition the balance of our network to all-digital. At the end of 2013, we have completed approximately 15 percent of our all-digital initiatives. We plan to be all-digital by the end of this year." On this same call, when asked if the 2014 guidance of higher capital expenditures was temporary, Charter's Chief Financial Officer responded:

> [T]he CapEx for [2014] is $2.2 billion and what we wanted to make sure people understood is there is $400 million of all-digital that is one-time in nature as well as $100 million of in-sourcing activities. So we are not going to give guidance for 2015 or beyond. The biggest reason is it is highly contingent on growth. So if you take the $2.2 billion and you back off the $500 million of one-time, you get to $1.7 billion and as you start to consider some of the things that [CEO Tom Rutledge] mentioned about what we are already seeing in residential revenue growth rates inside this quarter and put those pieces together so you have a highly – a fast-growing cable business, that is spending capital to generate that growth. And when the $500 million is no longer there in 2015, we get a significant increase in free cash flow.

And exactly as Charter indicated <u>one year prior to the FCC's vote</u>, 2015 capital spending returned to near the company's "normal" level, at $1.84 billion.

<u>Cablevision</u>

Like Charter, Cablevision's 2015 capital expenditures declined from 2014's highs, even as the company's network investments increased. This is again due to Cablevision deploying new set-top boxes in 2014, and these expenses went down sharply in 2015. As Cablevision explained on its fourth quarter 2014 investor call, "[w]e had an increase in CPE in the fourth quarter, but a lot of what happens with CPE, as you know, is timing of expenditures. We ended up with additional purchases of boxes, of managed routers, some remotes in the fourth quarter. But it's not necessarily CPE that will keep capital expenditures roughly these levels. We continue to invest in WiFi. We continue across-the-board to invest in our network, and we're going to continue those efforts."

This trend of increased spending on the network being offset by decreased spending on set-top boxes continued throughout 2015. On Cablevision's final investor call (for the results of second quarter 2015), the company stated that "cable capital spending in the second quarter was $186 million, a $21 million decrease from the same period in 2014. This primarily reflects lower year-over-year spending on set-top box and modem purchases, as well as the timing of certain video-related projects. <u>These declines were partially offset by higher project spending to support broadband and WiFi expansion</u>. We expect increased CapEx spending in the back half of 2015 as we continue to invest in the evolution of our product offerings and ensure a quality service experience." (Emphasis added.)

And just as it told investors to expect, the company's capital spending did tick up in the second half of 2015, particularly in the final quarter. However, overall spending for the year was down, again due to the company's 2014 ramp-up in CPE spending. As Cablevision stated in its 2015 10-K report to the SEC, "[c]apital expenditures for 2015 decreased $75,282,000 -8% as compared to 2014. This decrease was due primarily to a decrease in purchases of customer equipment and network equipment, partially offset by increases in spending related to cable plant upgrades."

Thus we see network investment is up at Cablevision, as it is at all other cable companies, even as Cablevision frees up cash following prior deployments of new set-top boxes.

<u>Suddenlink</u>

Suddenlink was acquired by Altice during the fourth quarter of 2015, and the now-privately held company is no longer required to report financial results to the SEC. However, the company's capital spending for the first 9 months of 2015 was 13 percent higher than it was during the first 9 months of 2014. As the company explained when it gave guidance to investors in its fourth quarter 2014 Earnings Release, this increase was driven by Suddenlink's deployment of gigabit broadband:

> Capital expenditures were $103.8 million and $88.6 million for the three months ended December 31, 2014 and 2013, respectively, and $417.3 million and $371.4 million for the twelve months ended December 31, 2014 and 2013, respectively. During 2015, we expect capital expenditures to be approximately $480.0 million to $490.0 million, which includes $85.0 million of capital expenditures related to Operation GigaSpeed.
>
> Starting in the second half of 2014 and extending through 2017, we expect to invest up to $230 million of capital expenditures to significantly enhance our Internet speeds in markets serving 94% of our high-speed Internet customers and ultimately position our network to offer speeds of up to 1 gigabit per second ("Gbps") in markets serving nearly 85% of our high-speed Internet customers. Internally known as "Operation GigaSpeed," this initiative will include expenditures to upgrade data network headend equipment, replace any remaining deployed DOCSIS 2.0 customer premises equipment with DOCSIS 3.0 equipment, and complete our all-digital video conversion that began with Project Imagine. We expect to complete these enhancements in a phased, market-by-market approach, focusing first on our largest and most competitive markets. Once fully phased in, the plan calls for our flagship Internet speed to increase from 15 to 200 Mbps and our top Internet speed to increase from over 100 Mbps to 1 Gbps in a vast majority of our markets. In 2014, we completed the initial phases of Operation GigaSpeed in 26 markets, which serve approximately 49% of our residential high-speed Internet customers. Those investments allowed us to increase the flagship Internet speed from 15 Mbps to 50 Mbps and to increase our top Internet speed to up to 150 Mbps to 300 Mbps in those markets. For the three months ended December 31, 2014, we spent approximately $35.2 million in capital expenditures related to Operation GigaSpeed, and expect to spend $85 million in 2015, with the remainder expected to be invested during 2016 and 2017.

In Suddenlink's last Earnings Release for the third quarter of 2015, the company affirmed this prior guidance and its commitment to the GigaSpeed project. It certainly appears the FCC's Net Neutrality decision did nothing to shake this smaller company's faith in the long-term viability of its gigabit deployment plans, nor did the new rules appear to deter its new owner, Altice, from paying a premium to acquire the company.

<u>Mediacom</u>

Mediacom did not hold a year-end 2015 investor call. However, on March 14, 2016 the company issued a press release announcing it "intends to invest $1 billion over the next 3 years to, among other projects, upgrade and expand its national broadband network." Mediacom explained that this ramp-up in spending was centered around its "Project Gigabit" initiative, which it described as "a wide-scale deployment of 1 gigabit per second broadband services to virtually all of the 3 million homes and businesses within the 1,500 communities located in Mediacom's 22 state footprint." The press release noted that the first of these deployments would be operational "as early as the fourth quarter of 2016."

Mediacom's announcement noted that in addition to the residential Project Gigabit deployments, the $1 billion in new capital investment would go towards "[e]xpansion of Mediacom Business's high-capacity network inside downtown areas and commercial districts in order to . . . bring tens of thousands of new business customers on-net with immediate access to fiber-based communications services." The investment also includes "[e]xtension of Mediacom's deep-fiber residential video, Internet and phone network in order to pass at least an additional 50,000 homes," and "[d]eployment of community Wi-Fi access points throughout high-traffic commercial and public areas across Mediacom's national footprint."

This announcement, if it encompasses the company's entire capital expenditures, would average $333 million per year for the next three years, a substantial increase from the company's 2015 expenditures of $288 million (itself higher than Mediacom's 2014 expenditures of $258 million).

Mediacom's commitment to rolling out gigabit services across their entire service area, as well as expansion of its network to 50,000 new homes, is difficult to square with the anti-Net Neutrality crowd's insistence that the policy is deterring network investment. This is of course because the position that protecting the successful status quo would somehow deter investment was and is unfounded and unsupported by basic economic theory and plain old common sense.

WOW!

Wide Open West, branded as WOW!, is a cable overbuilder, meaning it competes with not only the telephone company ISP in all its markets but also the incumbent cable company ISP. Wide Open West's business model traditionally involved growth not through acquisitions, but by building out its existing systems. Thus, if any company should be worried about the impact of regulation on investment, it is WOW!. As an overbuilder, it always has one additional company vying for market share against it.

Wide Open West's overall capital investments were down slightly in 2015. However, the company long told investors to expect this result, as it completed its efforts to upgrade the systems acquired in 2012 from Knology, another overbuilder. But now that all of its systems are all-digital, WOW! is once again returning to its strategy of growth through building. In the company's most recent investor presentation summarizing its 2015 results, WOW! stated that its 2016 capital expenditures would be between 24.9 percent and 36.5 percent higher than 2015 levels. It explained this increase noting that "[b]etween 2008–2012, the Company invested over $100 million in edge-out projects [. . .] Elevated levels of capital expenditures, however, following the Knology acquisition in 2012 to integrate the Knology network & back-office infrastructure (i.e. all-digital upgrades, etc.) have prevented investment in edge-out growth opportunities since 2012. New primary equity investment from Crestview, however, will enable WOW! to pursue these opportunities going-forward. In excess of $200 million of such edge-out opportunities have been identified with similarly favorable return characteristics providing a relatively low-risk growth opportunity."

This certainly indicates that the people running Wide Open West and its new investors at Crestview have ample confidence about the future of the broadband market; so much so that they're about to spend $200 million to overbuild existing cable and phone company ISP networks.

Cable One

Recently separated from the Washington Post Company, small cable ISP CableOne is now reporting financial results to the SEC. And like some of its peers, CableOne's capital spending declined in 2015. This decline however has nothing to do with public policy; it is the unremarkable result of the company nearing completion of a multi-year plan to upgrade all of its systems to all-digital. That plan required a large but temporary bump in capital expenditures, mostly for set-top boxes. Indeed, like other cable ISPs, CableOne is actually increasing network investments even as its total capital outlay declines.

For example, as CableOne told investors on its second quarter 2015 call, "[t]he decrease [in capital expenditures] was primarily due to the decline in spending for customer premise equipment and it was offset by spending on four major initiatives: our all-digital conversion; remaining plant upgrades to 450 megahertz; 4- to 24-channel bonding; and increases in fiber deployment. We expect significant expenditures for the remainder of 2015 due to the completion of these capital projects, and we are still forecasting that capital expenditures for 2015 will be approximately 20% of revenues. As we mentioned in our equity roadshow in June, with the completion of most of these capital initiatives by the end of this year we expect capital expenditures to return to historical levels in the mid to high teens after 2015."

On the company's third quarter 2015 investor call, after restating the above explanation, CableOne stated that "going forward, with the completion of most of these major capital initiatives, we should return to historical levels which are in the mid to high teens, whether it's 15% to 17%, somewhere in that range so we are forecasting that they will go down. Again, we are fully cognizant of the fact that we want to stay ahead of the curve from a technology standpoint on HSD. So they're not going to go away but they are going to go down."

On its most recent investor call (fourth quarter 2015), the company repeated this explanation and affirmed its future guidance: "Our CapEx as a percentage of total revenues has been running high over the last few years due to various plant investments. As we have previously said, we expect that CapEx spending should return to a more historical range of mid to high teens in 2016, which should have a large positive impact on free cash flow."

There's little surprising about these statements. They simply reflect the basic economics that apply to this industry, and to cable company ISPs in particular: system upgrades require a temporary bump in capital expenditures, and most of this comes in the form of purchases of new set top boxes, as the plant upgrades themselves are relatively inexpensive. Once these projects are completed, maintenance capital is all that is required to adequately meet growth in demand for the foreseeable future.

<u>GCI</u>

Alaska-based cable and wireless company GCI ended 2015 with flat capital spending. This result was in line with the company's guidance to investors on the company's fourth quarter 2014 call. ("Forecast capital expenditures will be approximately $170 million, of which approximately $45 million will be on wireless network projects and approximately $85 million will be on other network and infrastructure projects.")

GCI expects, however, to sharply increase network investment during 2016. As the company told investors on its fourth quarter 2015 call, "[c]apital expenditures are expected to be approximately $210 million, and capital expenditures net of tower sale proceeds to be re-invested in 2016 are expected to be approximately $150 million. The tower sale proceeds will be used primarily to fund two projects. We will expand our network to include a diverse fiber to the North Slope of Alaska. We will also ring and expand our TERRA network to increase our rural networks capacity and reliability. These multi-year projects are expected to total $85 million with approximately $60 million being invested in 2016."

It thus appears that even for a small, geographically challenged ISP like GCI, the FCC's Net Neutrality rules are not negatively impacting broadband deployment plans.

Telephone Company ISPs

<u>Verizon</u>

Verizon's overall capital expenditures were higher in 2015, as higher wireless segment spending offset lower wireline investment. Nothing about this result is surprising, as Verizon's been forthright about this investment trajectory for years. On its fourth quarter 2013 investor call, CFO Fran Shammo explained, "[i]n wireline capital expenditures were $1.8 billion in the quarter and $6.2 billion for the year, down 1.8% from 2012. [. . .] As I said before, obviously wireless will take a higher percentage of that CapEx spend and the other areas of the business will take a lower portion of that CapEx spend, especially as the FiOS builds continues to slow here."

A year later, on Verizon's fourth quarter 2014 call – which took place prior to the FCC's vote – Shammo reaffirmed this explanation: "In wireline, capital spending totaled $1.6 billion in the quarter and $5.8 billion for the year, down 7.7% from 2013. [. . .] On CapEx, Mike, it goes directly to what you said. I have been pretty consistent with this in the fact that we will spend more CapEx in the Wireless side and we will continue to curtail CapEx on the Wireline side. Some of that is because we are getting to the end of our committed build around FiOS, penetration is getting higher."

And on Verizon's most recent call (fourth quarter 2015), Shammo explained this trajectory yet again:

> Our capital spending was consistent with our guidance of around $17.5 billion to $18 billion for the year. In total, capital expenditures were $5.2 billion in the fourth quarter and $17.8 billion for the full year, up 3.4% from 2014. [. . .] Wireless capital spending totaled $3.3 billion in the quarter and $11.7 billion for the full year, up 11.5% from a year ago. We continue to invest in our 4G LTE network to provide the industry's highest reliability and position ourselves to capture the efficiencies and

> capabilities of new technologies. We are expanding capacity through a number of optimization techniques, effectively managing our spectrum and further successfully densifying urban markets. . . .
>
> Capital spending in Wireline was $1.6 billion in the fourth quarter and totaled $5 billion for the year, down 12.2%, which is consistent with our strategy to reduce our capital spending in the Wireline segment. . . .
>
> Additionally, we are targeting the following for 2016: [. . .] consolidated capital spending between $17.2 billion and $17.7 billion, this includes capital spending of approximately $150 million for the properties sold to Frontier.

Verizon's results are easily understood when one looks at its network plant. The company's FiOS systems do not need to be rebuilt; they're future-proof. So as the company continues to sell off un-upgraded systems and turn away from its DSL business, wireline capital expenditures will continue to decline. However, on the wireless side, Verizon has substantial need and incentive to spend capital in order to maintain its very valuable brand as the nation's highest quality mobile network carrier. This comes with the need to deploy LTE-Advanced technology using its AWS spectrum, and to densify its network in urban areas by deploying small cells. According to the company's own statements, these deployments will continue, even though the FCC now classifies wireless broadband properly as a telecommunications service.

<u>AT&T</u>

AT&T is the company that dishonest lawmakers and pundits point to when they claim a negative impact on broadband investment from Net Neutrality. Because the company's overall capital spending is down sharply in the year since the FCC's vote, this is an easy but intellectually dishonest exercise. However, for those that value truth over propaganda, AT&T's 2015 results are easily explained. In fact, AT&T itself explained them consistently ,with the same narrative long before, during and after the FCC's actions to protect Net Neutrality.

In February of 2014, a year prior to the FCC's vote, AT&T CEO Randall Stephenson told investors that "2014 capital will be in the $21 billion range, exactly what we laid out earlier for Project VIP, with savings from our original plan offset by capital for Agile and some new network projects. Again, we expect 2014 will be our peak investment year for Project VIP."

And just as AT&T predicted, 2014 was its peak year. After all, once a nationwide 4G LTE network is built, there's no need to rebuild it again a year later. So a decline should be expected by any rational observer or investor. And of course, it was. Speaking to investors on the company's fourth quarter 2014 call which took place a month prior to the FCC's vote, Stephenson again explained "capital expenditures will be in the $18 billion range, the same as we guided earlier, and that's thanks to the completion of a lot of the Project VIP initiatives."

Half a year later (on the company's second quarter 2015 investor call) after once again indicating that full year 2015 capex would be about $3 billion lower than 2014, AT&T was asked by an analyst to explain this decline. AT&T's CFO answered:

> Well, a couple of things. The simplest thing is to say the network team did a great job in getting the work done and we got nearly 310 million POPs with LTE right now and we're putting on a spectrum to use as opposed to building towers. And so that aspect of it is just a utilization of spectrum we own and capabilities we have that don't require as much CapEx. Secondly, the 57 million IP broadband and what is now approximately 900,000 business customer locations passed with fiber. Once again <u>the network has done a great job in getting the Project VIP initiatives completed and when they're done the additional spend isn't necessary because the project's been completed. And not for lack of anything but for success.</u> That's what's driving our changes. We continue to focus on working capital and construction work in progress and driving down cycle times and a whole host of other efforts the team is doing really good work on and that's also helping out. But it's really positive things that are driving this capability. We're going to continue to invest in capacity. We're going to continue to

> invest in successful sales. We feel very good about our ability to continue to respond to customers in a positive way. (Emphasis added.)

AT&T reiterated this explanation for the temporary decline and again committed to continued infrastructure investment on its third quarter 2015 investor call:

> <u>And then we will continue to invest, albeit at a slower rate, because we built the platforms out.</u> We will continue to invest in fiber and wireless capacity and in success-based capital for our satellite video product much in the same way you would have seen us in the past taking into account the fact that the ramp up in CapEx for VIP is now behind us. (Emphasis added.)

On its most recent investor call, AT&T reported $20.015 billion in total capital expenditures for 2015 (this excludes approximately $700 million of capital provided by a Mexican vendor on a deferred basis). This was lower than 2014's $21.433 billion total, but only because AT&T completed Project VIP and the expensive effort to deploy 4G LTE to 310 million Americans. Now that this infrastructure is operational, AT&T says it is turning its attention to deploying more fiber to carry its wireless traffic from cell towers, as well as expanding its fiber-to-the-home "Gigapower" service to millions of new locations. As AT&T stated on its fourth quarter 2015 investor call:

> The one thing about our wireless business is when you have got the tower network that we have today, the infrastructure that has been there, and you have the spectrum holdings that we have today, you can do great things with quality service, at least our network team can, do great service and continue to meet all the needs and you can be pretty effective with your capital spend. It's not a situation where there is an investment; <u>it is that much of this investment has been made over the last three years through the spectrum purchases, through the IP Project putting extensive fiber into the ground, and backhaul capabilities, and we're going to continue that</u>, quite frankly, with GigaPower as we put more fiber near other cell sites that we can then get even better high-quality backhaul. So it's a really integrated process, but we – needless to say, we continue to be very proud of the performance and continue to invest there. (Emphasis added.)

On this call AT&T's CFO told investors that in 2016 capital expenditures will be "about that 15 percent of the service revenues" and estimated the total would be about "$22 billion," an amount higher than any in the company's history.

Thus, anyone who affixes blame for AT&T's temporary capital investment decline on Title II is patently wrong. There's no mystery here. AT&T told investors to expect a large but temporary increase in capital spending more than a year ahead of the FCC's vote, and that's what happened. Certainly AT&T's actions in the marketplace and its statements to investors and the SEC belie any dour sentiment its lobbyists spout on panels and in FCC *ex parte* meetings about the ills of Title II.

Since AT&T is such a large company, its decline alone can push an aggregate list of ISP company investments down. This is why it is important to look at all available data. As we showed above, investment is up in the aggregate – but even more notable, it's up at companies of all sizes.

<u>CenturyLink</u>

Unlike AT&T and Verizon, CenturyLink's business is strictly wireline. Thus it acutely feels the impacts of the cable industry's continued dominance of the fixed broadband market, driven by cable's much lower-cost upgrade path compared to DSL. And like many other wireline-only telephone companies, CenturyLink's capital spending has been flat in recent years. Despite these existential challenges, CenturyLink has committed to upgrading a portion of its first generation DSL networks to next-gen VDSL, so the company can offer faster broadband and multichannel television services. Known as "Prism," this project is progressing at a slow and steady pace.

However despite its next-gen DSL deployment efforts, CenturyLink's 2015 capital spending was down slightly from 2014. This downturn had nothing to do with the FCC's vote, nor anything to do with the company's spending on its core business. As CenturyLink's CEO explained on the company's second quarter 2015 investor call, the decline came largely from the company's recent strategy to ramp down its spending on its data center business: "We believe we have a number of opportunities to manage our business in a way that supports the dividends, as we work to capitalize on our growth prospects. First, we have made significant investments in our network and data center infrastructure over the last several years and believe we have the flexibility to lower our planned capital budget by about $200 million to approximately $2.8 billion in full year 2015, without significantly affecting our path to growth."

When asked for more detail behind the $200 million decline from prior guidance, the company's CFO explained:

> [S]ome of the projects that we're looking at that we've actually cut really relate to what we – that falls in the revenue enablement bucket. Probably about one-third of the cut is there, and these are projects that are really more network-related that give us extra capacity and we can go a little bit longer for that. And related to that. And so we don't – we may need to make some of those next year, but we think we can really pretty safely cut that. So about one-third of $200 million cut is network related. About one-third is success based too, which really just reflects the – although we're making our sales for – and bookings for the second quarter, we're 15 percent ahead of where they were in the first quarter, they're still really behind where we originally expected them to be when we set our capital budget for 2015. And then another one-third of the $200 million really comes from furniture equipment, vehicles, and things like that that we just think we can not have to do. And some of that really relates to some of the other changes that we're making that Glen mentioned."

On CenturyLink's fourth quarter 2015 investor call, it indicated "anticipated 2016 capital expenditures of $3 billion," which represents an increase over 2015. CEO Glen Post also indicated his company's plans to emphasize network investment, stating "we deploy a disciplined approach to our operating capital investments to deliver profitable growth, first by investing more capital to enable high bandwidth network connectivity, and pursuing capital light investment approaches for our complementary adjacent services." Providing further details on its 2016 capital plans, CFO Stewart Ewing stated "basically in 2016, a little bit over the, over $2 billion or so of the capital budget will be what we call revenue enablement and support. Probably of that approximately $2 billion, basically broadband enablement and connection and capacity is about $1.2 billion or so. And then Ethernet and MPLS enablement, probably about $600 million or so. So we're going to expect to continue to spend capital to bring higher and invest in the access part of our business to basically be able to, through either fiber or other technologies over time, be able to drive higher speeds for our customers."

Thus, like all other ISPs, CenturyLink feels good about investing in broadband, and will continue to do so despite the inherent challenges it faces as a pure wireline ILEC.

<u>Frontier</u>

Frontier, the nation's fourth-largest ILEC, increased its capital spending in 2015 by 25 percent. As the company explained, this increase was driven by network upgrades, partially funded through the FCC's Connect America Fund (CAF). The company spent $863 million on capital investments in 2015, exceeding guidance offered at the beginning of the year. As Frontier stated in its 2015 10-K year-end SEC report:

> In 2015, 2014 and 2013, our capital expenditures were, respectively, $863 million, $688 million and $635 million (including $153 million and $116 million of integration-related capital expenditures in 2015 and 2014, respectively, associated with the Verizon Transaction and the Connecticut Acquisition). Since 2012, Frontier received a total of $133 million from the Connect America Fund (CAF) Phase I Program to support broadband deployment in unserved and underserved high-cost areas. In addition to the capital expenditures mentioned above, network expansion funded by the previously received CAF Phase I funds amounted to $22 million, $56 million and $33 million in 2015, 2014 and 2013, respectively. Capital expenditures related to CAF Phase II will be included in our reported amounts for capital expenditures.

On Frontier's fourth quarter 2015 call, it told investors that it will "continue to improve broadband capabilities elsewhere within our footprint. For example, in Connecticut and other markets we are in the process of introducing speeds in excess of 100 megabits over copper, led by our fiber-to-the-node infrastructure. We have been investing to transform our operating support systems, our customer self-service capabilities, and our provisioning platforms. We believe these investments will position us well to lower operating expenses from our existing business as we deploy these enhancements and customers begin to adopt the new functionality."

Windstream

Like Frontier, Windstream's 2015 capital investments were up sharply, by 34 percent in Windstream's case. The company noted in its 2015 10-K year-end SEC report, "[d]uring 2015, the majority of our capital spend was directed toward fiber expansion and consumer broadband upgrades of our network." In its fourth quarter 2015 investor call, the company indicated that the 2015 increase was a temporary bump, stating that in 2016 "[a]djusted capital expenditures are expected to be between $800 million and $850 million, which excludes approximately $200 million in expected investments to complete Project Excel, a program funded by a portion of the proceeds from the sale of the company's data center business to accelerate Windstream's plans to upgrade and modernize its broadband capabilities to the latest technology by year-end 2016, or two years ahead of the company's previous timeline."

TDS Telecom

TDS Telecom, the ILEC and cable subsidiary of Telephone and Data Systems Inc., increased capital spending modestly in 2015. The $219 million it spent was right in line with the guidance the company gave investors on its fourth quarter 2014 call. In presenting this guidance TDS explained "wireline CapEx . . . is expected to increase slightly as we pull forward deployments of additional fiber build; the cable capital budget includes funds to increase capacity related to household growth, success based capital and continued network upgrades."

One year later, on its fourth quarter 2015 investor call, TDS indicated that 2016 capital spending would be lower. It explained this decline as due to completion of prior builds:

> In the wireline business we will continue to deploy fiber where it strategically and economically makes sense, and where costs and demographic metrics support the business case. In 2016 we are completing our plan to fiber build to reach approximately 25 percent of our ILEC service addresses, and will focus on driving further penetration of triple play bundles in our existing markets. The completion of the planned fiber deployments is driving the lower capital spending for the wireline segment in 2016. . . . Capital expenditures are expected to be approximately $180 million in 2016. Within the segments, wireline CapEx, which is about two-thirds of total spend, is expected to decrease as we complete our planned fiber spending in targeted wireline markets. The cable capital budget includes funds for success-based growth, including the one-time analog reclamation project and increased broadband speeds. HMS CapEx is lower than last year, reflecting completion of our planned data center buildouts, and is primarily success-based capital. We've been investing heavily in all of our businesses to improve our competitive position in the markets we serve and to capitalize on the demand for higher speed broadband services and IT outsourcing needs. With our initial planned fiber deployments nearing their end, and our current data center builds complete, we now look to lower capital intensity, which will drive higher levels of free cash flow, an important metric to drive our future financial returns. (Emphasis added.)

Cincinnati Bell

Cincinnati Bell has been busy over the past few years deploying its "Fioptics" fiber-to-the-home service, with 2015 being the project's peak year. This ramp up in deployment caused the company's 2015 capital spending to spike 56 percent above 2014's already-elevated levels. But as the project nears its original goal of covering between 70 and 80 percent of passings, Cincinnati Bell is telling investors to expect capital spending to decline in future years. This guidance, recently affirmed, was charted as far back as early 2014. On the company's fourth quarter 2015 call it told investors that it "expect[s] that capital expenditures [in 2016] to be down compared [to] 2015 and range between $265 million and $275 million." When asked about what to expect in 2017 and beyond, the company stated:

> [W]e expect CapEx to begin declining. We stated in the past that on a normalized basis, CapEx is going to be, call it, in the historic 12, call it, 12 percent ranges of revenue, historic telco ranges. I don't see any different story right now as we sit here and look forward into 2017. We do believe we will be cash flow positive in 2017. We will make progress in 2016 compared to 2015 so you will see improvement in cash flow from 2015 to 2016. We won't be positive but we will be positive in 2017. I would expect ranges to be the normal telco ranges of capital spend. [. . .] It's not going to be -- 2017 won't look like a normalized year. We will still be building out. We've said that the build will stretch into 2017. We will see a reduction. At this point, I don't want to go beyond that. We are intently focused on cash flow, being cash flow positive in 2017 so I can sit here and say we do see that in front of us but I don't want to get too detailed on the commitment on capital levels yet.

Fairpoint

Fairpoint's 2015 capital spending was down slightly from 2014, but the company told investors to expect this on its fourth quarter 2014 investor call, explaining that it was due to "the flow of our business as we have completed major build out." On its fourth quarter 2015 call Frontier indicated that 2016 capital expenditures are expected to be between $115 million and $120 million, which would represent flat to modest growth.

Shenandoah Telecommunications Co.

Shenandoah, the smallest publicly traded ISP we track (with under 69,000 Internet subscribers using a mix of cable modem and traditional telecom services) saw modest growth in capital expenditures in 2015. This growth came despite the fact the company had completed system upgrades in 2014. Looking ahead to 2016, the company plans to close on its acquisition of regional wireless carrier nTelos, and ramp up spending on both its wireless and wireline networks. As the company stated on its fourth quarter 2015 call, "[t]he 2016 capital plan includes $123.3 million that we now plan to spend in the nTelos service area, as we finish the LTE upgrade, and 50 new coverage sites. Omitting the $123 million for nTelos, the remaining CapEx plan is $95.1 million, an increase over our previous two years, due to approximately $36 million of non nTelos expenditures for network expansion. The major projects [are] the upgrade of [] Colane Cable, a fiber build along Interstate 81 in Virginia from Harrisonburg to Roanoke, and plans to continue to build fiber to the tower."

When asked about investments beyond 2016, the company stated that "we've said that for 2018, finishing up the major push, on the major push we're finishing the nTelos upgrade in 2017 will be about $90 million. And if we don't have a major fiber build, or acquire another cable company, we believe that the remaining CapEx will be down in the $70 million to 80 million range that we've had the last two years. So I think when you kind of look at the total, we're kind of looking at $150 million to $160 million for 2017. And then beyond that, we'll be past the major upgrade and expansion of areas in the nTelos area, and then we've kind of said that it drops to the $120 million range in the 2018 and beyond, without a new acquisition."

Thus, even this very small, geographically challenged ISP feels good about the future, and is ramping up spending on network deployments in order to remain competitive in future years. Like all other ISPs, Shenandoah is telling investors that once these deployments are made, there will be years of lower spending and higher profits. This of course is the normal cycle of business in a capital intensive industry with lengthy asset depreciation schedules.

Wireless Company ISPs

Sprint

Sprint's 2015 capital spending was up sharply from 2014, and this was due in large part to the company undertaking a new strategy of purchasing then leasing smartphones to its customers. Though there are some analysts who set aside the capital spent on leased devices in the effort to demonstrate a decline in investment, this is a real capital expense. It is of course a capital expenditure recognized under Generally accepted accounting principles (GAAP). But it is also a real risk of capital. Sprint, not its customers, owns these devices, and is on the hook for selling them on the secondary market if it wishes to recover the remaining capital value of these assets. Furthermore, Sprint's capital spending for leased devices is no different than a cable company's spending on set top boxes. Excluding Sprint's equipment purchases from the analysis while including all other companies' CPE capital spending is a biased approach.

Purchased devices aside, Sprint continues to invest capital to improve its network, even as it finds itself under enormous pressure to cut costs. As it told investors on its fourth quarter 2014 call, "we remain focused on maximizing our capital efficiency, while continuing to improve the performance of the network through the deployment of the 2.5 GHz LTE and 2 by 20 carrier aggregation, as well as beginning the densification that [the Sprint CEO] discussed." On Sprint's fourth quarter 2015 call it indicated core capital spending would hold steady, stating "as we remain focused on maximizing our capital efficiency while continuing to improve the performance of the network, we continue to expect cash capital expenditures to be approximately $5 billion for FY15 excluding the CapEx associated with purchasing leased devices in indirect channels."

T-Mobile

T-Mobile's capital investments continue to grow as it continues its successful efforts to grow its business. Its 2015 capital expenditures were up by 9 percent, at the high-end of the guidance it gave investors at the start of the year. On T-Mobile's fourth quarter 2015 call it told investors that its 2016 capital spending would be "slightly higher than our target range for 2015, as we continue a success-based investment strategy, and continue to expand our footprint."

US Cellular

US Cellular, a subsidiary of TDS Inc, reported a slight decline in capital expenditures in 2015. The company explained on its fourth quarter 2015 investor call that this decline was due to its completion of its "LTE rollout and other projects," which enabled it to "manage its capital expenditures to levels below our guidance." Because its 4G LTE deployment is finished, the company told investors that 2016 capital expenditures will be lower than 2015, which it stated "reflects the completion of our 4G LTE deployment [and] includes spending to meet higher data demand and to prepare for the initial commercial launch of VoLTE."

nTELOS

Small regional wireless carrier nTELOS released year-end 2015 results, but will not hold any future investor calls as the company awaits final FCC approval for its acquisition by Shenandoah Telecommunications. It also completed the decommissioning of its eastern territory assets on November 15, 2015, migrating customers to other carriers. This makes direct year-to-year comparisons difficult. nTelos capital expenditures were 10 percent lower in 2015 than the year prior, a result primarily driven by the company's spectrum sale and asset discontinuation. However, the company's capital expenditures for the first 9 months of 2015 were up 11 percent from the comparable period in 2014. The comparable-period increase is due to the company's 4G LTE deployment in its western markets, as it explained on its fourth quarter 2014 investor call: "The bulk of the capital spend was tied to our LTE network upgrade and the addition of associated network capacity. [. . .] For 2015 we expect our capital expenditures to be between $95 million and $105 million and the vast majority of this will by tied directly to our 4G network expansion." As indicated above in the discussion of Shenandoah's results, it expects to make $123 million in capital investments in the nTelos network during 2016, higher than the previously estimated 2015 total.

Conclusion

The above aggregate and company-specific data tells a very simple story: carriers large and small have full confidence investing in their networks. Many carriers increased capital spending during 2015. Many continued to upgrade their networks to the latest technology, in hopes of continuing to meet growing consumer demand for higher capacity telecommunications. Those carriers that saw declining capital spending this year told investors to expect as much prior to the FCC's February 2015 vote, and explained that the declines were due to completion of prior system and equipment upgrades. Many carriers have indicated that they will further ramp up capital spending this year, as many wish to capture the high-margin revenues enabled by next-generation broadband. Those that predict 2016 capital declines have explained that these are due to completion of prior upgrades, not public policy.

In sum, the broadband market is functioning as it was prior to the FCC's Net Neutrality vote. Investments are up in the aggregate, and they are up at most individual companies. Many ISPs will continue to complete these projects, because network investments are money well spent – investments that incumbents are uniquely capable of making.

Indeed, the challenge policymakers must confront has nothing to do with incumbent investments. Policymakers must tackle the issue of competition. The experience of the past two decades shows that technological advancements have done nothing to change the natural monopoly economics of the telecommunications services market. Wireless broadband has progressed tremendously since the advent of the smartphone on 2G EDGE networks. But this progress pales when compared to that seen in cable modem technology, and thus wireless broadband continues to be a complementary product not a competitive alternative to wired broadband.

Half of Americans have at best two choices for next generation wired broadband, and they are the lucky half. The other half's only option is their cable ISP. Going forward, the status quo trajectory suggests there will be very little entry in either the wireless or wireline broadband markets – a result of the industry's massive entry barriers. For wired telephone companies, the cost of upgrading DSL fully to fiber-to-the-home is only justifiable in dense urban markets, and even then the time for these projects to reach a cash-positive status is too long. Cable's head start is simply insurmountable under the current market and policy structures.

There are of course some actions policymakers could take to lower entry barriers for new fiber deployments (either by an ILEC or new entrant such as a municipal fiber carrier). Nothing will be a silver bullet putting an end to the monopoly and duopoly broadband problem. But any progress is welcome. This is a difficult challenge, which will require policymakers of all political stripes to work with the public, ISPs, states, cities, utility companies, investors and other stakeholders.

The first step to meeting this competition challenge is to abandon the war on the basic consumer protections embodied in the Communications Act. The propagation of investment myths and scare tactics serves only the interests of monopoly. Those who willfully push these tall tales hold back progress and delay the much needed work on the competition problem.