# *Wired; Proposed $5M underground fiber-optic loop would link Charleston-area commercial centers*

Charleston Gazette-Mail

December 18, 2015, Friday

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**Section:** NEWS; Pg. P1A

**Length:** 1563 words

**Byline:** Andrew Brown, Staff writer

## Body

Alpha Technologies, a technology service company based in Putnam County, is planning an ambitious project to build a $5 million underground fiber-optic loop through the commercial centers of downtown Charleston, Kanawha City and South Charleston.

The 144 fiber-optic strands are meant to connect Union Carbide's old data center in South Charleston, which Alpha bought in 2012, to telecommunication hubs in the city, enabling the company to better compete for data-storage contracts with businesses and the federal government.

At the same time, the company plans to build that 30 mile fiber-optic loop past major commercial sectors in the area. The proposal calls for fiber to run past the Charleston Civic Center, five hospital centers, the city's largest office towers and numerous state government buildings.

The line will be capable of providing businesses along that route with a ***gigabit*** connection, which is 100 times faster than the average broadband speed.

"If you are building a business model, you build what people need, said Charlie Dennie, Alpha's director of special projects, who has helped organize the project over the past year.

On Thursday, Dennie went before the West Virginia Economic Development Authority, where Alpha received preliminary approval for a $2.2 million low-interest loan to help finance the project.

Charleston will, by no means, be the first city to have ***gigabit*** broadband speeds available for businesses, but those in support of Alpha's proposal believe the fiber-optic ring improves the city's chances of growing existing business and attracting new development.

Kanawha County Commissioner Dave Hardy called Alpha's plan a "eureka moment for broadband. For years, Hardy has heard people discuss the opportunity and importance of having high-speed broadband, especially fiber capable of providing businesses with ***gigabit*** service, but Alpha, Hardy said, is the first company he has seen that has created an achievable plan to build that type of technology in the Charleston region.

"We were very impressed with their vision, Hardy said. "You are seeing it, not as a concept but a tangible plan on paper.

The fiber-optic loop also could help Alpha's prospective customers access their data center at less expense, making it more attractive for large banking institutions or health care companies to virtually store their employee, customer and corporate data at the center in South Charleston over the cloud.

Alpha already rents fiber from companies like Lumos, Frontier and Suddenlink, to reach the telecommunication "backhaul - the local connection to national communication networks - on Lee Street. By building their own fiber, company officials

The company will be able to effectively replace sections of the fiber whenever it needs to. With the help of pressurized air, technicians would be able to blow strands of new or replacement fiber thousands of feet underground, making the setup more resilient.

"It's more important to do it right than to do it fast, Dennie said. "That fiber is going to be in the ground for a really long time.

To get the rights-of-way needed to construct the fiber-optic loop, Alpha had to work with the Public Service Commission to become a regulated utility in West Virginia, which is required to construct utility lines near state highways.

The company also struck deals with the city of Charleston and the West Virginia Division of Highways, which agreed to grant Alpha access under city streets and along state roadways. In return, city officials and the state agency would be able to use strands of the fiber once the loop is constructed.

David Molgaard, Charleston's city manager, said that will better connect city government offices and might allow for broadband improvements at the Civic Center.

"We are very fortunate to have a facility like that coming on line here, said Molgaard. When it comes to ***Internet*** speed, he said, there will be "no excuse not to locate in Charleston.

All of Alpha's executives were quick to point out the help they received from federal and state development agencies, including the WVEDA, the PSC, the West Virginia Small Business Development Center and the U.S. Small Business Administration.

"We're a huge proponent of using what the state provides, Tate said.

Even before the first spade of dirt has been turned over on the project, Dennie said the proposed fiber-optic route has attracted the attention of businesses. He wouldn't disclose what companies had discussed transferring their data servers to the center, but he suggested there is enough interest to make the project profitable.

"This is not a risk, Dennie said. "We have already monetized it.

New fiber-optic cable proposed

Alpha Technologies, a technology service company based in Putnam County, plans to build a $5 million underground fiber-optic loop through the commercial centers of downtown Charleston, Kanawha City and South Charleston. The route of the fiber-optic cable will cover around 30 miles, passing the Charleston Civic Center, five hospital centers, the city's largest office towers and numerous state government buildings. Alpha began planning the route earlier this year in order to better access telecommunication hubs in downtown Charleston and to make their data center in the West Virginia Regional Technology Park more competitive.

Source: Alpha Technologies GAZETTE-MAIL

TOM HINDMAN / Gazette-Mail

Charlie Dennie (left), director of special projects at Alpha Technologies, and Doug Tate, the company's president and CEO, stand outside their South Charleston data center.

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## Classification

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# *US Internet* to expand broadband offering in Minneapolis with new 2.5 and 5 Gbit/s *Internet* service

Optical Networks Daily

December 16, 2015

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San Francisco Chronicle

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## Body

December 15th US ***Internet*** (USI) of Minnetonka, Minnesota, a global ***Internet*** and data services provider, announced the forthcoming launch of new 2.5 and 5 Gbit/s fibre ***Internet*** service based on Active Ethernet fibre technology for residents and businesses in Minneapolis.

USI stated the introduction of 2.5/5 Gbit/s broadband service, provided over its Active Ethernet network and a dedicated fibre connection to each customer, follows the launch in December last year of its symmetrical 10 Gbit/s ***Internet*** service to Minneapolis residents. The company is now bridging the speed gap and plans to debut in the first quarter of 2016 a range of broadband ***Internet*** speeds including 1, 2.5, 5 and 10 Gbit/s at prices ranging from $65 up to $399 per month.

Founded in 1995, US ***Internet*** is a global company that last year completed a major expansion of its Minnetonka data centre. The company also operates colocation centres in Milwaukee, Wisconsin and Honolulu, Hawaii, and in international locations London in the UK and Sydney, Australia.

Last year, CenturyLink introduced its 1 Gbit/s symmetrical broadband service for business and residential customers in Minneapolis.

Recently, Detroit-based Rocket Fiber announced plans to launch fibre-based ***Internet*** service delivering up to 10 Gbit/s bandwidth for residential, and up to 100 Gbit/s speeds for business, customers in downtown Detroit from early 2016. In October, Chattanooga announced that municipal utility EPB Fiber Optics was offering 10 ***gigabit Internet*** service available across a community-wide territory based on Alcatel-Lucent's TWDM-PON broadband technology.

For further information go to *http://www.opticalkeyhole.com*

## Notes

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# *Pensacola to get Gigabit Internet*

Pensacola News Journal (Florida)

December 14, 2015 Monday, 1 Edition

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**Section:** NEWS; Pg. A1

**Length:** 630 words

**Byline:** By, Carlos Gieseken

## Body

Cox Communications and AT&T have announced they will introduce ***gigabit***-per-second residential ***Internet*** speeds to Pensacola by the end of 2016.

Neither company has announced launch dates or locations where the service will be introduced first. At that speed, subscribers can download a high-definition movie in about 36 seconds and 25 songs in one second, according to AT&T.

Avid video game players and those who have cut their TV cable cords will welcome those speeds, but how attractive are they to the average home ***Internet*** customer?

Tim Edge, a systems engineer with Digital Boardwalk, a Pensacola information technology company, is a big supporter of providing ***gigabit*** speeds for those willing to pay.

He said the 50 megabits per second he pays $45 per month for from Mediacom, however, is enough for his heavy ***Internet*** use and for his family to stream content in their Milton home.

"I don't see a big benefit from it for your average ***Internet*** user," he said Friday afternoon. "It would be nice to have if it is affordable, but it wouldn't affect my life as it is right now."

Cox and AT&T haven't revealed what the Pensacola pricing will be, but ***gigabit*** speeds tend to cost about $70 to $100 per month and more if they are bundled with cable TV packages.

Taylor Gordon, a University of Alabama student who is home in Gulf Breeze for Christmas break, probably wouldn't get the superfast speeds for herself, as amazing as the download times sound.

"I don't do anything fancy with my computer. If it makes Netflix load a half-second faster, I guess that's good," she said Friday while working on graduate school essays at the Bodacious Brew on Palafox Street. "I'm pretty content with my current ***Internet*** speed."

A Google search for the AT&T announcement reveals articles from newspapers in the 38 new metro areas where the service will be introduced, but also posts from skeptics who wonder if the telecommunications giant will offer the service only in specific, high-end housing developments.

David Musselwhite is the retired former director of IT for the Escambia County Board of County Commissioners. He is trying to give traction to the idea of building a ***gigabit*** or more network for Escambia County.

"While I applaud it, I am in a wait-and-see mode," he said, but he is wary that AT&T will try to discourage his or others who want to create a network.

"I think people need to celebrate that AT&T is willing to come into Pensacola and make those investments," he said. "I think people need to keep their eyes open and make sure it comes in a way that offers competition."

# *L.A. may get Google Fiber; The city is added to a list of 17 new markets selected for super-fast Internet* service.

Los Angeles Times

December 9, 2015 Wednesday, Home Edition

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**Section:** BUSINESS; Business Desk; Part C; Pg. 1

**Length:** 1029 words

**Byline:** David Pierson

## Body

***Internet*** providers used to battle one another for access to a city, agreeing to a host of demands that often included assurances that the provider would serve the poorest neighborhoods.

Then came Google Fiber and its brand cachet, which turned the tables by asking city governments what they were willing to do to be chosen for the tech giant's ultra-fast ***Internet***. More than a thousand cities have obliged.

Los Angeles appears to be following that same path now that the city has been added to Google Fiber's list of 17 new markets to which it's working to expand.

The announcement Tuesday, which provided scant details, comes only a day after AT&T said it would expand its equivalent of super-fast broadband service into 38 additional cities, including parts of L.A.

To better qualify for Google Fiber, L.A. will have to adhere to a checklist developed by the company that includes "efficient and predictable" permitting, access to city property for network hubs and the appointment of a person to deal directly with the company. The goal is to streamline the process to reduce the risk that a city may not be ready.

"In the past, municipalities would ask for significant concessions like 100% coverage or building connections to schools. It was really hard to get into a new area," said Jan Dawson, chief analyst at Jackdaw Research. "What Google has done is turn the model on its head by saying, 'If you want us to build fiber, what are you going to do for us?' "

It remains unclear whether Google Fiber, a subsidiary of Alphabet Inc., will pledge fair access to its service across all neighborhoods, even those with residents who would struggle to pay the charge of about $70 a month or the $300 construction fee for those opting for the service's free, and much slower, basic ***Internet***.

Jill Szuchmacher, Google Fiber's director of expansion, said it was too early in the process to determine how and where the company hopes to roll out its service.

"This is just the beginning of the conversation," she said.

A company spokesperson, Lauren Barriere, later added: "Our goal is to bring Google Fiber to as many people as possible, and we would design our network to cover as much of Los Angeles as we can."

Google Fiber has typically introduced its ***gigabit***-speed ***Internet*** one neighborhood at a time and only where there's demand for it, Dawson of Jackdaw Research said.

Fair access to the ***Internet*** has been a top issue for Los Angeles Mayor Eric Garcetti, who has championed the tech industry in the city.

"Expanding, improving and strengthening ***Internet*** access throughout Los Angeles is vital to further accelerating L.A.'s economic growth -- and affordable service is essential to erasing a digital divide that leaves too many people without the

L.A. may get Google Fiber; The city is added to a list of 17 new markets selected for super-fast Internet service.

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**Company:** GOOGLE INC (92%); ALPHABET INC (66%)

**Ticker:** GOOG (NASDAQ) (92%)

**Industry:** ***INTERNET*** & WWW (89%); COMPUTER NETWORKS (79%); ***INTERNET*** SERVICE PROVIDERS (79%); BROADBAND (54%)

**Geographic:** LOS ANGELES, CA, USA (94%)

**Load-Date:** December 9, 2015

Outside of home use, "the sky is the limit" for what fiber ***Internet*** can achieve, Douglas said.

In the "smart city" of the future, thousands of sensors could stream weather, air quality, earthquake and traffic data to early warning systems, smart phones and automated cars. These are all part of a larger technology trend called the ***Internet*** of Things, where everyday objects connect to the ***Internet*** to provide real-time feedback and streaming data. The city's ***Internet*** infrastructure will determine how well that connectivity operates.

Reno is working toward that goal. A local company, Filament, wants to deploy a network across the city to facilitate these types of sensors in the future. Owner Eric Jennings said a fiber-optic network would make Reno "pretty unstoppable."

Chattanooga, Tenn., is the first fully connected ***gigabit*** city and realized many of these benefits five years ago. Chattanooga now calls itself GIG City as a way to attract more technology companies and startup money.

"Chattanooga has gone from close to zero venture capital in 2009 to more than five organized funds with investable capital over $50 million in 2014 - not bad for a city of 171,000 people," the Guardian wrote in a 2014 story about the town's tech boom.

Chattanooga attracted $4 billion in additional outside investment since it turned into the GIG City, according to The Gig Tank, a startup accelerator for businesses that need ***gigabit***-speed ***Internet***.

Some cities only have ***gigabit*** speeds in a few neighborhoods. EDAWN Vice President Doug Erwin visited one called the Kansas City Startup Village last year. The village centers around a Google Fiber hub. He said it served as a lightning rod to bring in new businesses.

Tech startups moved to Kansas City and converted houses into businesses instead of renting office space because it was cheaper. Loretz said tech companies moved to the village for fiber, which in some ways is better than waiting for them to start from scratch. He said Reno could benefit from the same thing.

Fiber-to-home

Usually, fiber-optic services set up networks in neighborhoods and not entire cities. Customers who live within the network then pay standard monthly rates to an ***Internet*** service provider, which then uses the fiber-optic network to deliver the ***Internet*** to the home.

***Internet*** provider CenturyLink announced plans to create ***gigabit*** neighborhoods in Las Vegas starting this year. They offer TV bundled with one ***gigabit Internet*** for $124 per month.

Chattanooga went a different route and brought its fiber through a public utility, which is why the whole city received it. Customers pay for fiber through the power company. They offer 100 Mbps for $57 per month.

Lightcore's model would differ from other companies that offer fiber networks.

Lightcore lays the fiber-optic cables throughout the city. ***Internet*** providers would then lease bandwidth from Lightcore to provide faster ***Internet*** to their customers. Douglas' dream is that a customer's current ***Internet*** provider will call to say, "You've been upgraded to fiber, congratulations!" This dream and business model is not new; it happens all the time in the cellular-phone world.

Verizon, AT&T, Sprint and T-Mobile no longer set up their own towers; they all lease cellphone bandwidth from other companies.

It's more efficient for the city, customers and providers to use one tower instead of three identical towers next to each other. In some cases, tower companies bought and leased the bandwidth back to the provider.

Loretz said he's most excited that Lightcore could create price competition and more options for ***Internet*** service. Lightcore's idea would even the playing field so that no single company can hold a monopoly on ***Internet*** service. Instead, they will compete over pricing instead of who owns the network.

# *Greenlight Networks' Mark Murphy bracing for growth*

Rochester Democrat and Chronicle (New York)

November 29, 2015 Sunday, 1 Edition

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**Section:** BUSINESS; Pg. E4

**Length:** 766 words

## Body

Mark Murphy is gearing up for drastic change in 2016.

The president and founder of Greenlight Networks (a company we profiled back in 2013) is bracing for explosive growth next year, which will entail doubling the company's size, looking for alternate office space and providing its ***Internet*** services via fiber optic networks to additional local communities.

The company provides ***Internet*** service in the residential and small businesses space at prices ranging from $50-100 per month for 100 megabits per second to 1 ***gigabit*** per second.

Murphy, 46, says he's learned a lot since we last spoke with him.

"Now that we've been able to get to as many customers as we have, we've got a real comprehensive understanding of how to accelerate the business and how to build these things faster and some of the skillsets we need from employees to do that. We're buying a lot smarter from our vendors, and working with our contractors, we've been able to reduce the cost for installation," he said.

The company president was able to slash the price of his service by 60 percent this year, which was so well received that it crashed the company's Web servers that day.

Greenlight Networks also won Digital Rochester's Rising Star Award for "being the first ***Internet*** service provider to provide ***gigabit Internet*** speed in Rochester to residential and small-business customers via a fiber optic network," according to its website. That was a treat for Murphy, who said "it's easy to forget the impact you're having on the community when you're in the day-to-day."

We spoke with Murphy, a Penfield resident, recently about letting the business grow itself, national acknowledgement from PC Magazine - a well-respected industry trade publication - and more.

On national acknowledgment: "PC Magazine named Rochester the #11 city in the country for a ***gigabit*** of ***Internet*** availability. They specifically named Greenlight Networks, but it was an acknowledgment for the community. That's why we did this to begin with; we want to make Rochester a better place to live, and we want people to look at Rochester as the high-tech, progressive community that it is. So to have a pretty well-read technical trade magazine acknowledge that - it was a fun achievement."

On his approach to hiring: "We look for attitude first because we think we can teach people to do a lot of the job. We're trying to provide a different customer experience than what people might be used to from their current ***Internet*** company, and we have to be better because we're the new kids on the block. With the accelerated pace we're at right now, we need people who can do a lot of different things, where, at a larger company, they may have a more limited role."

On sales/marketing strategy: "We do not have a sales force. All the growth we've had has been through word of mouth and social media. We haven't been doing a whole lot of marketing, simply because we've gotten such huge demand in so many places that we're doing everything we can to grow and keep up with it. We made the right decision; we're putting our money into the product. People are finding out about us on their own."

# *Rocket Fiber ultrafast Internet* to go live in Detroit in '16

Detroit Free Press (Michigan)
November 13, 2015 Friday, 1 Edition

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**Section:** A; Pg. 12

**Length:** 469 words

**Byline:** By, John Gallagher

## Body

Detroit-based Rocket Fiber, the high-speed ***Internet*** service that is part of businessman Dan Gilbert's Quicken Loans family of companies, said Thursday many business and residential customers are to "go live" in early 2016.

In a media release Thursday, the company said it will provide up to 10-***gigabit Internet*** speeds for residential customers and up to 100-gig speeds for businesses.

Initial testing has already begun for residential customers at the Albert and Malcomson buildings in Detroit's Capitol Park district. In addition, 19 office buildings have been connected to the Rocket Fiber network including the First National Building and One Kennedy Square.

The cost to residential customers will be $70 per month for 1-***gigabit*** service and $299 per month for 10-***gigabit*** service.

Rocket Fiber was founded fewer than 18 months ago and now employs 30 full-time team members.

"Rocket Fiber's mission is to develop and implement critical technology infrastructure that will contribute to transforming Detroit into one of the most attractive cities for technology and other businesses to locate," said Randy Foster, Rocket Fiber chief technology officer and cofounder. "Ten-***gigabit Internet*** will put Detroit in an elite category in which technology start-ups and growth companies will naturally and quickly emerge inside its borders."

Ten-gig service to residents will allow a variety of high-bandwidth applications. The firm cited three examples: A typical 100-minute movie is expected to download in an average of 40 seconds. Doctors will be able to upload and download high-resolution scans with "virtually no lag time, allowing them to assist patients at any hour of the day." And musicians, artists and filmmakers can create and edit content with speeds faster than ever before.

"We have lived and learned the kind of philosophy, strategies and tactics that have enabled Quicken Loans to win seven JD Power awards in the last five years for overall client satisfaction. If there is any business in the world that needs a makeover when it comes to customer service, it's the telecom industry. We are focused and motivated to deliver," said Christina Mathes, Rocket Fiber vice president of client experience.

Rocket Fiber said it has already installed 17 miles of fiber in the city and began activating clients earlier this month in downtown Detroit's Central Business District. The company is expected to expand to Midtown Detroit in 2016 and then continue to grow in other areas of the city and eventually beyond.

The firm also announced the opening of its new headquarters in the 48,000-square-foot Albert Kahn-designed Bedrock building at 1505 Woodward Ave. in downtown Detroit.

For information, go to rocketfiber.com.

Contact John Gallagher: 313-222-5173 or *gallagher@freepress.com* Follow him on Twitter @jgallagherfreep.

## Classification

**Language:** ENGLISH

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"I think communities are starting to view it as a core infrastructure that they need to have for certain kinds of projects," Sewell said.

Sewell said his organization is working on a strategy that looks at the state's ***Internet*** assets and where they're lacking.

"We are in a position where we have to demonstrate to large industries that we electricity, water, sewer, all the basic infrastructure they need," Sewell said. "Now going forward, we're looking to demonstrate that we have broadband and high speed ***Internet***."

Kagan said ***gigabit*** speed is particularly advantageous for cities now since it is still so rare across the country.

"In another 10 years, nearly every city is going to have it but right now, it's only in a handful of cities," Kagan said.

Jeff Baumgartner, technology editor for Multichannel News, a telecommunications trade publication, said the big players in ***gigabit*** speed are Google and AT&T. The national companies have so far focused on larger markets like Nashville, Atlanta and Charlotte, N.C.

"But we suddenly are starting to see these mid-size companies starting to offer these 1 ***gigabit*** services," Baumgartner said.

He said pricing tends to vary on the service, with Google selling ***gigabit*** speed alone for $70 per month, while AT&T prices it between $70 and $120 per month.

"AT&T has been all over the map," Baumgartner said. "They're more expensive in other markets where Google isn't available."

Baumgartner said ***gigabit*** has become the latest marketing strategy for some cable and telecommunications companies.

"It's being driven by competition ... ***gigabit*** speed is the current broadband bar to reach," he said.

Kagan said offering high-speed ***Internet*** is also a way cable companies can adapt to a changing industry.

"Traditional cable TV is losing customers to television online and it is accelerating," Kagan said. "They have to make this move in order to survive."

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**Ticker:** NYSE:T,NASDAQ:GOOG

# *Suddenlink customers get super-fast Internet*

Austin American-Statesman (Texas)

October 31, 2015 Saturday, Final Edition

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**Section:** BUSINESS; Pg. B7

**Length:** 375 words

**Byline:** Gary Dinges American-Statesman Staff

## Body

Super-fast ***Internet*** is now available in even more Central Texas homes.

Suddenlink Communications has rolled out 1-***gigabit*** service to homes in Georgetown, Jarrell, Leander and Pflugerville, the company said this week.

It joins several other companies already offering 1-***gigabit Internet*** in parts of the region, including Google Fiber, AT&T, Grande Communications and LiveAir Networks.

Time Warner Cable, the area's dominant cable provider, has increased speeds in recent months but doesn't yet offer 1-***gigabit Internet*** to residential customers.

At 1 ***gigabit***, a user can download 25 songs in one second, a TV show in three seconds and a high-definition movie in less than 36 seconds, according to AT&T.

"Today's announcement is the next step in Operation GigaSpeed, the companywide plan we announced in August of 2014," Suddenlink vice President of Operations Charlotte Strong said in a written statement.

As the national -rollout of Operation GigaSpeed continues, Suddenlink expects virtually all its customers nationwide to have access to 1-***gigabit Internet*** by the end of next year. The project's total cost is close to a quarter of a billion dollars, Suddenlink said.

Google Fiber was the first company to unveil plans for 1-***gigabit Internet*** in Central Texas, doing so in 2013. The first customers didn't come online until 2014, though.

By then, AT&T and Grande already were offering 1-***gigabit*** -service in selected neighborhoods. Both -companies have continued to up- grade networks, adding new homes.

Google Fiber is in some homes in South Austin, and said this summer it would expand to Southeast Austin as part of a multi year rollout in neighborhoods - Google calls them "fiberhoods" - citywide where enough residents commit to subscribing.

In addition to the new ***gigabit*** service, Suddenlink also said it's boosting speeds for existing customers at no additional cost. Subscribers with current download speeds of up to 75 and 100 megabits per second, for example, will be transitioned to download speeds of up to 100 and 200 Mbps, respectively, Suddenlink said.

St. Louis-based Suddenlink says it's the seventh-largest cable provider in the nation, with about 1.5 million commercial and residential customers.

Contact Gary Dinges

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# *Google eyes city for fiber; Jacksonville negotiating for the gigabit Internet*

Florida Times-Union (Jacksonville)

October 29, 2015 Thursday

Copyright 2015 The Florida Times-Union

**Section:** Pg. A-1

**Length:** 1104 words

**Byline:** Drew Dixon

## Body

Google Fiber wants Jacksonville to be one of the next cities to become part of its growing list of communities with high-speed ***Internet*** and television services.

Google Fiber announced Wednesday it is beginning to negotiate with the city to establish a fiber-optic cable infrastructure system to provide speeds of up to 1 ***gigabit*** per second. That's about 1,000 megabits per second and is much faster than average broadband services that provide about 12 megabits per second.

For an ***Internet*** user, that means they could download about 25 music song files in one second with the Google Fiber speeds.

Jill Szuchmacher, director of expansion of Google Fiber, said the company will not seek any incentives, subsidies or tax breaks from Jacksonville if the city agrees to allow the installation of the fiber-optic network. The company sees Jacksonville as a valuable market that has fostered a "growing tech-hub" and is developing an entrepreneurial business community.

"This is a huge infrastructure project to bring all new fiber infrastructure all at once. This planning process helps us to break it down into a manageable plan of next steps, which is not only useful to us but for the city in terms of the administrative challenges of facilitating a build like this," Szuchmacher said.

The company has no permits from the city, and Szuchmacher declined to disclose the estimated cost of the project that could take another year and a half before service begins for paying customers, if the city gives the go-ahead for the project.

Google Fiber would not be the first company to offer ***gigabit*** service in Jacksonville. Comcast instituted 2 ***Gigabit*** Pro in July and that transfers data at about 2,000 megabits per second.

In fact, the Comcast service is already available for about 1.3 million Florida customers in the Comcast markets of Jacksonville, Miami, Fort Lauderdale and West Palm Beach.

Construction on fiber-optic systems provided by Google are already underway in about a half-dozen cities. Three cities, Kansas City, Mo., Austin, Texas, and Provo, Utah, are already equipped with the service and are using Google Fiber services.

Google Fiber also announced Wednesday it is approaching two other cities, Tampa and Oklahoma City, to consider the same request to add networks there.

Google has been ramping up on fiber-optic technology for about five years, since the company first asked cities to submit requests for the service. There were about 1,100 cities that contacted Google about the technology, including Jacksonville.

Mayor Lenny Curry said Jacksonville city officials began formal discussions with Google about a month ago.

that Jacksonville will approve the project, but that installation would require laying fiber in the ground or co-opting existing utility poles owned by JEA.

"Our service is really focused on residential service," Szuchmacher said. "That means passing all the households, going up and down each street. That's why we get into these long route miles, thousands of route miles."

Drew Dixon: (904) 359-4098

## Graphic

Photo

*Will.Dickey@jacksonville.com* Mayor Lenny Curry listens to Ashley Kroh of Google Fiber during a news conference Wednesday.

## Classification

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**Ticker:** GOOG (NASDAQ) (92%); CMCSA (NASDAQ) (86%); CCV (NYSE) (86%)

**Industry:** DATA TRANSMISSION (89%); FIBER OPTICS (89%); BROADBAND (78%); TELEVISION INDUSTRY (78%); ***INTERNET*** & WWW (78%); HEAVY & CIVIL CONSTRUCTION (77%); TELECOMMUNICATIONS EQUIPMENT (72%)

**Geographic:** JACKSONVILLE, FL, USA (93%); AUSTIN, TX, USA (79%); PROVO, UT, USA (79%); TAMPA, FL, USA (79%); OKLAHOMA CITY, OK, USA (79%); MIAMI, FL, USA (73%); FORT LAUDERDALE, FL, USA (68%); KANSAS CITY, MO, USA (67%); FLORIDA, USA (79%); MISSOURI, USA (79%); TEXAS, USA (79%); UTAH, USA (79%)

**Load-Date:** October 30, 2015

Google and city officials will work together over the next few months to evaluate the cost and how long it would take to install a cable network. Buckhorn said it is not known yet if the city would bear some of the cost.

Company officials say Google must conduct studies and design the fiber optic network street by street.

In addition, each city must complete an engineering checklist to ensure it can support the project's construction.

The checklist includes about two dozen tasks such as identifying a local project manager and locating underground utilities.

Cities must also identify potential sites for fiber huts, shelters for communication equipment. Google's checklist for cities recommends the fiber huts be put on city land.

Jill Szuchmacher, Google spokeswoman and director of Google Fiber expansion, said the company sets out to make the process as smooth as possible, but there are obstacles to overcome, such as getting construction permits to dig trenches for thousands of miles of underground conduit.

In Hillsborough County, the service would compete primarily with Verizon and Bright House, both of which offer high-speed ***Internet*** access, although not at speeds that match Google's.

Verizon offers ***Internet*** speeds of up to 500 megabits per second, according to its website, while Bright House's fastest service, known as Lightning, runs at 300 megabits per second.

Both providers declined to comment directly on Google's potential arrival in the Tampa market.

We've had an all-fiber network in this market for over 10 years that is available to 1.3 million premises, said Verizon spokesman Bob Elek.

Bright House remains focused on its customers, said Joe Durkin, the company's senior director of communications.

The United States is only 20th in the world when it comes to ***Internet*** speeds, according to Google, and fiber optic ***Internet*** is delivered to less than 10 percent of U.S. homes.

Unlike other ***Internet*** providers, Google says it runs the fiber cable directly to each home and business instead of running the final leg from switchboards to homes through copper cables.

Faster speeds mean more opportunities for innovation and development, Bell said. We know that great things can happen when a community upgrades to a ***gigabit*** network.

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Subject:** CITIES (89%); CITY GOVERNMENT (89%); ENTREPRENEURSHIP (89%); FIBER OPTICS (78%); POOR POPULATION (75%); ENGINEERING (72%); LOW INCOME PERSONS (68%)

**Company:** GOOGLE INC (98%)

**Ticker:** GOOG (NASDAQ) (98%)

**Industry:** COMPUTER NETWORKS (90%); ***INTERNET*** & WWW (90%); CABLE INDUSTRY (89%); FIBER OPTICS (78%); ***INTERNET*** SERVICE PROVIDERS (77%); TELEVISION INDUSTRY (77%); CONSUMER

Compared with copper-based technology, fiber-optic cable can carry significantly more data faster. Fiber cables are made of strands of glass or plastic finer than a human hair and carry data in the form of light. Unlike copper-based networks, the signals do not degrade over long distances.

"There's not really technology that can push a ***gigabit*** that doesn't include fiber," said Mark Wagner, former managing partner of Litecast, a Baltimore fiber technology company, and now a managing partner for Bay-Tek Consulting.

Such speeds are seen as increasingly important as consumers and businesses use more devices to tap more and more data from the ***Internet***. In schools, for example, computers and tablets are becoming increasingly important tools for instruction and even homework. Electronic health record systems and telemedicine are bringing health care into the 21st century but also straining networks.

"When you say you want to improve your education system, this is what you have to bring to the forefront," said Dea Thomas, an Otterbein resident who is running for the City Council. "This is what's going to make the community stronger."

Sitting council members agree. Last month, 13 of them, led by Councilwoman Mary Pat Clarke, introduced a resolution calling for the city to craft a plan for laying fiber-optic cable connected to all homes and businesses and overseeing operation of the network. "Timely execution is critical," the resolution states.

The resolution is informed by two studies completed this summer. One, produced by the mayor's Smarter City Task Force, emphasized that improving the city's network infrastructure is vital for growing a high-tech economy.

The other, a more detailed report from contractor Magellan Advisors that cost the city $157,000, urges the city to pursue available federal funding for connecting schools to fiber and to begin leasing fiber-optic cable already in the ground to companies or institutions that want to use it.

Magellan found there is at least 122 miles of fiber-optic cable around the city, part of networks such as the federal stimulus-funded Inter-County Broadband Network and Net800, a police and fire communications network. An expansion of the Net800 network to 54 miles was scheduled to end this month.

"I'm sure we have enough studies now to do the unthinkable -- move ahead," Clarke said.

But a range of options remain for how to do that -- from relying on a Comcast or Verizon to build a fiber network to establishing a municipal utility that would lay the cable and manage it. Westminster went with a public-private hybrid, building its own network but leasing its operation to the private sector.

Bandwidth of up to 1 ***gigabit*** per second is spreading across the country, having launched in cities that include San Francisco, Seattle, Las Vegas, Portland, Ore., Houston, Miami, and Omaha, Neb., offered by companies such as AT&T, Century Link, Cox and Comcast. Smaller, local outfits have recently launched service in places such as Detroit and Dayton, Ohio.

And Google Fiber continues to spread across the country. Since Kansas City beat out other communities, including Baltimore, for the first Google Fiber network, Google has expanded to Austin, Texas, and Provo, Utah, and is building out networks in seven more cities, including Atlanta, Nashville and Raleigh, Durham and Charlotte, N.C., and is weighing adding service in six others.

In Irvine, Calif., Louisville, Ky., and San Diego, three potential Google Fiber cities announced last month, Google is studying topography, housing density and infrastructure to consider whether construction of a large fiber network is feasible. Even if Google does not move forward, company officials said its vetting process could make the communities more attractive to other telecommunications companies looking to build fiber networks.

In Baltimore, some are still pressing for help from Verizon, given that its FiOS network comes so close to the city. On a recent weekday, the community group Maryland Working Families and City Council candidates including Thomas protested outside Verizon offices.

# *Chattanooga Implements World's First Community-wide 10 Gigabit Internet* Service

Pivotal Sources

October 19, 2015 Monday

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**Length:** 203 words

**Dateline:** United States

## Body

United States, Oct. 19 -- Chattanooga, known as "Gig City" for being the first in the United States to build a community-wide fiber optic network capable of delivering 1 ***gigabit*** (1,000 Mbps) ***Internet*** speeds, announced today that municipal utility EPB Fiber Optics is now offering the world's first 10 ***gigabit*** (10 Gig) ***Internet*** service to be made available across a large community-wide territory. Unlike point-to-point commercial installations, which have been possible for some time, EPB's 10 Gig service is now available for access by every home and business in a 600 square mile area through Alcatel-Lucent's TWDM-PON broadband technology.

Alcatel-Lucent's pioneering new solution is the world's most advanced ultra-broadband technology because it delivers the scalability to offer up to 10 ***gigabits*** per second ***Internet*** speeds across a community-wide network. The 10 Gig residential service is available everywhere in EPB's service area for $299 per month with free installation, no contracts and no cancellation fees.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Web Publication

**Subject:** FIBER OPTICS (72%)

**Company:** ALCATEL-LUCENT SA (91%)

**Ticker:** ALU (PAR) (91%); ALU (NYSE) (91%); ALU (BIT) (91%)

**Industry:** COMPUTER NETWORKS (90%); UTILITIES INDUSTRY (89%); BROADBAND (77%); FIBER OPTICS (72%)

**Geographic:** UNITED STATES (91%)

**Load-Date:** October 21, 2015

Citing increasing demand for commercial-free movies, Isenberg said Atlantic Broadband is launching EPIX, a premium movie and original content entertainment network, and ENCORE, another movie service.

Tony Sheridan, president and chief executive officer of the Chamber of Commerce of Eastern Connecticut, First Selectman Dan Steward and state Rep. Kathleen McCarty, R-Waterford, who read a proclamation from the General Assembly, all praised the company's commitment to eastern Connecticut.

A wholly-owned subsidiary of Cogeco Cable Inc., Atlantic Broadband also serves about 246,000 residential and business customers in four other U.S. regions: western Pennsylvania, Miami Beach, Fla., Maryland-Delaware and Aiken, S.C. Its corporate headquarters is in Quincy, Mass.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Journal Code:** NL

**Acc-No:** 20151015-NL-Atlantic-Broadband-investing-20-million-in-eastern-Connecticut-operations-1015-20151015

**Subject:** EXECUTIVES (89%); ENTERTAINMENT & ARTS (89%); US STATE GOVERNMENT (89%); US DEMOCRATIC PARTY (78%); PARENT COMPANIES (76%); REGIONAL & LOCAL GOVERNMENTS (76%); LEGISLATIVE BODIES (76%); JOB CREATION (73%); EMPLOYMENT GROWTH (73%); BUSINESS & PROFESSIONAL ASSOCIATIONS (71%); ECONOMIC GROWTH (68%); ECONOMIC DEVELOPMENT (68%); CHAMBERS OF COMMERCE (66%)

**Company:** COGECO CABLE INC (84%)

**Ticker:** CCA (TSX) (84%)

**Industry:** CABLE INDUSTRY (90%); COMPUTER NETWORKS (89%); BROADBAND (89%); ENTERTAINMENT & ARTS (89%); TELEVISION INDUSTRY (78%); ***INTERNET*** SERVICE PROVIDERS (77%); ***INTERNET*** & WWW (77%); DATA TRANSMISSION (73%); General

**Person:** RICHARD BLUMENTHAL (73%)

**Geographic:** NEW LONDON, CT, USA (79%); MIAMI, FL, USA (79%); CONNECTICUT, USA (95%); FLORIDA, USA (79%); MARYLAND, USA (79%); PENNSYLVANIA, USA (79%); DELAWARE, USA (79%); SOUTH CAROLINA, USA (79%); UNITED STATES (92%)

**Load-Date:** October 27, 2015

Arvig has had business customers of ***Internet*** service for several years in St. Cloud, Schornack said. Sign-ups from residential consumers will be the company's first, he said, and the focus on apartment buildings is simply a matter of density. With potentially hundreds of customers in one location, bringing broadband to an apartment makes economic sense.

The largest independent telecom in Minnesota has provided the Smart Search telephone directory in the area for about six years, Schornack said, and it also owns All State Communications in Sauk Rapids.

Evenson said North Star will announce locations of the "few dozen" initial installations in St. Cloud soon. The Central Minnesota projects are part of a wider effort from the company and Arvig that will bring access to high-speed ***Internet*** to more than 5,000 multidwelling units in the state, including ones in the Twin Cities and Rochester, according to a news release.

Follow Mitch on Twitter, Facebook, Instagram and Snapchat: leclairmitch. Contact him at 320-428-1336.

Sign up online

Dustin Evenson of North Star Fiber invited residents and landlords to enter their properties at *www.iwantfiber.com*. North Star will be using a database of addresses from the site to gauge interest and evaluate where the company will expand next, he said.

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Journal Code:** stc

**Subject:** FIBER OPTICS (90%); AGREEMENTS (77%); BUSINESS DEVELOPMENT (68%)

**Industry:** MULTIFAMILY REAL ESTATE (90%); FIBER OPTICS (90%); COMPUTER NETWORKS (89%); REAL ESTATE (89%); ***INTERNET*** & WWW (89%); BANDWIDTH (78%); DATA TRANSMISSION (78%); MODEMS (78%); TELECOMMUNICATIONS (78%); RESIDENTIAL RENTAL PROPERTY (77%); BROADBAND (77%); RESIDENTIAL PROPERTY (77%); TELECOMMUNICATIONS SERVICES (77%); WIRED TELECOMMUNICATIONS CARRIERS (75%); BUSINESS TELEPHONE SERVICE (68%)

**Geographic:** MINNEAPOLIS, MN, USA (75%); MINNESOTA, USA (79%)

**Load-Date:** September 9, 2015

## Classification

**Language:** ENGLISH

**Publication-Type:** Magazine

**Journal Code:** OBSERV

**Subject:** NEW PRODUCTS (77%); c22 New Products/Services; ccat Corporate/Industrial News; ncat Content Types; nfact Factiva Filters; nfcpin C&E Industry News Filter

**Company:** COX COMMUNICATIONS INC (91%); coxen Cox Enterprises Inc; coxc Cox Communications Inc

**Industry:** COMPUTER NETWORKS (90%); BROADBAND (89%); CABLE INDUSTRY (78%); i7902 Telecommunication Services; i97411 Broadcasting; i9741109 Cable Broadcasting; imed Media/Entertainment

**Geographic:** NEW ORLEANS, LA, USA (79%); PHOENIX, AZ, USA (70%); LOUISIANA, USA (93%); ARIZONA, USA (79%); ARKANSAS, USA (79%); CALIFORNIA, USA (79%); usa United States; usla Louisiana; namz North America; uss Southern U.S.

**Load-Date:** July 27, 2015

# *Comcast 2-gigabit Internet* coming to Boulder County this summer

Colorado Daily: University of Colorado at Boulder

May 21, 2015 Thursday

University Wire
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**Section:** NEWS; Pg. 1

**Length:** 172 words

**Byline:** Tamara Chuang

## Body

Comcast will unleash its 2-***gigabit***-per-second ***Internet*** service to customers in Boulder County and most of Colorado this summer, the company announced today.

Until then, you'll need to be content with the new 250 mbps, which becomes available today for $150 a month.

Comcast won't share prices for 2 gpbs, which it calls ***Gigabit*** Pro, until the service is available. But one site, DSLReports, spotted a $300 price tag online for the ***Gigabit*** Pro service before Comcast pulled the pages.

Unlike the competition, Comcast says that it will roll out service to Colorado customers almost all at once. The Denver metro area, Colorado Springs, Fort Collins, Loveland and Longmont will be included in the summer launch.

In Colorado, ***gigabit*** is slowly rolling out. On Monday, CenturyLink added Aurora, Fort Collins and Boulder to its batch of cities getting ***gigabit*** service. But the service is limited to business customers.

Others, like Rise Broadband and the city of Longmont, also offer ***gigabit*** in Colorado.

For more, visit DenverPost.com
Advertisement

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Subject:** CITIES (77%); CUSTOMER SERVICE (73%)

**Company:** COMCAST CORP (95%); CENTURYLINK INC (58%); DENVER POST CORP (55%)

**Ticker:** CMCSA (NASDAQ) (95%); CCV (NYSE) (95%); CTL (NYSE) (58%)

**Industry:** COMPUTER NETWORKS (73%); BROADBAND (72%)

**Geographic:** FORT COLLINS, CO, USA (90%); COLORADO SPRINGS, CO, USA (58%); DENVER, CO, USA (58%); COLORADO, USA (93%); Boulder; CO

**Load-Date:** June 4, 2015

The provider also is upgrading the municipal-wireless network it has long maintained in Minneapolis, and said it can now achieve speeds of up to 25 megabits per second. Not all of Minneapolis will see these improvements right away, it said.

Other parts of the United States, meanwhile, are seeing significant broadband upgrades. Silicon Valley-based Google provides 1-***gigabit*** broadband via its Google Fiber service in Austin, Texas, Kansas City, Mo., and Provo, Utah, with plans to deploy it in a handful of other cities.

Google Fiber has been seen as an impetus for other companies to follow suit.

Comcast said it will shortly provide 2-***gigabit*** GigabitPro service in sections of California, Florida, Georgia and Tennessee. The company famously said about two years earlier that ***gigabit*** service for consumers is overkill and unnecessary.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Journal Code:** SP

**Acc-No:** 20150506-SP-Expect-St-Paul-broadband-service-to-speed-up-by-2016-0506-20150506

**Subject:** HOME SECURITY (73%); FIBER OPTICS (70%)

**Company:** COMCAST CORP (95%); CENTURYLINK INC (92%); GOOGLE INC (58%)

**Ticker:** CMCSA (NASDAQ) (95%); CCV (NYSE) (95%); CTL (NYSE) (92%); GOOG (NASDAQ) (58%)

**Industry:** BROADBAND (90%); TELECOMMUNICATIONS SERVICES (90%); COMPUTER NETWORKS (89%); TELECOMMUNICATIONS EQUIPMENT (88%); BUILDING AUTOMATION (78%); WIRELESS BROADBAND (78%); DATA TRANSMISSION (78%); MODEMS (78%); WIRELESS NETWORKS (78%); WIRELESS ***INTERNET*** ACCESS (78%); STREAMING MEDIA (78%); ***INTERNET*** & WWW (78%); WIRELESS INDUSTRY (73%); SECURITY SYSTEMS SERVICES (72%); TELEPHONE SERVICES (72%); FIBER OPTICS (70%); BROADCAST ADVERTISING (69%); TELEVISION ADVERTISING (69%); General

**Geographic:** MINNEAPOLIS, MN, USA (94%); SAINT PAUL, MN, USA (92%); SILICON VALLEY, CA, USA (68%); MINNESOTA, USA (92%); UNITED STATES (79%)

**Load-Date:** May 7, 2015

# *TDS BOOSTS INTERNET* SPEED IN SOME AREAS

Wisconsin State Journal (Madison, Wisconsin)

March 13, 2015 Friday, ALL EDITION

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**Section:** BUSINESS; Pg. A10

**Length:** 280 words

**Byline:** JUDY NEWMAN , *jdnewman@madison.com*, , 608-252-6156

## Body

TDS Telecom says it is starting 1-***gigabit Internet*** service in parts of Dane County ? the highest speed available in the U.S.

The upgrade is being offered to parts of Middleton, Verona, Waunakee and Black Earth to customers who subscribe to a package that includes TDS TV. Prices start at $135 a month for 1-***gigabit*** download speeds and TV, according to the company.

About 7,000 homes can access the higher-speed service. "This is just our first phase, with much more to come," TDS spokeswoman Cindy Tomlinson said.

The Madison company, part of publicly traded, Chicago-based Telephone and Data Systems, delivers ***Internet*** protocol TV to those areas. That means video signals are sent over the same fiber-optic lines that carry phone and high-speed ***Internet*** service.

UW telecommunications professor Barry Orton said the upgrade will have a limited impact.

"It's largely designed so you can watch Netflix and Hulu without any stutter or buffering," Orton said. "But if you're going to be a home-based business, you're as interested in upload as in download."

TDS said upload speeds will be up to 400 megabits per second.

***Internet*** speeds of 1 ***gigabit*** per second have become available in some other parts of the U.S. over the past two years. "This is the new generic standard for faster broadband service," Orton said.

Orton speculated one reason TDS is upgrading is to "make sure their customers won't migrate away from them." He said more people are unhooking from cable TV and instead, snapping up offerings such as Netflix that let consumers stream programs live, or on request.

According to Nielsen research, more than 40 percent of U.S. homes with TVs subscribe to video-on-demand services.

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Subject:** FIBER OPTICS (73%); HOME BASED BUSINESSES (52%); #wsj, tds, highspeed broadband, tv service, #top_story

**Company:** NETFLIX INC (54%)

NASDAQ-100 Index which has risen 1.1% over the same period, this is a relative price change of -33.8%. Average daily volume of 116,582 shares in the trailing year was 1.1 times average daily volume in the previous year. In the trailing 12 months the market cap has declined US$115.2 million.

GLOBAL RANK
GLOBAL RANK [out of 45,165 stocks]

| Description | Value | Rank | Quartile |
|---|---|---|---|
| MCap (US$) | 256.4M | 13736 | Second |
| Total Assets (US$) | 622.6M | 11039 | Top |
| Revenue (US$) | 202.1M | 13603 | Second |
| Net Profit (US$) | 21.5M | 10143 | Top |
| Return on Equity % | 23.2 | 2786 | Top |
| Net Profit Margin % | 10.7 | 9386 | Top |
| Price Earnings | 24.0 | 16246 | Second |
| PV$1000 (1Year) US$ | 650 | 28520 | Third |
| US$ Change (1Year) % | -35.0 | 28207 | Third |
| Rel Strength 6 Mo (US$) | 49 | 23194 | Third |

Lumos Networks Corp. (O:LMOS)
ISIN: US5502831051
PermID: 1-5037430960
CIK: 1520744
CUSIP: 550283105

Source: *www.BuySellSignals.com*

## Classification

**Language:** English

**Document-Type:** Press digests

**Publication-Type:** Newswire

**Subject:** STOCK INDEXES (89%); MARKET CAPITALIZATION (89%); FIBER OPTICS (89%); EXECUTIVES (78%); SMALL BUSINESS (78%); PRESS RELEASES (78%); MANAGERS & SUPERVISORS (68%)

**Company:** LUMOS NETWORKS CORP (98%); Lumos Networks Corp.

**Ticker:** LMOS (NASDAQ) (98%); LMOS.OQ; 1-5037430960; 1520744; 550283105; US5502831051

**Industry:** ***BROADBAND*** (92%); STOCK INDEXES (89%); STOCK EXCHANGES (89%); TELECOMMUNICATIONS (89%); FIBER OPTICS (89%); DATA TRANSMISSION (77%); WEBSITES & PORTALS (77%); TELECOMMUNICATIONS EQUIPMENT (76%); TELECOMMUNICATIONS EQUIPMENT MFG (71%)

**Geographic:** VIRGINIA, USA (92%); UNITED STATES (79%); United States

**Load-Date:** January 29, 2016

# Mayor Garcetti Announces Major Upgrades to Internet Speeds Across Los Angeles

*Announcements underline L.A.'s commitment to being America's most connected — and innovative — city.*

Mayor Eric Garcetti announced today that Google Fiber, a unit of Alphabet Inc., will explore L.A. as the next market for Google Fiber's high-speed Internet service. The announcement follows the unveiling of AT&T's plan to introduce its GigaPower fiber optic broadband service to the city. These announcements respond to continuing demand from residents and businesses for high-speed connectivity to the Internet.

These plans have the potential to offer affordable Internet connectivity that is 20-200 times faster than what is currently available to residences and small to medium-sized businesses in L.A. — which would be the nation's largest market to date for both services.

"Expanding, improving and strengthening Internet access throughout Los Angeles is vital to further accelerating L.A.'s economic growth — and affordable service is essential to erasing a digital divide that leaves too many people without the tools to maximize potential in the 21st century," said Mayor Garcetti. "When companies like Google and AT&T invest in our communities, it shows that L.A. is determined to be America's most connected city, and will continue leading the world in innovation and creativity."

The City and Google Fiber have already engaged in initial discussions about construction, planning and coordination. Over the next several months, the company's engineering team will study local factors that

# *Mediacom starts Gigabit* rollout with Columbia, Missouri

Pivotal Sources

September 14, 2015 Monday

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**Length:** 202 words

**Dateline:** United States

## Body

United States, Sept. 14 -- United States based cable operator Mediacom Communications has launched its ***Gigabit*** service in Columbia-Jefferson City, Missouri. The 1 Gbps service is available to homes passed in Boone, Cole and Callway counties, including the cities of Columbia, Jefferson City and Holts Summit. Mediacom chose Columbia, Jefferson City and Holts Summit as the first cities to receive its residential ***Gigabit internet*** service. It plans to start deploying technology using the 'Gigasphere' standard next year, expanding availability of 1 Gbps residential services to more communities in its 22 state territory.

Mediacom's senior vice president of field operations, Ed Pardini, said, "Unlike some other 1-Gig providers whose services are limited to selected neighborhoods, our ***gigabit*** speeds are available throughout the community to 100 percent of the homes and residences along our network." He added that the company has invested over USD 4 billion in its communities through infrastructure upgrades.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Web Publication

**Company:** MEDIACOM COMMUNICATIONS CORP (95%)

**Industry:** CABLE & OTHER DISTRIBUTION (90%); CABLE INDUSTRY (78%); MEDIA SYNDICATION (78%); COMPUTER NETWORKS (71%)

**Geographic:** JEFFERSON CITY, MO, USA (91%); MISSOURI, USA (92%)

**Load-Date:** September 15, 2015

array of information, communications and entertainment services to households and businesses, including video, high-speed data, phone, and home security and automation. Through Mediacom Business, the company provides innovative ***broadband*** solutions to commercial and public sector customers of all sizes, and sells advertising and production services under the OnMedia brand. More information about Mediacom is available at*http://www.mediacomcc.com*.

About Casa Systems, Inc.Casa Systems has defined a new category of software-centric Ultra ***Broadband*** network edge devices that allow cable and mobile service providers to intelligently and cost-effectively scale their networks to meet ***gigabit*** demands today. Based on disruptive technologies to target the growing market opportunity in interactive digital video and ***broadband*** IP services, Casa Systems provides market-leading, DOCSIS 3.1-enabled CCAP and CMTS products, universal EdgeQAM and intelligent video processing solutions for broadcast and unicast services, as well as MobileEdge small cell and managed WiFi solutions. #UltraBroadband #GigabitSpeeds #DOCSIS3.1

For more information, please visit us at*http://www.casa-systems.com*.

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To view the original version on PR Newswire, visit:*http://www.prnewswire.com/news-releases/mediacom-turns-to-casa-systems-to-deploy-new-**gigabit**-services-300202880.html*

SOURCE Casa Systems, Inc.

## Classification

**Language:** ENGLISH

**Publication-Type:** Newswire

**Subject:** CUSTOMER EXPERIENCE (72%); CASA-SYSTEMS; LIC Licensing and Marketing Agreements; PDT New Products and Services

**Company:** MEDIACOM COMMUNICATIONS CORP (96%); Casa Systems, Inc.

**Industry:** CABLE INDUSTRY (91%); CABLE & OTHER DISTRIBUTION (91%); ***BROADBAND*** (89%); BANDWIDTH (78%); INTERNET OF THINGS (78%); TELECOMMUNICATIONS SERVICES (78%); INTERNET & WWW (78%); CPR Computer; Electronics Products; STW Computer Software

**Geographic:** JEFFERSON CITY, MO, USA (73%); MISSOURI, USA (90%); MIDWEST USA (73%); UNITED STATES (79%); Massachusetts

**Load-Date:** January 13, 2016

**Subject:** PRESS RELEASES (90%); ENTREPRENEURSHIP (78%); INTERNET SERVICE REGULATION (78%); FIBER OPTICS (78%); PRIVATELY HELD COMPANIES (73%); EXECUTIVES (70%); CUSTOMER SERVICE (69%); TX-Metroplex-Addison

**Company:** Metroplex Communications, Inc.

**Organization:** FEDERAL COMMUNICATIONS COMMISSION (94%)

**Industry:** ***BROADBAND*** (95%); COMPUTER NETWORKS (92%); CABLE INDUSTRY (90%); INTERNET & WWW (89%); INTERNET SERVICE REGULATION (78%); FIBER OPTICS (78%); NET NEUTRALITY (73%); TELEPHONE SERVICES (62%); CPR Computer; Electronics Products; WEB Web Site; ITE Internet Technology; TLS Telecommunications; WIC Wireless Communications

**Geographic:** TEXAS, USA (92%); UNITED STATES (92%); Texas

**Load-Date:** March 6, 2015

## Notes

PUBLISHER: Electronics International

## Classification

**Language:** ENGLISH

**Publication-Type:** Magazine

**Journal Code:** OBSERV

**Subject:** RURAL COMMUNITIES (89%); CROWDSOURCING (73%); EXECUTIVES (50%); c22 New Products/Services; ccat Corporate/Industrial News; ncat Content Types; nfact Factiva Filters; nfcpin C&E Industry News Filter

**Company:** MIDWEST ENERGY COOPERATIVE INC (58%)

**Industry:** ELECTRICITY TRANSMISSION & DISTRIBUTION (91%); COMPUTER NETWORKS (90%); ELECTRIC POWER INDUSTRY (90%); NATURAL GAS & ELECTRIC UTILITIES (90%); ELECTRIC POWER PLANTS (90%); BROADBAND (89%); UTILITIES INDUSTRY (89%); TEST MARKETING (78%); ENERGY & UTILITY TRADE (77%); ***INTERNET*** & WWW (73%); ONLINE MARKETING & ADVERTISING (73%); CONSTRUCTION (72%); irenewf Renewable Energy Facility Construction; i502 Heavy Construction; i5020044 Power Station Construction; iconst Construction; icre Real Estate/Construction

**Geographic:** MICHIGAN, USA (95%); MIDWEST USA (90%); OHIO, USA (79%); INDIANA, USA (73%); usmi Michigan; namz North America; usa United States; usc Midwest U.S.

**Load-Date:** September 1, 2015

from individual councilors. Anyone who wishes to catch up on past workshops or council meetings can see them at townhallstreams.com.

-- Council members are interviewing marketing firms to help put together an economic development package and advertisements lauding Millinocket as a place to do business and recreate. The selection process likely will take a few more weeks, councilors said.

Six community groups have been meeting, some for more than a year, to pursue economic and community development ***projects***. Osborne identified the groups as The Millinocket Industrial Development Committee, Katahdin Revitalization, The Katahdin Citizens Group, Our Katahdin, the Katahdin Area Chamber of Commerce and the Katahdin Tourism Partnership. Katahdin Revitalization was organized by Rep. Steve Stanley, D-Medway, and consists of East Millinocket, Medway and Millinocket residents.

The six groups' participation "shows that people are getting involved. We don't want each group to lose its identity," Osborne said Monday. "It's just a matter of ensuring that we are not marching in different directions."

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Subject:** REGIONAL & LOCAL GOVERNMENTS (90%); SUSTAINABLE DEVELOPMENT (90%); ECONOMIC DEVELOPMENT (90%); CITY GOVERNMENT (89%); TALKS & MEETINGS (89%); GRANTS & GIFTS (89%); NONPROFIT ORGANIZATIONS (78%); US STATE GOVERNMENT (78%); ENVIRONMENTAL DEPARTMENTS (77%); CITIES (76%); SOCIAL JUSTICE (76%); LEGISLATIVE BODIES (76%); ASSOCIATIONS & ORGANIZATIONS (76%); US FEDERAL GOVERNMENT (72%); US ENVIRONMENTAL LAW (70%); AGRICULTURE DEPARTMENTS (70%); CONSERVATION (67%); ENVIRONMENT & NATURAL RESOURCES (67%)

**Organization:** US ENVIRONMENTAL PROTECTION AGENCY (55%); US DEPARTMENT OF AGRICULTURE (55%)

**Industry:** ***BROADBAND*** (90%); UTILITIES INDUSTRY (89%); LOTTERIES (84%); SPONSORSHIP (75%); AGRICULTURE DEPARTMENTS (70%)

**Geographic:** MAINE, USA (91%); UNITED STATES (92%)

**Load-Date:** March 14, 2016

their networks and become the ***broadband*** provider of choice to their subscribers. For more information, visit the Calix website at *www.calix.com*.

This press release may contain forward-looking statements that are based upon management's current expectations and are inherently uncertain. Forward-looking statements are based upon information available to us as of the date of this release, and we assume no obligation to revise or update any such forward-looking statement to reflect any event or circumstance after the date of this release, except as required by law. Actual results and the timing of events could differ materially from current expectations based on risks and uncertainties affecting the Company's business. The reader is cautioned not to unduly rely on the forward-looking statements contained in this press release. Additional information on potential factors that could affect Calix's results and other risks and uncertainties are detailed in its reports on Form 10-Q for the first 2015 fiscal quarter and Annual Report on Form 10-K for the fiscal year 2014, filed with the SEC and available at *www.sec.gov*. NYSE closing price for CALX-N Date: 2015/05/04 Closing Price: 7.38

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CONTACT: TEL: 707-766-3512 Neila Matheny, Press *Neila.matheny@calix.com* Calix, Inc.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Newswire

**Journal Code:** MNP

**Subject:** FIBER OPTICS (90%); ECONOMIC DEVELOPMENT (77%); CITY GOVERNMENT (69%); TECHNICIANS & TECHNOLOGICAL WORKERS (67%); EXECUTIVES (66%); RURAL COMMUNITIES (65%)

**Company:** CALIX INC (98%); CALIX INC

**Ticker:** CALX (NYSE) (98%); CALX; (New York)

**Industry:** ***BROADBAND*** (90%); FIBER OPTICS (90%); WIRELESS ***BROADBAND*** (89%); WIRELESS INTERNET ACCESS (89%)

**Person:** JAMES L DOLAN (50%)

**Geographic:** MONTANA, USA (94%); NORTH AMERICA (79%)

**Load-Date:** May 6, 2015

In the town of Floyd, where Citizens is nearing the completion of a fiber ***project***, the provider's home customers have access to 1.5, 3 and 6 megabits per second, Reece said. By the time the fiber ***project*** is done, all of the customers would be able to reach 50 megabits per second, he said. Some customers in Wythe County and the town of Floyd, he said, already have access to fiber and up to 50 megabits per second.

Citizens, which launched as a telephone service provider more than a century ago, serves business, home and government customers in counties ranging from Wythe to Montgomery, Roanoke and Botetourt.

Using a ballpark estimate, Reece said Citizens has about 5,300 home and 100 business and government ***broadband*** customers.

Citizens benefited from the federal stimulus bill in the late 2000s that gave the provider the cash needed to connect schools in the New River Valley to fiber ***broadband***.

Citizens' business and government customers in 11 counties that range from Wythe and Grayson all the way to Roanoke and Botetourt can access up to 10 gigabits per second.

Reece recalls that about half of the schools in Montgomery County during the late 2000s could use speeds of up to 1.5 megabits per second before. Now, he said, all of those schools have a 1 gigabit connection.

Regarding Montgomery County's plans to bring much bigger bandwidth to the home, Reece didn't exactly express support or opposition.

"It all depends on what they're trying to do," he said. "I'm not going to say if I'm for or against it because I don't know much about it."

Not even the people behind the push to enlarge the county's Internet bandwidth are exactly sure what the service will look like or even how it will be financed.

"If we could go ahead and lay down fiber cable, maybe later on a provider might come along that might provide Internet service," said Montgomery County Supervisor Mary Biggs.

Biggs said the county could also seek a grant of some kind to cover the cost of installing the cable.

"I don't know the cost of it, but I don't think it would be a cost we couldn't find a way to cover," she said.

The service Tuck said he's thinking about may not necessarily mean gigabit fiber, but simply ***broadband*** that would make it easier for students and professionals to work from home and broaden the entertainment options for rural residents.

"We're trying to help folks who are underserved ... Rural areas that are undeserved or not served at all with Internet services," Tuck said.

The underserved places Tuck said he has in mind include the Wake Forest and Brush Mountain areas and Riner.

PSA Director Bob Fronk describes the ambitious idea as forward thinking.

"It's a great concept," he said. "Schools are moving more toward [being] Internet-based, where students can get online and do their homework. I'm amazed at what my children get into with a computer at the age they are."

Fronk said expanding ***broadband*** in the rural areas could also help startups being launched out of homes.

***Broadband*** has been a big talking point among businesses and local governments across the New River and Roanoke valleys in recent years.

# NC Partners: Fiber Will Give Region A Green Light to A Gig

*Sat, November 28, 2015 | Posted by ternste (/users/ternste)*

The Tri-Gig High Speed Broadband Initiative (http://www.ptrc.org/index.aspx?page=611), an effort by communities and universities within Greensboro's Piedmont Triad Region, recently announced plans to release an RFP in an effort to improve regional connectivity.

According to the News & Record (http://www.greensboro.com/business/regional-governments-looking-for-way-to-light-up-the-fiber/article_50959775-15a7-5e6c-bc6d-3e183cb73ae9.html), the partners are searching for a partner equipped to develop, operate, and provide Internet services over a new open access (/glossary/1#term625) network. Hemant Desai, Chief Information Officer for Guilford County, hopes the project will spur innovative ideas from the private sector:

> *The goal of this project is not to restrict but enhance the deployment Let them come back to us and say, 'Here's what we'll provide you if you provide this to us '*

The project is a joint effort of the City of Greensboro, Guilford County, the City of High Point, the City of Burlington, North Carolina A&T State University, the University of North Carolina-Greensboro, and the Piedmont Triad Regional Council. Collectively, these entities have a population of nearly 700,000 people.

### A Strong Foundation

A network of this scope and scale was not envisioned by Greensboro officials when they spent $24 million to build a fiber-based communication system several years ago. At that time, the goal was to update the communication infrastructure for the city's traffic signal equipment. In 2008 Greensboro began building its award-winning (http://ncsite.org/2015/08/greensboro-traffic-signal-system/) Intelligent Traffic System (ITS) comprised of 120 miles of fiber optic cables and other essential modern traffic technologies. Guilford County, High Point, Burlington, UNC-Greensboro, and North Carolina A&T all have similar traffic systems.

ITS provides significant public safety benefits (http://www.fiber-optics.info/articles/fiber_optic_intelligent_traffic_systems) over traditional traffic communication systems. For example, the system in Greensboro controls over 450 intersections and enables sensors to turn traffic lights green for fast-moving emergency vehicles, making the roads safer for everyone while facilitating faster attention to crisis situations.

### Using Existing Dark Fiber

When an ITS is installed, managing traffic lights typically requires a fraction of the actual fiber capacity; the remaining fiber is unused or "dark." Communities like Greensboro are looking for ways to use, or "light up" the remaining dark fiber. In some cases, municipalities lease the dark fiber to providers who light it and use it to provide services to local businesses or residents. Arlington, Virginia, took advantage of an ITS project to expand its network (http://www.muninetworks.org/content/fiber-optic-connectarlington-moving-forward-virginia), ConnectArlington.

While exploring options for improved broadband access in the area, community leaders in greater Greensboro learned that the ITS project could provide a backbone for a regional fiber network. The publicly owned infrastructure in Greensboro already covers more land than any network owned by any large private provider in the city. This cooperative effort will expand the network even further.

City leaders like Greensboro's Chief Information Officer Jane Nickles consider the project an effort to improve the quality of life and a way to create opportunities for local residents:

> *This is not just the future, this is a platform Cities that don't have it, they're going to be left in the dust*

Tweet

having access to a state-of-the-art open fiber-optic network that would reach every home and business is as important as building roads and bringing water and electricity to residents.

A collaboration of municipalities put out a request for proposals for a private investor to work with cities to accomplish this and Macquarie Capital was selected to do it.

Macquarie requires, as a condition to participate in what is the called CTgig Project, an interlocal agreement be signed among towns interesting in working with them.

New Haven would be the first to enter into an agreement for Macquarie to develop a citywide feasibility study to determine the baseline engineering data and design criteria and establish the probable costs of a fiber network in the city.

The resolution states that despite the demand for gigabit-level access speeds, the current supply is either unavailable or prohibitively expensive.

It states that it is up to the towns to work together to go around the current providers "who have largely ceased investing in advanced technologies due to huge sunk costs in legacy copper and coaxial cable infrastructure, leading these companies to merely harvest profits from their historical investments."

Vallee said New Haven is a prime city to get involved in this and get a feasibility study underway, and he credited Mayor Toni Harp's interest in it.

"This town is a goldmine of data," Vallee said.

He said if everything fell into place, the investor could start laying cable in a year, with the project finished in less than three years.

"Broadband access is no longer a luxury," he told the members. "I think it is a public utility."

Vallee anticipated increased competition among Internet providers, once the cable is in.

The issue will go before an aldermanic committee in August, with a possible vote by the full board in September. Under the plan, Macquarie is the borrower over 30 years with no city or state debt, he said.

Economic Development Administrator Matthew Nemerson said high-speed access citywide would be a game changer for New Haven through this "unique business proposition."

He said the wealthy now pay what they have to for access at this level of service, but the vast middle are victims of the "structural mediocrity" of Internet service.

(http://www.emergencymgmt.com/papers/5-Trends-Transforming-Public-Safety-Communications-8430.html?promo_code=Featured Paper Module)

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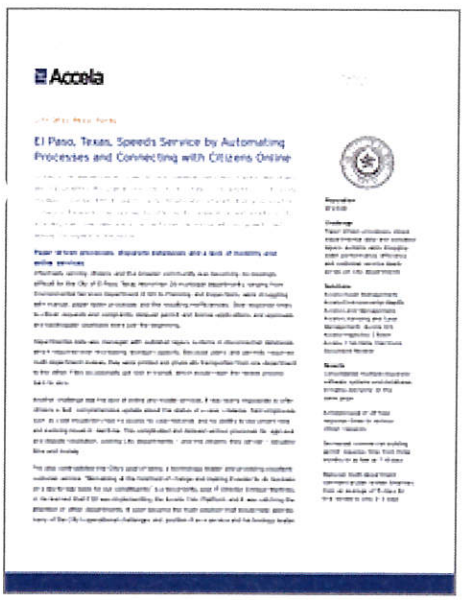


(http://www.govtech.com/dc/papers/El-Paso-Texas-Speeds-Service-by-Automating-Processes-and-Connecting-with-Citizens-Online-7689.html?promo_code=Featured Paper Module)

El Paso, Texas, Speeds Service by Automating Processes and Connecting with Citizens Online (http://www.govtech.com/dc/papers/El-Paso-Texas-Speeds-Service-by-Automating-Processes-and-Connecting-with-Citizens-Online-7689.html?promo_code=Featured Paper Module)

# *New ISP bringing high-speed service to St. Cloud*

St. Cloud Times (Minnesota)

September 7, 2015 Monday, 1 Edition

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**Section:** A; Pg. 1

**Length:** 710 words

**Byline:** By, MITCH LECLAIR

## Body

A new business is coming soon to St. Cloud, and it will offer consumers something more rare than another choice of pizza: gigabit Internet.

Minnetonka-based North Star Fiber will provide high-speed ***broadband*** service to tenants of a few apartment buildings perhaps as early as this fall, according to one of its vice presidents. Whichever buildings initially connect could house the fastest residential Internet connections in town.

Dustin Evenson said St. Cloud is an untapped market with attractive features, such as a bandwidth-hungry student population, multiple apartment complexes and strong fiber-optic infrastructure. He said his company's services will operate under month-to-month agreements and with a three-year price lock for customers.

"If we don't impress them every month, we don't want to keep them hostage," Evenson said.

Telecommunications company Arvig announced its acquisition of North Star in July. North Star's co-founders live in the Twin Cities, and the customer call center is in White Bear Lake.

David Schornack, Arvig's director of business development, said the deal allows the Perham-based firm to expand into the multidwelling field of the industry.

Where exactly Arvig will be expanding in St. Cloud is not yet public. Neither that company nor North Star would divulge which apartment buildings will receive access first, as deals with property owners are not yet finalized.

Arvig operates a ring of fiber lines that go through St. Cloud, Schornack said. That fiber is directly connected into the 511 Building in downtown Minneapolis, which is home to many providers' network connections, data center services and more. With a robust network in the St. Cloud area connecting directly to primary Internet data routes through the 511 Building, new North Star customers will have access to virtually unlimited download and upload speeds, according to Schornack.

He said plans will start at 50 megabits per second for $40 per month. Symmetrical, or equal download and upload, speeds up to 1 gigabit per second will be available, Schornack said.

Bringing ***broadband*** to buildings will include installing new high-speed Cat5e cables in apartment units, he said, and the service will not require a modem - Ethernet jacks in walls will provide connections.

Schornack said Arvig's work will include some minor construction to connect buildings to the company's underground backbone, which is comprised of more than 2,600 miles of fiber in more than half of Minnesota's counties.

According to a North Star news release, apartment residents aren't the only ones who could potentially benefit from the new service.

"There is no cost to the building owners or management for the free infrastructure upgrade, and it includes free (Internet) services for their onsite office," the release states. "There are also investment opportunities for property owners if they wanted to help finance their property's ***project*** and share a significant portion of the revenues."

# *New partnership will bring high-speed Internet to underserved western Howard County*

Howard County Times, Columbia, Md."

February 9, 2016 Tuesday

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Distributed by Tribune Content Agency

**Section:** BUSINESS AND FINANCIAL NEWS

**Length:** 344 words

**Byline:** Fatimah Waseem, Howard County Times, Columbia, Md.

## Body

Feb. 09--When Nicole and Renard Parson moved from the bustling streets of New York City to the rolling hills of western Howard County five years ago, they were in for a surprise.

Their home in Mount Airy did not have high-speed Internet.

With only 30 gigabytes to use per month -- the best offer they could find from Verizon -- the couple avoided updating their computers, paying bills online and watching Netflix. Renard, a teacher at Marriotts Ridge High School, often went to Dunkin Donuts, the library and the school to use free WiFi.

"It was a shock to us. It's the 21st century. You'd think every one has high speed Internet," Renard said.

After a two-year-long community effort led by their neighbor David Furman, western Howard County residents now can purchase unlimited high-speed Internet through a public-private partnership between Howard County and a private wireless provider, Howard County Executive Allan Kittleman announced at Furman's Mount Airy home Monday afternoon.

"This is not only a public-private partnership, but a public-public-public partnership," said Chris Merdon, director of the county's Department of Technology and Communication Services.

The wireless Internet availability is the result of ***networking***. Howard County looped its fiber-optic ***network*** through the Mount Airy water tower in Carroll County, allowing Freedom ***Broadband*** to connect its WiFi equipment and begin expanding its services, Kittleman said.

The partnership also leverages the bandwidth of the 10-jurisdiction Inter-County ***Broadband Network***, a publicly funded Internet provider that used $115 million from a federal stimulus grant and $45 million in state funds to lay down a 4,200-square-mile fiber optic ***network*** in 2013. Owned by governments, the ***network*** is touted for saving jurisdictions millions in phone and Internet fees to private cable ***broadband*** ***networks***.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

Economic-Development (5)

Design-and-Engineering (1)

Broadband-Strategy (2)

Technology-Leadership (1)

View All

## November 24, 2015 - Morristown Utility Systems and Appalachian Electric Cooperative, TN. Hires Magellan Advisors for a comprehensive Broadband Feasibility Study

Denver, CO. Nov 23, 2015 – MUS and AEC will work with Magellan to examine the feasibility of leveraging its curr fiber-optic network to expand and improve broadband for municipal operations, businesses, education, healthcar community anchors and residents throughout the "Lake Way Region" of East Tennessee. Magellan's staff has pla and developed fiber optic networks in over 100 communities across the U.S., and will bring their real world experi develop a study that delivers realistic, actionable steps going forward for MUS-AEC and the entire region. Magella nation's leading broadband planning and IT consulting firm, with a staff of expert broadband planners and consul having a combined 200 plus years of experience in telecommunications and broadband planning.

The feasibility study will focus on assessing the broadband needs of the "Lake Way Region" including municipal, facilities and stakeholders, creating a "State of Broadband" report and study for the region. Magellan and MUS-A work cooperatively to examine the financial feasibility of creating an enhanced and extensive broadband network Lake Way Region and the greater AEC membership throughout the MUS-AEC footprint. Magellan will deliver a n assessment; current state of the broadband in the market; services availability mapping, state of market competit complete financial study and business plan and operational model.

Magellan Advisors' President John Honker added, "We applaud the MUS and AEC for recognizing the importance available, accessible, reliable and competitive broadband for the region and the part it plays in economic develop improved healthcare, education and a the overall quality of life. "

**About Magellan Advisors**

Magellan Advisors is the leading broadband consulting firm, providing broadband planning and implementation se to public organizations of all types. We assist cities, counties, states, public utilities and regional authorities in leve their strengths to expand broadband through smart public policy, wise investments and strategic partnerships. As of our work, over $1 billion of investments in broadband networks have been made nationwide; over 1,000 schoo hospitals and government offices have been connected with enhanced services; and, over 1 million homes have passed with fiber. We have worked with over 250 public organizations to create and implement real-world broadb strategies that enhance economic development, improve quality of life and create the smart cities of tomorrow.

# # #

Comments from the audience ranged from compliments to questions about the conditions of street pavement around town.

Troxell, who is a Fort Collins native, said the city has a unique "sense of place" and its livability needs to be preserved as it grows.

The city's ***projected*** population at "build out" is expected to be around 255,000. Careful planning must go into preserving the city's many qualities, including its "environmental ethos" and respect for historic preservation, he said.

"Instead of just hoping people don't come here, I think we need to be very intentional about the values that actually make our community the wonderful place that it is," he said.

Kevin Duggan is a Coloradoan senior reporter covering local government. Follow him on Twitter, @coloradoan_dugg, and on Facebook at Coloradoan Kevin Duggan.

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Journal Code:** ftc

**Subject:** CITIES (91%); CITY GOVERNMENT (91%); CITY LIFE (78%); REGIONAL & LOCAL GOVERNMENTS (78%); LEGISLATIVE BODIES (78%); POPULATION ESTIMATES & PROJECTIONS (78%); CORPORATE SUSTAINABILITY (77%); MAYORS (77%); ASSOCIATIONS & ORGANIZATIONS (77%); EDITORIALS & OPINIONS (66%); EMISSIONS (64%)

**Company:** WOODWARD INC (68%)

**Ticker:** WWD (NASDAQ) (68%)

**Industry:** UTILITIES INDUSTRY (89%); ***BROADBAND*** (72%); EMISSIONS (64%)

**Geographic:** FORT COLLINS, CO, USA (94%)

**Load-Date:** March 1, 2016

**3 Comments** Pamplin Media

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**It's my money!** • a month ago

Thirty years is a long time. When, not if, wireless internet arrives or even before, people will not be using an overhead fiber network. This plan is not a realistic risk for the city to take on. It always seems like a better idea if one is using other people's money, but the City Council has a fiduciary responsibility to consider the real needs of the citizens for services that only a city can provide. Internet service is covered by private companies - let's leave it there. An emotional dislike of Comcast is not a reason for a municipality to compete with the company on my dime. Concentrate on ballooning employee costs instead that is threatening to cripple our city finances!

• Reply • Share ›

**Suzanne** ➦ It's my money! • 17 days ago

No matter how much people object or more costs come out of the cracks that symmetrical appear to have missed city council are going to vote this through. Even publicly switching the models before everyone's eyes has not stopped council. Arrive at your own opinion on that....

• Reply • Share ›

**GerryG** ➦ It's my money! • a month ago

Right on!

• Reply • Share ›

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# *Otter Tail Telcom broadband project* nearly complete

Fergus Falls Daily Journal, Minn

October 8, 2015 Thursday

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Distributed by Tribune Content Agency

**Section:** STATE AND REGIONAL NEWS

**Length:** 630 words

**Byline:** Jeff Meier, Fergus Falls Daily Journal, Minn.

## Body

Oct. 08--Otter Tail Telcom brings fiber connections to underserved areas, thanks to a grant from the state

This summer, Otter Tail Telcom in Fergus Falls has delivered ***broadband*** Internet connections to previously underserved areas in Otter Tail County thanks to state grants.

"Our focus has always been on providing service to as many people as possible and the state has helped us reach that goal," Otter Tail Telcom CEO Dave Bickett said.

The Minnesota Department of Employment and Economic Development awarded state grants in February totaling $19.4 million to fund ***projects*** helping areas throughout Minnesota get reliable, high-quality ***broadband*** Internet connections.

Otter Tail Telcom was awarded $652,854 for three ***projects***: Swan Lake West (just south of Fergus Falls), northeastern outskirts (northeast of Fergus Falls near Hoot Lake) and Stuart Lake (east of Battle Lake). The Hoot Lake and Stuart Lake ***projects*** are finished with ***broadband*** ***projects*** now available to customers who previously received inconsistent connections.

"The response has been great," Bickett said. "Customers are happy to have improved Internet."

The Swan Lake West ***project*** is nearing completion and will be fully installed at the end of October. The Swan Lake West ***project*** included a $438,937 grant to bring ***broadband*** Internet services to 110 unserved locations.

The northeastern outskirts ***project*** is worth $108,553 to bring services to 39 unserved locations near 245th street and Otter Tail County Road 1. Finally, the Stuart Lake ***project*** worth $105,364 brings connections to 47 unserved locations including 46 residences and one business near Stuart Lake.

"We're a community player, and we like to give back to the community," Bickett said. "We feel a responsibility to bring quality service to as many people as we can."

These grants were awarded to Otter Tail Telcom thanks to the support of the Fergus Falls community. After Otter Tail Telcom learned what areas in Otter Tail County were getting unsatisfactory wireless connections, the company applied for the grants with five ***projects*** in mind.

These areas reached out to Otter Tail Telcom specifically and the company also found them by assessing their connection power in various areas. These new connections are made from a cable fiber meant to have a 30- to 40-year lifespan and provide a faster, more reliable connection than the basic wireless these areas were getting previously.

Fergus Falls community leaders like the Economic Improvement Commission, Mayor Hal Leland, Fergus Falls City Administrator Mark Sievert and Minnesota House of Representatives member Bud Nornes supported the application process and wrote letters with the applications expressing their approval.

# Owensboro Residents Flying High On Fiber Pilot

*Sat, February 06, 2016 | Posted by lgonzalez (/users/lgonzalez)*

Last fall, Owensboro, Kentucky, began constructing its pilot program (http://www.muninetworks.org/content/owensboro-kentucky-developing-muni-ftth-pilot) to bring Fiber-to-the-Home (FTTH) to a limited number of residents. Construction is complete and now the municipal utility is serving subscribers, much to the delight of folks in the city's Town & County neighborhood. There are 570 households and approximately 1,500 people living in the pilot area.

As of late January, 80 households had signed up for service with 15 now being served at a rated of about eight installations completed every week. Chris Poynter, superintendent of Owensboro Municipal Utilities (http://omu.org) (OMU) telecommunications division reported to the Board (http://www.messenger-inquirer.com/news/local/internet-pilot-program-launched/article_1536eb97-558d-5ea8-915f-667b453442b3.html) that feedback has been positive and that customers have been "...very happy with their speeds and the installation process."

All speeds are *symmetrical* (/glossary/1#term24) - just as fast on the *upload* (/glossary/1#term28) as the *download* (/glossary/1#term8) - and there is a $49.99 installation fee. OMU offers three tiers:

- 50 Megabits per second (*Mbps* (/glossary/1#term18)) for $49.99
- 100 Mbps for $69.99
- 1 Gigabit per second (*Gbps* (/glossary/1#term14)) for $99.99

OMU installed fiber thought the city in 1997 and two years later began offering high-speed Internet access and other telecommunications services to local businesses. OMU's goal is to serve a minimum of 20 percent of the households in the pilot area and if all goes well, the community will consider a city-wide project.

Home to about 58,000, Owensboro sits across the river from Ohio. The city is the county seat and center of a metropolitan area of about 116,000 people. OMU also offers electricity and water services.

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Saparito provided an analogy: A single fiber-optic strand can carry a gigabyte of data. A gigabyte is like a 52-gallon drum through which water could be poured, whereas a megabyte is like a coffee stir stick, he said.

Adams likened the expansion of such systems to the next step for the U.S. after the westward expansion of railroads, then the modernization of transportation by automobiles and airplanes.

"We're in the information age now, and this is all about moving information," he said.

Providers

The six providers also include a Regents-run fiber-optic system at the university, Kansas Fiber Network, and Cox and AT&T -- the latter two of which have offered area ***broadband*** for several years.

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## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

**Journal Code:** JL

**Acc-No:** 20151003-JL-Pittsburg-fiber-optic-network-to-come-online-in-November-1003-20151003

**Subject:** FIBER OPTICS (89%); CITIES (78%); MIDDLE MANAGEMENT (78%); ECONOMIC DEVELOPMENT (78%); CITY GOVERNMENT (73%); CITY LIFE (73%); MANAGERS & SUPERVISORS (73%); BUSINESS & PROFESSIONAL ASSOCIATIONS (72%); CHAMBERS OF COMMERCE (72%)

**Company:** CRAW-KAN TELEPHONE COOPERATIVE INC (84%); NETFLIX INC (51%)

**Ticker:** NFLX (NASDAQ) (51%)

**Industry:** TELECOMMUNICATIONS EQUIPMENT (89%); FIBER OPTICS (89%); INTERNET VIDEO (77%); WIRED TELECOMMUNICATIONS CARRIERS (77%); WIRELESS INDUSTRY (77%); TELECOMMUNICATIONS (77%); INTERNET SOCIAL NETWORKING (77%); TELEPHONE SERVICES (76%); INTERNET SERVICE PROVIDERS (76%); INTERNET BROADCASTING (76%); STREAMING MEDIA (76%); MOBILE & CELLULAR COMMUNICATIONS (72%); MOBILE & CELLULAR TELEPHONES (70%); PHOTO & VIDEO SHARING (64%); General

**Geographic:** WICHITA, KS, USA (58%); KANSAS CITY, MO, USA (55%); KANSAS, USA (92%); MISSOURI, USA (91%)

**Load-Date:** October 3, 2015

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Logo - *http://photos.prnewswire.com/prnh/20140806/134213*

To view the original version on PR Newswire, visit: *http://www.prnewswire.com/news-releases/centurylinks-1-gbps-service-is-now-available-to-more-than-64000-business-locations-in-the-*

SOURCE CenturyLink, Inc.

/Web site: *http://www.centurylink.com*

(END) Dow Jones Newswires

May 18, 2015 07:15 ET (11:15 GMT)

## Notes

PUBLISHER: Dow Jones & Company, Inc.

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**Subject:** FIBER OPTICS (89%); PRESS RELEASES (73%); c22 New Products/Services; neqac Equities Asset Class News; npress Press Releases; ccat Corporate/Industrial News; ncat Content Types; nfact Factiva Filters; nfcpin C&E Industry News Filter; PROVIDER TERMS: N/DJG N/DJGP N/DJGS N/DJGV N/DJI N/DJIV N/DJN N/DJPT N/DN N/WED N/WER N/CNW N/DJPN N/DJWI N/PDT N/PRL N/TPCT N/WEI

**Company:** CENTURYLINK INC (94%); ctle CenturyLink, Inc.

# *Press Release: RS Fiber and HBC Partnership Selects Calix to Deliver Gigabit Services*

Dow Jones Institutional News

April 14, 2015 Tuesday 12:25 PM GMT

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MARKET NEWS PUBLISHING
Financial Content in Context

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NEWSWIRES

**Length:** 1145 words

## Body

RS Fiber and HBC Partnership Selects Calix to Deliver ***Gigabit*** Services

New 844E GigaCenter and Consumer Connect Create Foundation for a Superior ***Broadband*** Experience

AUSTIN, TX--(Marketwired - April 14, 2015) - Calix, Inc. (NYSE: CALX) today announced that the RS Fiber Cooperative (RS Fiber) has partnered with Hiawatha ***Broadband*** Communications (HBC) to bring a ***gigabit broadband*** experience to 10 cities and 17 townships across four counties in south central Minnesota using Calix systems and software. Leveraging some of the same traditional financial and business mechanisms that brought electricity to rural areas, these communities have taken a collaborative funding approach that leverages a unique public-private partnership to deliver an affordable fiber-optic ***broadband*** network to the region.

The multi-community/township Joint Powers Board will issue two General Obligation Tax Abatement Bonds to provide essential community-based funding for the network. The bond proceeds will be provided to RS Fiber through a loan agreement, which enables the cooperative to obtain additional funding from private sources, including local banks, other cooperatives, and rural investors. In addition, RS Fiber is using other federal, state, and private funding sources to implement the $15 million first phase of this network. Upon its completion, this network will enable educational, government, and medical institutions to extend the provision of essential community services to the area's cities, townships, agricultural producers, and related businesses. RS Fiber has partnered with fiber service provider HBC in a partnership to build and operate the ***gigabit*** network that will serve each community.

RS Fiber ***broadband*** services are being delivered in two separate phases. First, in July 2015, RS Fiber Air, which includes Wi-Fi-based Internet speeds of up to 25 megabits per second (Mbps) and voice services, will be rolled out to 90 percent of the RS Fiber serving area. One month later, the cities of Winthrop and Gaylord will be able to receive voice, video, and ***gigabit broadband*** speeds within their communities. In 2016, the middle mile network will be completed and eight more cities will be served by the ***gigabit*** network. In the second phase of the project, as subscribers sign up for services and revenues are generated, RS Fiber will continue to push fiber further into the network and plan to connect every premises in the 17 townships to fiber.

The project includes an end-to-end fiber service solution from Calix to bring the ***gigabit*** experience to each wireline subscriber. The solution includes:

-- The 844E GigaCenter, a new service delivery platform, which uses Carrier Class Wi-Fi to deliver cloud-enhanced services throughout the home.

707-766-3512

Neila.matheny@calix.com

(END) Dow Jones Newswires

April 14, 2015 08:25 ET (12:25 GMT)

## Notes

PUBLISHER: Dow Jones & Company, Inc.

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**Company:** CALIX INC (94%); calixn Calix Inc.

**Ticker:** CALX (NYSE) (94%)

**Company-Number:** DJ Ticker: CALX; ISIN: US13100M5094

**Industry:** ***BROADBAND*** (90%); WIRELESS ***BROADBAND*** (89%); FIBER OPTICS (89%); DATA TRANSMISSION (78%); COMPUTER SOFTWARE (75%); WIRELESS INTERNET ACCESS (68%); ibrdbi ***Broadband*** Infrastructure; i3302 Computers/Consumer Electronics; i3303 Networking; i7902 Telecommunication Services; icomp Computing; itech Technology; ifbropt Fiber Optic Transmission; PROVIDER TERMS: I/TSX I/XDJGI I/XNYA I/XRUS

**Geographic:** AUSTIN, TX, USA (79%); TEXAS, USA (79%); MINNESOTA, USA (79%); usa United States; namz North America

**Load-Date:** April 15, 2015

Smart Bridging Brings High Density ***Gigabit Broadband*** WiFi To the Masses

The ZoneFlex P300 bridge system is designed specifically for high-density user environments such as school campuses, business parks, warehousing environments, urban centers, parks and other outdoor venues where reliable, high performance ***broadband*** access is essential. Each ZoneFlex P300 bridge integrates a specially designed 5 GHz, dual-polarized directional antenna system that provides up to 14dBi of antenna gain. This new two-stream (2x2:2) 802.11ac WiFi bridging system features an internal, high-gain directional antenna system as well as external antenna connections to increase effective distance and help ensure highly reliable connectivity.

By combining the signals received across two distinct polarizations (vertical and horizontal) and across high-gain directional antenna elements, ZoneFlex P300 bridges are designed to maximize the received signal-to-noise ratio, resulting in more reliable connectivity and yielding the highest possible performance between two or more points. The Ruckus ZoneFlex P300 bridge system provides 30 degrees of coverage from one root bridge with internal antennas to handle many receiving bridges, or 360 degrees of coverage with external antennas. In addition, the ZoneFlex P300 bridge system features a dedicated sniffer radio for radar avoidance pre-scan, resulting in high availability of WiFi traffic.

Simple Better Wireless Bridging

At 18 centimeters long by 15 centimeters wide and 8.6 centimeters high, and weighing a mere 2.5 kilograms, each Ruckus ZoneFlex P300 root bridge can support up to 10 node links. Each link is secure through the use of AES encryption, with the ability to support multiple networks segmented by VLANs.

Automatic pairing and easy aiming between bridges provides for fast and simple installation, allowing installers to deploy these new wireless bridges effortlessly. Lightweight and designed with flexible wall or pole mounting options, the ZoneFlex P300 bridge system provides precision aiming through sophisticated LED-based aiming software. IP-67 rated and ruggedized for harsh outdoor environments, the P300 bridge system operates at temperatures from -40 up to 149 degrees Fahrenheit (from -40 up to 65 degrees Celsius).

Pricing and Availability

Available immediately worldwide, the new Ruckus ZoneFlex P300 bridge system comes as a single unit, with an MSRP of $1,195 (USD), or as pre-provisioned pairs with an MSRP of $2,395 (USD), and can be purchased through authorized Ruckus BiG DOG resellers.

Follow Ruckus Wireless on LinkedIn and Twitter for all the latest on #SimplyBetterWireless.

ABOUT RUCKUS WIRELESS

Headquartered in Sunnyvale, CA, Ruckus Wireless, Inc. (NYSE: RKUS) is a global supplier of advanced wireless systems for the rapidly expanding mobile Internet infrastructure market. The company offers a wide range of indoor and outdoor "Smart WiFi" products to mobile carriers, ***broadband*** service providers, and corporate enterprises, and has approximately 52,000 end-customers worldwide. Ruckus technology addresses WiFi capacity and coverage challenges caused by the ever-increasing amount of traffic on wireless networks due to accelerated adoption of mobile devices such as smartphones and tablets. Ruckus invented and has patented state-of-the-art wireless voice, video, and data technology innovations, such as adaptive antenna arrays that extend signal range, increase client data rates, and avoid interference, providing consistent and reliable distribution of delay-sensitive multimedia content and services over standard 802.11 WiFi. For more information, visit *http://www.ruckuswireless.com* .

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Media Contact

Mark Priscaro

# *Press Release: Troy Cable and ADTRAN Bring Alabama Communities Together with Gigabit* Services

Dow Jones Institutional News

April 23, 2015 Thursday 12:30 PM GMT

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MARKET NEWS PUBLISHING
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NEWSWIRES

**Length:** 729 words

## Body

Troy Cable and ADTRAN Bring Alabama Communities Together with ***Gigabit*** Services

Cable provider deploys ***Gigabit*** services to provide a richer online experience for more than 40,000 households in Southeast Alabama

HUNTSVILLE, Ala.--(BUSINESS WIRE)--April 23, 2015--

ADTRAN(R), Inc., (NASDAQ: ADTN), a leading provider of next-generation networking solutions, today announced a new addition to its Enabling Communities, Connecting Lives program. Troy Cable has selected ADTRAN's advanced Fiber-to-the-Home (FTTH) portfolio for its ***Gigabit*** Internet Service offering for residential customers in more than 20 communities across Alabama. One hundred times faster than today's basic ***broadband***, residents will no longer have to wait for streaming to buffer thereby making gaming, movie streaming and video chats much better experiences.

As one of the first true ***Gigabit*** networks in Alabama, Troy Cable is continuing its long history of investing back into the community while addressing the needs of key customers and market segments. Today's millennial generation, for example, demands more capacity and bandwidth than ever before. With their hands full of connected devices, these consumers are focused on services that provide top-quality ***broadband*** to view videos, access social media and connect to global events. They're three times more likely than non-millennials to watch television online and are willing to pay for high-quality viewing with minimal pauses and interference. The ***Gigabit*** Internet Service enables Troy Cable to meet the demands of these tech-savvy customers with symmetrical ***broadband*** speeds of up to one ***Gigabit***.

"Our customers expect the fastest internet connection possible for telecommuting, video streaming, gaming and more. Add to that the growing number of devices in each household, launching a ***Gigabit*** Internet Service offering was a logical next step. We have the fiber infrastructure in place and are delivering the fastest, most reliable ***Gigabit*** service available in Alabama," said Jake Cowen, General Manager of Troy Cable. "ADTRAN's ***Gigabit*** services architecture helped make this happen by allowing us to continue investing in the future of our community and provide the best network infrastructure possible for our customers."

"As Troy Cable remains dedicated to enhancing the community's ***broadband*** infrastructure, they're changing the way customers look at cable companies," said Mitch Fleming, regional vice president, sales, ADTRAN Carrier Networks Division. "Beyond offering standard cable services, Troy Cable is thinking long-term by offering its customers a complete portfolio of solutions. They are taking ***broadband*** service offering to the next level, as well as finding a competitive differentiator in a demanding marketplace."

**Ticker:** ATN (FRA) (91%); ADTN (NASDAQ) (91%)

**Company-Number:** DJ Ticker: ADTN; ISIN: US00738A1060

**Industry:** COMPUTER NETWORKS (90%); ***BROADBAND*** (90%); CABLE INDUSTRY (89%); STREAMING MEDIA (89%); INTERNET VIDEO (78%); BANDWIDTH (78%); CABLE & OTHER DISTRIBUTION (78%); INTERNET BROADCASTING (78%); TELEVISION INDUSTRY (78%); INTERNET & WWW (78%); SOCIAL MEDIA (73%); i9741109 Cable Broadcasting; i7902 Telecommunication Services; i79022 Wireless Telecommunications Services; i97411 Broadcasting; imed Media/Entertainment; i3302 Computers/Consumer Electronics; i3303 Networking; i33031 LAN/WAN Hardware; icomp Computing; itech Technology; PROVIDER TERMS: I/CMT I/CTS I/TLS I/XDJGI I/XRUS I/XSCI I/XSP6

**Geographic:** HUNTSVILLE, AL, USA (58%); ALABAMA, USA (95%); usal Alabama; namz North America; usa United States; uss Southern U.S.

**Load-Date:** April 24, 2015

he top operator for women by Women in Cable Telecommunications; Cox has ranked among DiversityInc's Top 50 Companies for Diversity 10 imes, including he last nine years. More informa ion about Cox Communications, a wholly owned subsidiary of Cox Enterprises, is available at www.cox.com and www.coxmedia.com.

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# *Quicken Founder Dan Gilbert Follows Google Fiber's Lead, Brings $70 Gigabit* Fiber To Detroit

Techdirt

July 17, 2015 Friday 10:28 PM EST

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**Length:** 758 words

**Byline:** Karl Bode

## Body

Jul 17, 2015( Techdirt: *http://www.techdirt.com* Delivered by Newstex) <nl/> When Silicon Valley and New York City struggle[1] to get incumbent ISPs to offer better service and faster speeds, you can only imagine the kind of ***broadband*** competition that exists in rust-belt cities like Detroit, Flint or Buffalo. But, following the lead of Google Fiber, Quicken founder Dan Gilbert apparently hopes to do something about it. Gilbert's employed the help of a few fellow Quicken employees to launch a new ISP by the name of Rocket that's going to start offering $70/month ***Gigabit*** service to a sizable chunk of Motor City[2].

*https://imgur.com/TjDH1Kg* <nl/> So far, the company has received "submissions of interest" from roughly 80 businesses and 3,000 consumers, with plans to reach 12 miles of deployed fiber and 32 buildings by the end of the year. It's a small beach head in a vast underserved telecom hellscape, but it's the latest example of how communities have finally reached the breaking point when it comes to waiting for AT...Comcast, Verizon, and Time Warner Cable to give a damn about the territories they service. Rocket hopes to ease into the ***broadband*** market thanks to Gilbert's existing ties to downtown real estate ventures, leading to more efficient installs:"One unique advantage is its ties to Rock Ventures, Gilbert's investment firm which funded Rocket Fiber and also owns more than 75 properties totaling more than 12 million square feet of commercial real estate in downtown Detroit. Foster says these properties and the companies within them are free to pursue internet services from any provider, and that Rocket Fiber has never assumed exclusivity with any of them."That's good, since the FCC banned such exclusive MDU arrangements[3] (pdf) back in 2007, even though enforcement remains a mixed bag[4]. Like Google Fiber, Sonic.net and municipal operators, Rocket is well aware that there's a growing contingent of customers fed up with the nation's utterly abysmal incumbent ISP customer service. That's of course particularly true of Detroit's entrenched monopoly provider, Comcast:Nationwide, ISPs are widely regarded as the worst-performing organizations in customer service. Rocket Fiber aims to set itself apart by being the rare local ISP that can focus all of its resources on the one region it serves..."There's a whole host of things that people are disenfranchised about [with] the current providers that, even if they offer exactly the same product at exactly the same price point, we still feel that they will still choose us because there are still intrinsic values other than just the dollar value that you get," Foster says."Also like Google Fiber, the actual deployment footprint is relatively small. There are still huge swaths of Detroit that nobody is going to want to wire, and fewer still are going to want to use tax dollars to help upgrade. It also probably goes without saying the city, while greatly improved, has problems that take priority over ***broadband***. Still, alongside Google Fiber and municipal network builds[5], it's another example of how the best hope of breaking down the traditional telecom duopoly -- and returning to an age when customer service was a priority -- is happening piecemeal on the local level.<nl/>Permalink[6] | Comments[7] | Email This Story[8]<nl/> [ 1]: *https://www.techdirt.com/blog/netneutrality/articles/20150621/09382931413/eight-years-later-new-york-city-officials-wake-up-to-verizons-fiber-**broadband**-bluff.shtml* [ 2]: *http://www.networkworld.com/article/2941353/lan-wan/inside-the-bold-plan-to-bring-**gigabit**-fiber-to-detroit.html* [ 3]: *https://apps.fcc.gov/edocs_public/attachmatch/DOC-277763A1.pdf* [ 4]: *https://www.techdirt.com/articles/20150628/08022631484/audit-reveals-verizon-tried-to-corner-nyc-**broadband**-market-striking-exclusive-landlord-deals.shtml* [ 5]: *https://www.techdirt.com/blog/netneutrality/articles/20150313/05200530309/fcc-outlines-plan-to-crush-awful-state-protectionist-**broadband**-laws.shtml* [ 6]: *https://www.techdirt.com/blog/netneutrality/articles/20150629/07511931487/quicken-founder-dan-gilbert-follows-google-fibers-lead-brings-70-**gigabit**-fiber-to-detroit.shtml* [ 7]: *https://www.techdirt.com/blog/netneutrality/articles/20150629/07511931487/quicken-founder-dan-gilbert-follows-google-fibers-lead-brings-70-**gigabit**-fiber-to-detroit.shtml#comments* [ 8]: *https://www.techdirt.com/blog/net-*

# Reedsburg Utility Commission Receives State Grant for Expansion

*Sat, January 16, 2016 | Posted by lgonzalez (/users/lgonzalez)*

In April 2015, Wisconsin's Brett Schuppner from the Reedsburg Utility Commission (RUC) had a conversation (http://www.muninetworks.org/content/reedsburg-expansion-weighed-after-muni-fiber-success-community-broadband-bits-episode-147) with Chris about the utility's plan to expand the municipal fiber network. Funding is one of the biggest challenges but in December, the RUC learned that it a state grant will help move those plans forward.

WisNews recently reported (http://www.wiscnews.com/news/local/article_e676da04-9e40-5f44-bb37-94061e664bd5.html) that the RUC applied for $110,000 to bring the *triple-play* (/glossary/1#term27) fiber network to Buckhorn Lake in Sauk County. The Wisconsin Public Service Commission announced on December 11th that the RUC will instead receive $69,300 which will allow the network to extend to an additional 105 homes and 40 properties. From the article:

> *Schuppner said an informal survey of members of the Buckhorn Property Owners' Association suggests the utility commission will likely recover its out-of-pocket costs for the project not covered by the grant of about $40,000 from new users in the first year*

RUC began serving the community in 2003, expanding in 2011 (http://www.muninetworks.org/content/reedsburg-finally-launches-rural-expansion), and offering gigabit service (http://www.muninetworks.org/content/wisconsin-gets-gig-reedsburg) in 2014. The community is located about 55 miles northwest of Madison and home to approximately 10,000 people.

Ten other entities across the state also received grants. RUC anticipates construction to begin on this expansion early this year.

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# *Rural areas to get high-speed Internet*

Northeast Mississippi Daily Journal (Tupelo)

September 4, 2015 Friday

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**Section:** STATE AND REGIONAL NEWS

**Length:** 536 words

**Byline:** Zack Orsborn, Northeast Mississippi Daily Journal, Tupelo

## Body

Sept. 04--GUNTOWN -- Within a decade, Public Service Commissioner Brandon Presley wants to see every house and business in Mississippi wired up with high-speed Internet service.

Presley announced Thursday at Guntown City Hall that more than $816,000 in federal funding will be expended by Frontier Communication to expand ***broadband*** service to rural areas in Guntown, Rienzi, Tishomingo and Houlka.

"In the year 2015, high-speed Internet service is just as important for Mississippians as bringing electricity almost was a century ago," he said. "Folks who live in small town and rural areas deserve the same level as the Governor's mansion in downtown Jackson."

The five-year ***project***, hoping to add 2,500 new high-speed Internet customers, should be complete by 2020. It will cost nearly $4 million dollars to complete.

After several years of collecting names and addresses of citizens without high-speed Internet, Presley received $188 million dollars in funding through the FCC for a technological overhaul in the state, including Internet service and cellphone coverage.

"As a state, we get in the top percentages of states throughout the country to have these types of subsidies to phone companies," he said. "We're not getting too much of this money. We're not getting enough."

Citizens asking for affordable high-speed Internet in their area is a top request the commissioner's officer gets daily.

According to a 2013 Census report, Mississippi remains below the national average of users with high-speed Internet, with 62.3 percent of Mississippians having access to the service.

Mike Byrd, area general manager for southern properties at Frontier Communications, knew the task of offering high-speed Internet to more than 2,500 customers in rural areas would be a challenge, but he said it's well worth the risk.

"The construction will start in 2016," he said. "Our engineers are already working on planning and building the network. Within the next two years, we should be 40 percent complete."

When a block of Rienzi's downtown was engulfed in flames last year, Mayor Walter Williams believed faster Internet would have made life easier.

"It used to be TV and radio, but it's so expensive," he said. "With internet, you can reach out and touch people. You can bam, bam, bam, and the word is out."

Currently, Rienzi's school uses dial-up to access the Internet. Williams said he's proud to take back good news to his city.

# *Rural wireless Internet project* complete

The Reporter (Fond du Lac, Wisconsin)

October 25, 2015 Sunday, 1 Edition

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**Section:** A; Pg. 5

**Length:** 420 words

**Byline:** By, Justin Kabbes

## Body

Live in rural Fond du Lac County. Receive Internet access as good as in a big city.

At least that's the assertion of one of the leaders involved in bringing the county's wireless Internet ***project*** to fruition.

Nearly three years in the making, the ***project*** was a public-private partnership between Fond du Lac County and Bug Tussel Wireless, a subsidiary of Hilbert Communications. Bug Tussel has built 11 towers since a deal with the county was made in November 2012 and will also make use of three existing towers for its services. As part of the deal, the county would guarantee its portion of the ***project*** up to $3.35 million.

The county board approved a resolution to work with Bug Tussel and Adams County to leverage Midwest Disaster Area Recovery Bonds for ***broadband*** tower infrastructure build-out in the two counties. In exchange for the financial assistance, the county's public safety agencies will be able to use the towers to communicate among each other, increasingly necessary as emergency responders make use of digital data.

The company specializes in providing wireless Internet to rural areas that are underserved. Steven Schneider, president and CEO of Hilbert Communications, said he is a "country kid" from Kellnersville in rural Manitowoc County and understands that rural areas are often the last to see technological improvements. Better Internet access can empower businesses in those areas, he said.

"You can have the same business operation in downtown El Dorado that you can have in downtown Chicago," Schneider said.

County Executive Al Buechel said rural families need quality Internet access for work and school.

"When their children take home the iPads and the laptops and tablets, they can do their homework and actually have speeds sufficient enough to make that happen," Buechel said.

Schneider said Internet access is increasingly essential for farmers. Data is collected and decisions are made autonomously by machines while farmers are in the field, he said. Those without modern technology are left behind.

"Nobody loses in this scenario," Schneider said. "Everybody is able to do things more effectively and efficiently."

Bug Tussel offers wireless Internet packages from $24.99 for 512 kbps to $64.99 for 4 mbps. The coverage area spans across many rural areas in south-central Wisconsin. It goes as far east as Calumet County and as far west as rural areas near Wisconsin Dells, and includes parts of rural Fond du Lac County.

Contact Justin Kabbes at (920) 907-7925 or at *jkabbes@gannett.com*

## Classification

**Language:** ENGLISH

**Publication-Type:** Newspaper

through the city already, and one that's under construction by Sunesys LLC. Funded by a California Advanced Services Fund grant and available on a open access basis for a fixed price of $8.50 per mile per month, the Sunesys line will connect Salinas to Silicon Valley via Santa Cruz, as well as nking to major fiber access point locally and in Soledad, and providing in-town connections.

Written questions are due on 10 February 2016, there will be a pre-proposal meeting on 9 March 2016 and responses are due on 21 March 2016.

Request for proposal, Salinas Broadband Project, 25 January 2016
City of Salinas Preliminary Broadband Plan, 1 September 2015
Salinas City Council staff report, commercial broadband infrastructure, 15 December 2015
Salinas Broadband Project KML files

0 Comments

# Sanford, Maine Plans Largest Municipal Network in the State

*Fri, October 23, 2015 | Posted by ternste (/users/ternste)*

A lot has happened in Sanford, Maine since our last report (http://muninetworks.org/tags/tags/sanford-me) on their municipal fiber optic network discussions. After a year of deliberations over different proposals, the city recently announced plans to begin building a 32-mile municipal fiber-optic network (http://www.pressherald.com/2015/09/28/sanford-plans-to-built-biggest-municipal-fiber-optic-network-in-maine/).

The city of Sanford is inside York County, situated about 35 miles southwest of Portland. The network will provide connectivity to businesses, government entities, non-profit organizations, and residences in Sanford along a limited route where there is sufficient customer density. City leaders plan to also provide a foundation for future expansion of the network to additional residential areas in the city. The network will be *open access* (/glossary/1#term625), allowing multiple ISPs to provide services via the publicly owned infrastructure.

The city will partner with Maine-based company GWI (Great Works Internet) (http://www.gwi.net/) to operate the network. Readers may recognize GWI as the same company working with Rockport, Maine's (http://www.muninetworks.org/tags/tags/gwi) first community to invest in a municipal fiber network.

Once they complete the buildout, Sanford will be in an elite class of a just few cities nationwide that provide widespread access to 10 *Gbps* (/glossary/1#term14) broadband. It is a bold plan for this city of just over 20,000 in a state that last year ranked 49th in the nation in average broadband speeds (https://www.washingtonpost.com/blogs/govbeat/wp/2015/01/08/how-state-internet-speeds-compare-w th-countries-around-the-world/).

The Sanford Regional Economic Growth Council, a major driving force behind the project p://fdweb.sx.atl.publicus.com/article/20150729/OPINION/150729337), sees the project as critical ,ttp://www.sanfordgrowth.com/uploads/files/Sanford%20Broadband%20Network%20FAQs%2010-1-15.pdf) to their broader economic development efforts:

> *Like the growth council, this project is a public-private partnership stemming from the exploration of a best business model allowing for municipal investment and input while leveraging the strengths and expertise of private sector for-profit business The growth council recognizes the collaboration of the public private partnership as the best means to accomplish the City's economic development strategies*

The new network is also the first major loop in Maine that will connect to the state's existing Three Ring Binder network (http://www.fiercetelecom.com/press-releases/maines-1100-mile-three-ring-binder-high-speed-internet-network-complete). Constructed in 2012, the middle-mile Three Ring Binder spans 1,100 miles around much of Maine. The network was a product of private investments and $25 million in stimulus money from the 2009 American Recovery and Reinvestment Act (https://en.wikipedia.org/wiki/Amer can_Recovery_and_Reinvestment_Act_of_2009).

According to a study commissioned by the Economic Growth Council, the network could generate between $47 million and $192 million in economic benefits over the next decade. The Economic Growth Council and the the city are still seeking funding to build the network, estimated at $1.5 million. The city expects to cover costs through agreements they're pursuing with anchor institutions and savings they'll see by eliminating the cost of leasing lines to city government buildings and schools.

The city is also considering Tax Increment Financing (TIF) (https://en.wikipedia.org/wiki/Tax_increment_financing), a process we described in a previous article (http://muninetworks.org/content/rural-indiana-looks-tax-increment-financing-build-fiber-networks) about another network using the process:

> *"Tax Increment Financing (TIF) is a method of public financing that uses future gains in property or sales taxes within a defined area to subsidize a redevelopment or infrastructure project A local jurisdiction can borrow money up front, build the project, and then use the increased tax receipts it generates to pay off the debt over a period of years The concept is actually pretty simple: capture the value that something will have in the future to build it now "*

A small number of municipal broadband projects have been funded with TIF, but this arrangement can be controversial as it removes substantial property value from the general taxbase. Most choose revenue bonds, interdepartmental loans, or by redirecting savings ined when city can build incrementally thereby avoiding payments for leasing lines from providers. Fortunately, Maine remains one of e states where local communities have the freedom to choose whether or not they invest in Internet networks and how they finance such a project.

At the meeting to announce plans for the network, U.S. Senator from Maine, Angus King, summed up the network's importance to the state's future:

# *Sanford, Maine, to Build State's Biggest Muni Broadband Network*

ICT Monitor Worldwide
September 30, 2015 Wednesday

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**Length:** 748 words

## Body

The city of Sanford plans to start work next year on the state's largest municipal ***broadband network***, building a 32-mile extension of fiber-optic cable off the state's open Three Ring Binder system.

The city announced its plan Monday during a regional ***broadband*** conference featuring panels about economic impacts of ***broadband*** expansion and collaboration between government and private companies to build out ***broadband*** ***networks***. Maine regularly ranks among the slowest states for average ***broadband*** speeds, and some municipalities have taken it upon themselves to fund expansion projects using fiber-optic cable.

Officials in Sanford, Maine's seventh-largest city, said Monday that its $1.5 million project would be eight times larger than any other municipal ***network*** in the state, though other cities and towns are considering similar projects.

″œThe sheer size and scope of this undertaking is impressive, and that's what I love about it,″ Tom Cote, Sanford's mayor, said in a news release. ″œThis is a bold move that will make Sanford a technological standout in the Northeast, and very attractive as a place to start, modernize or move a business. This is a truly visionary step, and absolutely necessary to boost economic growth.″

During a panel at the conference Monday, Maine Public Advocate Tim Schneider said that higher speeds are important for some of the state's far-flung businesses, like The Jackson Laboratory in Bar Harbor and Woodland Pulp in Baileyville. But fast connections at those work sites are not enough, he said.

″œ[Employees] want to be able to monitor things from home, and that's not a reality for them,″ Schneider said, noting that some of those businesses are starting to view quality ***broadband*** access beyond their worksites as important.

Fiber optic ***networks*** are one part of that system, typically acting as a highway to the off-ramp of copper cables or phone lines that run to residential users. Fiber-optic cable has much than the copper lines used to deliver phone and television service, which have been adapted to also provide Internet service.

The Camden-based wireless provider Redzone Wireless, for example, has expanded in the state from fiber-fed cell towers, from which it can reach customers with 4G LTE wireless systems similar to those serving data to smartphones.

Susan Corbett, CEO of the Machias-based Axiom Technologies, said solving Maine's ***broadband*** access challenges will rely on a variety of technologies and providers. The project in Sanford will extend the Three Ring Binder's fiber into York County. Commercial or municipal customers can enter contracts for capacity on that larger open ***network***, which is managed by Maine Fiber Co.

The city said construction on the open access fiber-optic ***network*** could start as early as the spring of 2016, using the Biddeford-based contractor GWI and the Rochester, New Hampshire-based fiber-optic ***network*** contractor NextGen Telecom Services Group. The city said the vendors were selected after soliciting proposals from 22 different companies.

Steve Buck, Sanford's city manager, said that the plan could also accommodate extensions to other nearby towns, including Wells, Kennebunk and Alfred.

For that reason, Buck said, the financial details are still coming together for the project that could also seek state or federal grants for construction.

Under the agreement, GWI has a contract to operate the ***network*** for five years with an option to extend the contract for another five years. The city would own the ***network*** and it will be open to other Internet service providers. Buck said the city will have input on the rates charged to competitive providers who wish to use that ***network*** to serve customers along

# Santa Cruz Fiber Project with Cruzio

*Tue, August 25, 2015 | Posted by hannah (/users/hannah)*

Santa Cruz, California, and its 62,000 people with poor Internet connectivity near Silicon Valley, could be one of the larger municipalities to develop a citywide fiber network. The Santa Cruz Fiber project, which was announced on June 24, 2015 (http://choosesantacruz.com/journal/2015/city-of-santa-cruz-cruzio-internet-explore-gigabit-broadband-network-1), would be an open-access public private partnership (PPP) with the city constructing the network and a private company, Cruzio (http://cruzio.com/), serving as network operator. The plans are preliminary, but the announcement highlighted the project's emphasis on local ownership:

*"A locally-owned, next-generation broadband network operated openly and independently and built for Santa Cruz, [the Santa Cruz Fiber Project] is uniquely tailored to fit the diverse needs of the Santa Cruz community "*

Cruzio is one of the oldest and largest Internet service providers in California. Completely locally-owned and staffed, Cruzio is rooted in Santa Cruz County. The company's name perfectly describes it. *Cruz-* from Santa Cruz and *-io* from I/O (Input/Output, communication between an information processing system and the rest of the world). Our Christopher Mitchell is gushing over the name and says: "I seriously love it."

Fiber is not a new commodity in Santa Cruz. Since 2011, Cruzio has installed fiber in several of its projects, and the fiber has wooed some 30 entrepreneurs and solo practitioners (http://www.santacruzsentinel.com/general-news/20110531/cruzio-high-speed-fiber-internet-available-downtown) to stay in the downtown area at the Cruzio Works, a co-working space. Last November, Central Coast Broadband Consortium commissioned a study of the fiber networks in Santa Cruz (http://www.santacruztechbeat.com/2014/11/03/survey-fiber-santa-cruz/) (paid for with a grant from the California Public Utilities commission). They discovered more fiber under the city of Santa Cruz than in any other city in the counties of Santa Cruz, Monterey, and San Benito. Unfortunately much of it belonged to incumbent providers like Comcast and &T who are loath to lease dark fiber or make affordable fiber connections available to local businesses and residents.

Then, just this past June, Comcast announced the planned rollout of Gigabit Pro near Silicon Valley, but not Santa Cruz (http://www.techtimes.com/articles/47118/20150418/comcast-brings-gigabit-pro-2gbps-internet-service-to-california.htm). Even if Comcast changes its mind, the city has already found a local private partner in Cruzio. This local public-private partnership will almost certainly result in far more benefits to the community than Comcast's Gigabit Pro. This network will be under local control and responsive to community needs.

The intention of the partnership is to pursue an *open access* (/glossary/1#term625) model. At first, the network will be solely a public-private partnership where the City of Santa Cruz will own the network and Cruzio will construct and operate it. During the initial stages, Cruzio will provide the expertise in network management that the city of Santa Cruz does not necessarily have. After a number of years, the network will open up to more service providers in order to promote competition, which is how Westminster has arranged its partnership with Ting (http://muninetworks.org/content/gigabit-muni-fiber-partnership-westminster-and-ting) in Maryland.

The goal of the FTTH project proposal (http://www.tellusventure.com/downloads/santacruz/cruzio_santa_cruz_ftth_proposal_23jun2015.pdf) according to Cruzio is to connect 6,000 households and businesses by the end of the third year. Currently, the construction costs are estimated at $52 million (http://www.govtech.com/dc/articles/Santa-Cruz-Calif-Takes-First-Step-Toward-Next-Gen-Internet.html). The City staff will present a report to city council by the end of this September on the potential Fiber Project's feasibility. Early project estimates suggest the network would be mostly completed by late 2018 (http://www.govtech.com/dc/articles/Santa-Cruz-Calif-Takes-First-Step-Toward-Next-Gen-Internet.html). If the take-rate is feasible, the city intends to back the network with municipal revenue bonds (http://www.govtech.com/dc/articles/Santa-Cruz-Calif-Takes-First-Step-Toward-Next-Gen-Internet.html). Revenue bonds are repaid through the sale of networking services, not through taxes. This ensures that those who use the network will pay for the network. Cruzio is now surveying residents to determine interest and creating an engineering report.

Tweet

**Journal Code:** FP

**Acc-No:** 20150927-FP-School-Internet-services-get-speed-boost-0927-20150927

**Subject:** FIBER OPTICS (90%); EDUCATION SYSTEMS & INSTITUTIONS (77%); SCHOOL DISTRICTS (72%); REGIONAL & LOCAL GOVERNMENTS (63%)

**Industry:** COMPUTER NETWORKS (90%); ***BROADBAND*** (90%); FIBER OPTICS (90%); INTERNET & WWW (90%); EDUCATION SYSTEMS & INSTITUTIONS (77%); PUBLIC LIBRARIES (77%); INTERNET SERVICE PROVIDERS (75%); General

**Geographic:** MINNESOTA, USA (94%)

**Load-Date:** September 27, 2015

**Journal Code:** TW

**Acc-No:** 20160223-TW-Senate-Ed-Panel-Signs-Off-on-2-***Broadband***-Bills-0223-20160223

**Subject:** EDUCATION SYSTEMS & INSTITUTIONS (90%); SCHOOL DISTRICTS (90%); LEGISLATIVE BODIES (89%); LEGISLATION (78%); US STATE GOVERNMENT (78%); CONTRACTS & BIDS (78%); GRANTS & GIFTS (78%); DECISIONS & RULINGS (73%); LITIGATION (72%)

**Company:** CENTURYLINK INC (90%)

**Ticker:** CTL (NYSE) (90%)

**Industry:** EDUCATION SYSTEMS & INSTITUTIONS (90%); ***BROADBAND*** (90%); LITIGATION (72%); General

**Geographic:** COEUR D'ALENE, ID, USA (92%); BOISE, ID, USA (79%); IDAHO, USA (95%); UNITED STATES (79%)

**Load-Date:** February 23, 2016

Cable companies, including Suddenlink, argue that the legislation would make water and sewer ***projects*** a "lesser priority in West Virginia by diverting the state's limited bonding capacity to ***broadband projects***.

"It is our contention that the bill provides limited protections to the Water Development Authority and taxpayers against fiber-optic ***projects*** that cannot sustain themselves economically, said Mark Polen, who's lobbying against the bill for the West Virginia Cable Telecommunications Association.

Cable companies and Frontier, West Virginia's largest Internet provider, say Walters' ***broadband*** bill does not guarantee that a single business or home without high-speed Internet will get ***broadband*** service.

"There is no assurance that bonded ***projects*** will serve rural customers which is where the resources are needed most, said Frontier spokesman Andy Malinoski.

West Virginia ranked 48th in the nation for ***broadband*** access in a recent Federal Communication Commission report.

Walters predicts his ***broadband*** bill will spur economic development and create competition among Internet providers, especially in rural communities.

"You want to diversify West Virginia's economy? Walters asked. "This is the way to do it in the 21st Century.

The bill next moves to the House, where it's expected to receive resistance.

Reach Eric Eyre at *ericeyre@wvgazettemail.com*, 304-348-4869 or follow @ericeyre on Twitter.

## Classification

**Language:** ENGLISH

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**Company:** CEQUEL COMMUNICATIONS HOLDINGS I LLC (50%)

**Industry:** ***BROADBAND*** (91%); CABLE INDUSTRY (89%); INTERNET & WWW (89%); WIRELESS INDUSTRY (78%); FIBER OPTICS (78%); BOND ISSUES (76%); WATER & SEWER SYSTEM CONSTRUCTION (73%); WIRELESS INTERNET ACCESS (73%)

**Geographic:** WEST VIRGINIA, USA (94%)

**Load-Date:** February 19, 2016

The city sought proposals in the spring and received seven responses, ranging from $49,000 to $600,000 and opted to go with a $50,000 contract with Virginia-based Design Nine Inc. for a Broadband Needs Assessment that will get underway soon.

T cope of the Design Nine contract includes:

-- Mapping of existing private and public fiber assets;

-- Assessment of current and projected future residential, business and institutional needs;

-- Recommended short, medium and long-term strategies for ensuring affordable Broadband access to Shaker residents and businesses

-- If a city role is recommended, how to implement and finance it.

A nine-member Broadband Advisory Committee has been established, and Shaker has joined the non-profit group Next Century Cities, and has initiated a series of meetings with existing Internet service providers such as AT&T, Time Warner Cable and Wide Open West (WOW) to better understand their business models.

It all ties in with a paraphrased favorite quote that Mayor Earl Leiken has cited from hockey great Wayne Gretzky: "I never skate to the puck...I skate to get out in front of it."

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# Springfield, Massachusetts Introducing Free Downtown Wifi Plus New Dark Fiber Capacity

*Tue, March 01, 2016 | Posted by ternste (/users/ternste)*

Starting this spring, the City of Springfield, Massachusetts (http://www.springfield-ma.gov/cos/) will offer free municipal *Wi-Fi* (/glossary/1#term29) and new dark fiber capacity to a 7-block area of the city's downtown known as the "Springfield Innovation District (http://www.courbanize.com/springfield-tdi/)."

As Masslive.com reports (http://www.masslive.com/business-news/index.ssf/2016/01/springfield_bringing_free_wifi_high-capa.html), the new dark fiber will create a connection between the city's Springfield Innovation Center (http://www.masslive.com/business-news/index.ssf/2014/10/springfield_innovation_center.html) and an existing network of dark fiber capacity in this part of downtown. The publicly owned fiber currently provides gigabit connectivity to municipal buildings but the city will lease out excess capacity. The new Wi-Fi and dark fiber services are part of a broader plan aimed at boosting economic development and innovation in Springfield, the state's third largest city at 150,000 and the fourth largest city in all of New England.

The project is phase one of a broader plan to soon expand the network even further in order to reach an additional downtown area and all of the city's public parks. Springfield's Chief Information Officer Kevin Kennedy estimates the project's phase 1 total cost between $50,000 and $100,000. While users interested in connecting to the dark fiber will contract with a private provider for Internet service, the city will be the service provider for the free downtown Wi-Fi.

**Preparing for New Tourism, Increased Economic Development, Better Livability**

Over the next two years, the city will welcome a new Union Station transportation center and an MGM Casino in the city's downtown area. With the increased tourism, Kennedy told WAMC Radio (http://wamc.org/post/springfield-bringing-free-public-wi-fi-downtown#stream/0) that it would be "embarrassing" for Springfield not to have free downtown Wi-Fi.

Delcie Bean, the founder of a Springfield IT company and the creator a downtown-based tech training organization called Tech Foundry, believes the new network capacity is essential to attracting people to work, live, and play in downtown Springfield:

> *"Connectivity like this is like what electricity was to an earlier age," he said " It opens up the possibilities for other things to happen because we will have this fundamental base " While pointing at a downtown park near his offices, Bean added, "If we are ever going to activate that park as a public work space, we are going to need to have Wi-Fi Even food trucks use Wi-Fi these days to process credit cards There is just so much you can't do without it "*

Local coverage:

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# Storm Lake, Iowa, Plans Community Anchor Fiber Network

*Tue, July 07, 2015 | Posted by hannah (/users/hannah)*

Storm Lake's city council recently approved a resolution to collaborate with other entities in Buena Vista County (http://www.stormlake.com/articles/2015/06/05/city-okays-13-million-fiber-optic-network) to install a fiber optic network. For this fiber project, the city, school district, and county have forged a partnership to share the costs and reap the benefits of the estimated $1,374,335 project.

As the county seat, the city has 10,600 residents, a waterpark, a college, and a small school district of 2,442. The project's origins started with an effort to improve water and wastewater communication. In exploring their options, the city decided fiber would replace the wireless radios (http://www.stormlake.com/articles/2015/06/10/city-takes-lead-14m-fiber-network). The fiber will also provide more reliable and secure communications for the government and school facilities.

City leaders estimated the cost only for a contract to lay a system of ducts for the fiber. They will also consider trenchless methods of distributing the fiber throughout the city. The cost estimate does not include the hardware needed to connect the fiber at each school and government facility in Storm Lake. The city intends to purchase the fiber in a separate contract in order to minimize costs and ensure quality.

The City Clerk Yarosevich has said that they expect the base project to be completed this year (http://www.stormlakeradio.com/2015/06/04/city-county-school-plan-fiber-network/) with the currently available funds of $700,000-$800,000. The base project has five possible expansions to be completed with additional funding. Construction on the base project is expected to be mostly finished by December 18th 2015.

The collaboration between the City of Storm Lake, Buena Vista County, and the Storm Lake Community School District is anticipated to bring savings to the community. The $1.4 million cost will be split among the three agencies, and the network itself is expected to duce costs for internet, phone, and hardware. By creating the network themselves, they intend to ensure collaboration in the future d save on costs. From the June 1st City Council meeting agenda item (http://stormlake.novusagenda.com/agendapublic/CoverSheet.aspx?ItemID=1159&MeetingID=143):

> *"Over time the investment in this infrastructure will provide reduced costs for internet, phone, and data hardware (such as servers) as we can combine and share resources across the network Additionally, the network will provide the opportunity for the three agencies to work together in the future for technology purposes as well as provide all the entities with a continuity of service options throughout the City "*

An increasing number of communities are taking this approach to fund their networks. Last year, Monticello, IL (http://www.muninetworks.org/tags/tags/monticello-il) used such a partnership to build the city's fiber optic network. Monticello, IL is also a county seat and has 1,600 students, similar to Storm Lake. The city, county and school district chose to share the costs of building the network to increase Internet access and savings. The school district increased its Internet access from 170 *Mbps* (/glossary/1#term18) at $3,500 per month to 200 Mbps at $1,750 per month. As this approach proves to be cost effective, more cities may partner with their school districts and counties to bring better connectivity to their communities.

Tweet

# *Suddenlink customers get super-fast Internet*

Austin American-Statesman (Texas)

October 31, 2015 Saturday, Final Edition

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**Section:** BUSINESS; Pg. B7

**Length:** 375 words

**Byline:** Gary Dinges American-Statesman Staff

## Body

Super-fast ***Internet*** is now available in even more Central Texas homes.

Suddenlink Communications has rolled out 1-***gigabit*** service to homes in Georgetown, Jarrell, Leander and Pflugerville, the company said this week.

It joins several other companies already offering 1-***gigabit Internet*** in parts of the region, including Google Fiber, AT&T, Grande Communications and LiveAir Networks.

Time Warner Cable, the area's dominant cable provider, has increased speeds in recent months but doesn't yet offer 1-***gigabit Internet*** to residential customers.

At 1 ***gigabit***, a user can download 25 songs in one second, a TV show in three seconds and a high-definition movie in less than 36 seconds, according to AT&T.

"Today's announcement is the next step in Operation GigaSpeed, the companywide plan we announced in August of 2014," Suddenlink vice President of Operations Charlotte Strong said in a written statement.

As the national -rollout of Operation GigaSpeed continues, Suddenlink expects virtually all its customers nationwide to have access to 1-***gigabit Internet*** by the end of next year. The project's total cost is close to a quarter of a billion dollars, Suddenlink said.

Google Fiber was the first company to unveil plans for 1-***gigabit Internet*** in Central Texas, doing so in 2013. The first customers didn't come online until 2014, though.

By then, AT&T and Grande already were offering 1-***gigabit*** -service in selected neighborhoods. Both -companies have continued to up- grade networks, adding new homes.

Google Fiber is in some homes in South Austin, and said this summer it would expand to Southeast Austin as part of a multi year rollout in neighborhoods - Google calls them "fiberhoods" - citywide where enough residents commit to subscribing.

In addition to the new ***gigabit*** service, Suddenlink also said it's boosting speeds for existing customers at no additional cost. Subscribers with current download speeds of up to 75 and 100 megabits per second, for example, will be transitioned to download speeds of up to 100 and 200 Mbps, respectively, Suddenlink said.

St. Louis-based Suddenlink says it's the seventh-largest cable provider in the nation, with about 1.5 million commercial and residential customers.

Contact Gary Dinges

at 512-912-5987.

# *Suddenlink launches Gigabit* broadband in selected markets

CommsUpdate

July 15, 2015 Wednesday

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**Length:** 162 words

## Body

Suddenlink, the US cableco that is in the process of being sold to European telecoms group Altice, has reportedly introduced downlink transmission speeds of up to 1Gbps in a handful of selected markets. The first areas to receive ***Gigabit*** connectivity are: Bryan-College Station (Texas); Nixa (Missouri) and Greenville and Rocky Mount (both North Carolina), with a number of other markets expected to follow in the near future.*According to TeleGeography's GlobalComms Database, Suddenlink is the seventh largest cable broadband operator in the United States, with more than 1.2 million residential and commercial customers in Arkansas, Louisiana, North Carolina, Oklahoma, Texas, West Virginia and elsewhere.*In May this year Altice signed a definitive agreement to acquire 70% of the share capital in Suddenlink from existing shareholders BC Partners, CPP Investment Board and Suddenlink's management; Altice will pay USD9.1 billion for the stake. 2002-2015 PriMetrica, Inc.

## Classification

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**Company:** CEQUEL COMMUNICATIONS HOLDINGS I LLC (90%)

**Industry:** CABLE INDUSTRY (78%); BROADBAND (78%); TELECOMMUNICATIONS (78%); TELECOMMUNICATIONS SERVICES (78%)

**Geographic:** ROCKY MOUNT, NC, USA (71%); TEXAS, USA (91%); NORTH CAROLINA, USA (91%); MISSOURI, USA (79%); LOUISIANA, USA (79%); ARKANSAS, USA (78%); UNITED STATES (92%)

**Load-Date:** July 15, 2015

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have previously only had wireless or satellite ***broadband*** options. With Callaway Electric Cooperative building the mainline infrastructure and Kingdom Technologies Solutions managing the customer connections, Callabyte subscribers will be coming online throughout 2016. All Callabyte subscribers will enjoy a world-class symmetrical ***broadband*** experience featuring Carrier Class Wi-Fi enabled by Calix Compass Consumer Connect Plus software, 844G GigaCenters, and the E7-20 Terabit Access System.

"Electric cooperatives have proven to be fiber innovators over the last several years, bringing fiber-based ***broadband*** services into many underserved parts of the country," John Colvin, senior vice president of North America sales at Calix. "Each of these cooperatives has not only demonstrated a commitment to their communities by offering the most advanced ***broadband*** services, but also a commitment to the future health of their cooperative through this exciting business transformation. These communities will find tremendous benefits in terms of economic development and consumer satisfaction."

To learn more about how Calix is enabling electric cooperatives to deliver the ultimate ***broadband*** experience, visit the Calix booth (#1644) at the TechAdvantage Conference &Expo next week in New Orleans.

About Calix

Calix, Inc. (NYSE: CALX) is a global leader in access innovation. Its Unified Access portfolio of ***broadband*** communications access software, systems, and services enables communications service providers worldwide to transform their networks and become the ***broadband*** provider of choice to their subscribers. For more information, visit the Calix website at *www.calix.com*.

This press release may contain forward-looking statements that are based upon management's current expectations and are inherently uncertain. Forward-looking statements are based upon information available to us as of the date of this release, and we assume no obligation to revise or update any such forward-looking statement to reflect any event or circumstance after the date of this release, except as required by law. Actual results and the timing of events could differ materially from current expectations based on risks and uncertainties affecting Calix's business. The reader is cautioned not to rely on the forward-looking statements contained in this press release. Additional information on potential factors that could affect Calix's results and other risks and uncertainties are detailed in its reports on Form 10-Q for the third fiscal quarter of 2015 and Annual Report on Form 10-K for the fiscal year 2014, filed with the SEC and available at *www.sec.gov*. Neila Matheny 707-766-3512 *Neila.matheny@calix.com*

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NYSE closing price for CALX-N Date: 2016/02/09 Closing Price: 7.23

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# *Time to invest in rural broadband* access

Wausau Daily Herald (Wisconsin)

January 24, 2016 Sunday, 1 Edition

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**Section:** NEWS; Pg. A10

**Length:** 655 words

## Body

***Broadband*** Internet access has become an indispensable resource for business and a vital part of our society. Such technologies as cloud-based computing, high-definition audio and video streaming, web conferencing and mobile web access are all designed around Internet speeds of at least 25 megabits per second (MBPS) - and even that's considered a slow connection speed nowadays. The latest 4G data services start at a minimum of 100 MBPS, and the gold standard is "gigabit" service of 1,000 MBPS. I know it's a highly technical topic, but it's important to know that today's innovative businesses and research institutions need this kind of ***broadband*** access to thrive.

Unfortunately, much of Wisconsin lacks access to high-speed ***broadband***. According to the Federal Communications Commission and industry group data, 20 percent of Wisconsin's population is currently underserved. The average ***broadband*** connection in Wisconsin is 23.8 MBPS - far slower than 4G speeds. As you might guess, rural areas of the state are especially starved for ***broadband*** access. For example, more than a third of Jackson County residents lack even minimal ***broadband*** coverage, as do more than half the people in Adams and Waushara counties.

And, until recently, gigabit access has been virtually absent in all of the counties of the 24th Senate District. This past spring, Lemonweir Telecom announced plans to bring gigabit service to the business parks in Sparta and Tomah. We need more of that kind of investment to keep our local businesses competitive and growing.

As the Senate Committee on Economic Development, of which I am ranking member, held a series of listening sessions around the state this past fall, we heard from business leaders in many rural communities that greater access to ***broadband*** is crucial to enable them to attract both new businesses and skilled employees. Making a real investment in expanding ***broadband*** in rural areas would be one of the most important ways we can promote job creation in Wisconsin.

Unfortunately, the efforts of Gov. Walker and the Republican majority in the State Legislature have been notably lacking in this regard. One of the governor's first acts back in 2012 was to turn away nearly $23 million in grant funding that would have allowed the state to expand fiber optic ***broadband*** networks to 82 schools and 385 library facilities. We lost 150 full-time jobs that could have been created by this ***project***. The most recent state budget contains only $6 million spread over four years for ***broadband*** deployment. And as part of their recent jobs package, Senate Republicans are touting a bill that adds no new funding and just allows the $6 million to be spent right away.

The weakness of these efforts is especially apparent when compared to what our neighbors in Minnesota are doing. According to the publication Government Technology, the Minnesota Office of ***Broadband*** Development has already managed $30 million in ***broadband*** investment in that state since it launched in January 2014. The legislature there recently approved a $10 million annual investment in ***broadband*** expansion, and Minnesota Gov. Mark Dayton has proposed investing $100 million of the state's nearly $2 billion budget surplus in bringing ***broadband*** to rural communities. This program has the potential of bringing high-speed Internet access to tens of thousands of rural homes and businesses.

I introduced an amendment to the Republican bill that would have upped Wisconsin's investment in rural ***broadband*** to $10 million annually - the same level that Minnesota is investing now. If Wisconsin is going to become economically competitive with its neighboring states, we have to commit to making a meaningful investment in our ***broadband*** infrastructure, the digital highway that carries the promise of economic growth and higher paying jobs both today and in the future.

# Time Warner Cable Announces Expansion of "TWC MAXX" to Greensboro and Wilmington, N.C.

*Twelve TWC service areas now part of service transformation to bring customers rock-solid network reliability, superfast Internet and new TV experience*

*Data shows increased customer satisfaction in service areas with completed TWC Maxx enhancements*

**Release Date: 07/14/2015**

**NEW YORK, July 14, 2015** – Time Warner Cable (TWC) today announced it will begin transforming the TV and Internet service experience, known as TWC Maxx, in two additional service areas – Greensboro and Wilmington, N.C. – as company research shows increased customer satisfaction where the enhancements have been completed. The service transformation features ultra-fast Internet speeds, state-of-the-art TV services and best-in-class reliability.

"We continue with our commitment to greatly enhance the customer experience area by area with the addition of Greensboro and Wilmington to our effort," said John Keib, Time Warner Cable EVP and COO, Residential Services. "Today's announcement is buoyed by data from our initial 'TWC Maxx' service areas showing there is meaningful improvement in customer satisfaction where we've implemented these enhancements. We're bringing a new experience to our customers, and they are noticing."

Company research from Los Angeles, New York City and Austin, Texas, initial "TWC Maxx" areas where the service transformation is complete, shows customer satisfaction trending upward year over year. Overall across these areas, the research shows improvement in customer satisfaction with Internet speed, as well as reliable Internet and video services.

TWC announced its commitment to transform the customer experience in January 2014. The effort is also underway in Kansas City, Dallas, San Antonio, San Diego, vaii and Charlotte and Raleigh in North Carolina. Approximately 45 percent of Time Warner Cable Internet customers nationwide will have access to TWC Maxx ernet speeds by the end of this year, and more than 50 percent of video subscribers will have access to all-digital video once the transformation in these first twelve service areas is complete.

Over the next month, customers in San Antonio, San Diego/Desert Cities, and Wilmington will receive communications from TWC outlining the next phase of the project as the company begins the process of creating a 100 percent digital network in those areas. The first steps of all-digital transformation will start in Greensboro in mid-September.

The key components of TWC's new customer experience are:

**New Internet Experience for Residential Customers**

The Internet transformation includes speed increases on TWC residential Internet plans at no additional cost, with customers experiencing increases up to six times faster, depending on their current level of Internet service. For example, customers who subscribe to Standard, formerly up to 15 Mbps, will now receive up to 50 Mbps, customers who subscribe to Extreme, formerly up to 30 Mbps, will now receive up to 200 Mbps; and customers who subscribe to Ultimate, formerly up to 100 Mbps, will receive up to 300 Mbps, at no extra charge.

**New TV Experience**

The advanced TV experience includes an Enhanced DVR, which lets customers simultaneously record up to six different programs, and the ability to save 150 hours of high-definition (HD) programming on its 1TB (terabyte) hard drive, which is twice the storage of the largest prior model. Customers will also have access to an all-digital lineup and an expanded On Demand library that has reached 20,000 titles, growing to more than 30,000 by the end of 2015.

**Rock-Solid Network Reliability**

As TWC has committed to new network performance standards companywide, this initiative includes a stringent review and upgrade of every network connection site (referred to as hubs) to ensure optimum service levels are delivered to every neighborhood. Each TWC hub serves thousands of customers with TV, Internet and phone services.

**About Time Warner Cable**

Time Warner Cable Inc. (NYSE: TWC) is among the largest providers of video, high-speed data and voice services in the United States, connecting 15 million customers to entertainment, information and each other. Time Warner Cable Business Class offers data, video and voice services to businesses of all sizes, cell tower backhaul services to wireless carriers and enterprise-class, cloud-enabled hosting, managed applications and services. Time Warner Cable Media, the advertising sales arm of Time Warner Cable, offers national, regional and local companies innovative advertising solutions. More information about the services of Time Warner Cable is available at twc.com, twcbc.com and twcmedia.com.

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# Time Warner Cable Begins Major Internet Speed Increases in Austin and Surrounding Communities

*Faster speeds available to almost 40% of area customers starting June 3*

**Release Date: 05/21/2014**

More than 100,000 Time Warner Cable (TWC) customers in the greater Austin area will have access to Internet speeds up to 300 Megabits per second (Mbps) beginning June 3. Announced in February, all six of the Internet plans offered by TWC will receive an increase in speeds at no additional cost, with speeds up to 6x faster than before. The roll out will continue over the next few months and by the end of this fall, all TWC Internet customers in the greater Austin area will have access to the new speeds. Time Warner Cable will be the only provider to offer ultrafast Internet speeds to all of its residential customers in the market.

As an example, TWC customers who subscribe to the Standard Internet plan, formerly up to 15 Mbps, will now receive up to 50 Mbps, and customers who subscribe to the Ultimate plan, formerly up to 100 Mbps, will receive up to 300 Mbps, at no extra charge. The faster speeds are the result of a nearly $60 million investment by TWC in its Austin area network.

"These significant speed increases will allow all our Internet customers in the greater Austin area to enjoy TWC Internet better," said Kathy Brabson, area vice president of operations for Time Warner Cable in Central Texas.  "Time Warner Cable offers a variety of Internet speed plans and prices to meet the varying needs of our customers. So whether they are simply surfing the Web, streaming video or downloading music and photos, these faster Internet speeds will enhance their experience with Time Warner Cable."

Some customers will need a DOCSIS 3.0 modem to enjoy the full benefits of the speed increases, and they will be contacted by Time Warner Cable about their choices for receiving a new device. Customers who lease their modem from TWC and need a more advanced modem to receive the faster speeds can swap their modem for no additional charge. Communication to the first group of customers about the new speeds and details about equipment is being delivered to homes this week.  'stomers can also visit www.twc.com/speedincrease for more information about how to receive a new modem.

.ne Internet speed upgrade in June will be available to almost 40% of Time Warner Cable Internet customers in the greater Austin area, including customers in these Austin neighborhoods: Downtown Austin, West Campus, Hyde Park, Clarksville, Old Enfield, North Loop, Terrytown, Highland Park West, Central East Austin, Windsor Hills, Copperfield, Springdale Heights, Harris Branch, Edinburgh Gardens, Rollingwood, West Lake Hills, Lost Creek, Barton Creek, Jollyville, Anderson Mill, Brushy Creek, Bull Creek Park, Steiner Ranch, River Place, Canyon Creek, and the Reserve at Twin Peaks, as well as these communities: Manor, Cedar Park, Jonestown, Bee Cave, Kyle, Mountain City, and Uhland. The roll out will continue through the summer, and when completed this fall, the following areas will also have access to these new speeds: Round Rock, Leander, San Marcos, Elgin, Marble Falls, Lockhart, Bastrop, Fredericksburg, Taylor, Smithville, Wimberley, Liberty Hill, Lago Vista, Buda, Kyle, Elroy, and Lakeway.

**More WiFi hotspots added to Austin area**

Time Warner Cable also continues to build out its TWC WiFi® network in the greater Austin area and add more access points for customers. All Business Service customers and all Time Warner Cable Internet customers with Standard Internet or above have access to Time Warner Cable's network of more than 2,000 TWC WiFi® hotspots in Austin and more than 250,000 TWC WiFi and Cable WiFi® hotspots in cities across the U.S. The hotspots can be located by using the free TWC WiFi Finder app. Time Warner Cable will continue to add hotspots in Austin and surrounding communities through 2014.

**Faster Speeds for TWC Business Service Customers**

Time Warner Cable Business Services has also introduced speed tiers of 100 x 10, 200 x 20 and 300 x 20 as new options in its portfolio.  These new options will be available on the same schedule as the residential speed increases and will complement the existing tiers of Internet services available for businesses. TWC Business Services also offers a symmetrical fiber-based Internet service that delivers speeds of up to 10 x 10 gigabits per second for business customers.

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# Time Warner Cable Increases Internet Speeds in First Phase of "TWC MAXX" Launch in Eastern N.C.

**Release Date: 07/14/2015**

**RALEIGH, July 14, 2015** – Time Warner Cable (TWC) has begun the rollout of faster Internet speeds, with the first wave of customers in the Elizabeth City and Murfreesboro areas now having access to Internet speeds of up to 300 Mbps. All six of TWC's Internet plans will see significant increases by the end of the year as part of the "TWC Maxx" launch that features ultra-fast Internet speeds, state-of-the-art TV services and best-in-class reliability.

Our customers have asked for faster Internet speeds and we're now able to provide these faster speeds at no additional cost to all of our customers in the Elizabeth City and Murfreesboro areas," said Darrel Hegar, regional vice president of operations for Time Warner Cable. "This is just the beginning of the benefits customers will see from our TWC Maxx initiative that will enhance our Internet, video and reliability."

Some customers will need to switch out their modems to receive the faster speeds and they have been communicated with via mail, email and phone messages with reminders on how to obtain a new modem.

The key components of TWC's new customer experience with TWC Maxx are:

**New Internet Experience for Residential Customers**

The Internet transformation beginning this month includes speed increases on TWC residential Internet plans at no additional cost, with customers experiencing increases up to six times faster, depending on their current level of Internet service. For example, customers who subscribe to Standard, formerly up to 15 Mbps, will now receive up to 50 Mbps, customers who subscribe to Extreme, formerly up to 30 Mbps, will now receive up to 200 Mbps; and customers who subscribe to Ultimate, formerly up to100 Mbps, will receive up to 300 Mbps, at no extra charge.

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As TWC has committed to new network performance standards companywide, this initiative will include a stringent review and upgrade of every network connection site (referred to as hubs) to ensure optimum service levels are delivered to every neighborhood. Each TWC hub serves thousands of customers with TV, Internet and phone services.

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# Ting Internet is now available in Westminster, MD

JESSE SIMMS | AUGUST 17, 2015
CATEGORY: TING INTERNET, WESTMINSTER
COMMENTS: 0 COMMENTS

We're live!

Gigabit fiber Internet is now officially available in Westminster MD and we couldn't be more excited.

Westminster was the first community in the United States to get rural free delivery postal service, a completely transformative technology in its day. It's only fitting that Westminster become one of the first communities in the United States to get the next generation of Internet access technology and all it entails, too.

If you live in the City of Westminster and are looking to get connected, simply run your address at the top of the Ting Westminster page. If we haven't yet made it to your home or business, don't worry, we're coming. Just hit the "Sign up for updates" button and we'll keep you in the loop. Don't forget to sign an access agreement to allow the City to do the necessary work, too. (Residential access agreement | Business access agreement)

If you haven't had the chance to follow along with our progress, we've put in a lot of work over the past few months up to today's launch. On June 26 we hosted a fiber lighting ceremony with some key industry leaders in attendance (including the FCC's Gigi Sohn). Since then, we've been busy installing all the necessary equipment to light up the whole network and bring crazy fast fiber Internet all across town.

Speaking of which, we should probably get back to work. Great chatting. We'll do it again soon.

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kevin_j_m
After ~2 years on an employer cell phone plan, I'm back on @tingFTW following another seamless porting experience.
2 days ago

# Traffic Project Gets Fiber in the Ground in Winston-Salem, NC

*Tue, August 18, 2015 | Posted by lgonzalez (/users/lgonzalez)*

Winston-Salem (http://www.cityofws.org) struck up a smart deal with the North Carolina Department of Transportation in 2011. Four years later, that agreement allows the city to move forward with its vision for an *I-Net* (/glossary/1#term15).

The Winston-Salem Journal reports (http://www.journalnow.com/news/local/c ty-to-connect-departments-with-fiber-opt c-links/article_23c54fdc-3597-11e5-8915-bfcb01165814.html) that the City Council recently approved $826,522 for networking equipment to light up city owned fiber installed by the NCDOT. The agency has been upgrading area traffic control systems, a project estimated at around $20 million. Winston-Salem took advantage of the opportunity and paid the agency $1.5 million to simultaneously install its own fiber in the state *conduit* (/glossary/1#term305).

*"The city was able to have the network built at only the cost of the fiber," [city information systems department Chief Officer Dennis] Newman said "They (state traffic contractors) are running fiber optic cable all around the city to where all the traffic lights are at This will enable us to connect to all facilities all over the city – fire stations, public safety centers, satellite police stations – right now there are about 40 locations that we have targeted to connect to "*

As is typically the case, Winston-Salem currently pays private providers for connections at each facility but when the new I-Net is up and running, they will be able to eliminate that expense. The new voice and high-speed network will outperform current connections, described in the article as "out-of-date." City officials also told the Journal that some municipal offices have no Internet access at all but will be connected to the new I-Net.

A number of other communities have taken advantage of partnerships with state and federal transportation agencies during traffic signal upgrades. Martin County, Florida (http://muninetworks.org/reports/florida-county-saves-millions-building-its-own-broadband-network); Aurora, 'nois (http://muninetworks.org/content/onlight-aurora-partners-c ty-better-connectivity-illinois); and Arlington, Virginia .dtp://muninetworks.org/content/connectarlington-offer-dark-fiber-services-local-businesses-virginia) saved considerably by collaborating during similar projects.

Tweet

# United States : Indiana Fiber Network, LLC Turns to Ciena for Network Expansion

TendersInfo

April 9, 2015 Thursday

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**Length:** 429 words

## Body

To support its recently announced ***broadband*** expansion project, Indiana Fiber Network, LLC (IFN) has selected converged packet optical and packet networking solutions from Ciena to ensure network resiliency, reduce costs and increase capacity. With Ciena, IFN can rapidly provision new high-speed offerings like Ethernet business services, 10G, and 100G services to its service provider, data center and enterprise customers. Bringing these scalable and secure communication services to users in both urban and rural areas will help drive sustainable economic development across the state.

IFN is owned by a consortium of 20 independent telephone companies and provides a variety of communications services, including fiber-optic ***broadband***, to both urban and rural areas in 52 Indiana counties. Its customers include carriers, service providers, enterprise businesses, government entities, educational and healthcare institutions, as well as independent telephone company members.

One such customer benefiting from IFN s network is Community Health Network, one of Central Indiana s two largest health care providers. With Ciena, IFN connected Community Howard Regional Health and Community s affiliated Kokomo area physicians

sites. Community Health Network relies on its own private Dense Wavelength Division Multiplexing (DWDM) ring to connect its main Indianapolis area campuses. IFN currently provides connectivity to 24 remote locations into CHN data centers.

Architected for network modernization projects like IFN s, Ciena s 5400 and 6500 converged packet optical platforms, equipped with WaveLogic Coherent Optical Processors and integrated switching capabilities, will help IFN address increased bandwidth demands with the highest levels of quality and survivability. Ciena s Flexible Grid Reconfigurable Optical Add-Drop Multiplexer (ROADM) technology simplifies operations and provides greater network flexibility by enabling new wavelengths to be remotely added or dropped, which allows IFN to easily turn up new services as needed.

IFN s flexible network expansion, an example of Ciena s OPn network architecture that enables programmable and scalable network designs, also benefits from Ciena s 3930 and 3916 Service Delivery Switches, 5142 Service Aggregation Switch and OneControl Unified Management System. Together, these powerful solutions and software capabilities allow IFN to automate provisioning and streamline network management for faster service turn-up while supporting mesh restoration, which offers greater resiliency and service availability.

## Classification

**Language:** ENGLISH

**Publication-Type:** Web Publication

# *United States : Jupiter Broadband* brings wireless internet to Florida, Georgia

TendersInfo

January 4, 2016 Monday

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**Length:** 255 words

## Body

Jacksonville, Florida-based, Jupiter ***Broadband***, has just joined a larger group of internet service providers to bring super fast ***broadband*** to rural and suburban Florida and Georgia - and, through a strategic collaboration, to similar communities countrywide.

The creative team at Jupiter, with the help of private-equity financing from Atlanta's Apex Ventures, has invested in and build a large group of local fixed wireless internet towers, dubbed Jupiter BB towers to provide a fixed wireless ***broadband*** solution to customers sited in the areas ranging, from west to east, from Tallahassee, FL to Jacksonville, FL and, from north to south, from Macon, GA to Spring Hill, FL (just north of Tampa).

Serviced by the Jupiter ***Broadband network***, the coverage area is nearly 50,000 square miles.

A co-founder of Jupiter ***Broadband***, Said Ivan Cooper, said,"We are excited to give rural residents and businesses the high speed internet options that, before now, have been severely limited where we have started our operations."

Jupiter's fixed wireless system operates from data links created between homes or businesses and one of the single-access point Jupiter BB towers to provide a cheaper alternative to extending cable or leasing fiber ***networks***.

Jupiter ***Broadband*** has also joined hands with a national satellite ***broadband*** provider, Exede Satellite Internet service, to help bridge the gap between urban communities with access to cable and fiber ***networks*** and rural and suburban communities that often only have dial-up available to them.

## Classification

**Language:** ENGLISH

**Publication-Type:** Web Publication

**Journal Code:** 812

**Subject:** RURAL COMMUNITIES (78%); SUBURBS (78%); ALLIANCES & PARTNERSHIPS (72%)

**Industry:** ***BROADBAND*** (93%); COMPUTER ***NETWORKS*** (90%); WIRELESS INDUSTRY (90%); WIRELESS ***BROADBAND*** (89%); WIRELESS INTERNET ACCESS (89%); SATELLITE ***BROADBAND*** SERVICES (78%); INTERNET SERVICE PROVIDERS (78%); SATELLITE COMMUNICATIONS SERVICES (78%); TELECOMMUNICATIONS SERVICES (78%); PRIVATE EQUITY (77%)

**Geographic:** JACKSONVILLE, FL, USA (90%); TALLAHASSEE, FL, USA (79%); TAMPA, FL, USA (79%); ATLANTA, GA, USA (79%); MACON, GA, USA (79%); FLORIDA, USA (92%); GEORGIA, USA (92%)

Welcome to the Alford Massachusetts official town web site!

# Town Of Alford Massachusetts



« National Grid Community Connection Event Community Cafe »

## Update from your Alford MLP Board

UPDATE FROM YOUR ALFORD MLP BOARD
JANUARY 2016

2015 was a momentous year for the Alford Broadband Committee and its successor, Municipal Lighting Plant Board:

- We received a design study from Matrix Design Group, laying out the proposed broadband network, which has proved very useful in our project.
- By more than 90%, Alford residents approved authorization, and Prop 2½ debt exclusion, for borrowing up to $1.6 million for the installation of a high-speed fiber-to-the-home network. The Town also elected the five-member Municipal Light Plant Board, whose names are below.
- The MLP Board evaluated a number of public/private options for our fiber network and ultimately decided to work closely with the Massachusetts Broadband Institute (MBI), the builder of the so-called "middle mile," the path through which the fiber content will come to Alford.

With this background in place, the Board has moved forward on a number of fronts and has a clear plan towards our goal of providing high-speed Internet and phone service to all Alford residents at reasonable cost. In that vein, we can report the following:

- The MLP Board meets with MBI leadership and staff regularly, and holds weekly open meetings to plan and execute the necessary steps to complete the project.
- The Alford MLP, the Town of Alford, and MBI are close to signing an agreement outlining our intent to work together to perform the necessary pole survey and license application filings with the pole owners, Verizon and National Grid. This work is expected to begin very shortly, so don't be surprised to see signs of preparatory work in town.
- MBI will work with other like-minded communities in parallel with the Alford project, provided that those towns can move forward at our pace. Regardless, MBI has committed to ensure that Alford is first in line.
- We have working groups coordinating regularly with MBI staff in areas such as technology, finance, and legal.
- An MLP Web site is under development to help you keep up with the Board's activities. Until it's formally launched, we'll use the dedicated web page that has been set up at http://townofalford.org/category/mlp/, as well as Alford Assist and circulars such as this one.
- We have continued to work closely with the Alford Select Board, Treasurer, and Finance Committee; the Town's financial adviser; the Town's municipal staff; and bond counsel to ensure that the project goes forward smoothly, under-girded by realistic financial budgets and projections.
- We have filed the necessary papers to borrow the funds to finance the project, and expect the first draw to take place early in 2016.
- Many unknowns in the project, some of which are likely to be out of our control, prevent a precise estimate of project completion. Nonetheless, our timeline at this point is to start the pole-related work necessary before fiber can be installed on the poles in 2016, followed by installation of the necessary electronics and fiber to each premise well into 2017, and aiming towards a late 2017 completion.

The Alford Municipal Light Plan Board:

Tom Doyle
Jim Hall
Bob Lichter, Chair
Joe Nicolosi
Jay Weintraub

This entry was posted on January 13, 2016, 1:16 pm and is filed under Municipal Lighting Plant. You can follow any responses to this entry through RSS 2.0. Both comments and pings are currently closed.

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AT&TNEWSROOM

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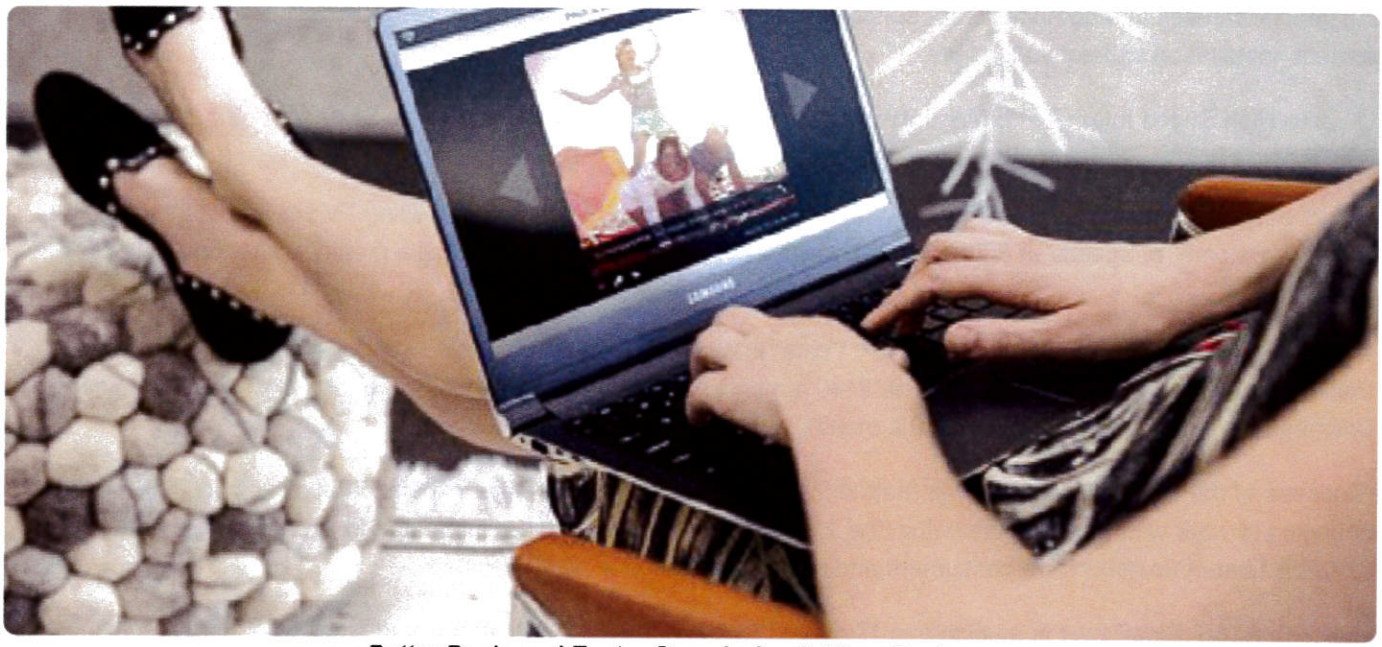
# Upgraded U-verse with AT&T GigaPower offers launch in Chicago Area

CONSUMER / Chicago, Illinois, Sep 29, 2015



*Better Deals and Faster Speeds Await More Customers*

**CHICAGO, Sept. 29, 2015** – Faster speeds and lower prices are now available for U-verse® with AT&T GigaPower℠ customers in Chicago, Elgin, Oswego, Plainfield, Skokie, Yorkville and surrounding communities.[1]

The AT&T[2] GigaPower network provides customers access to the fastest Internet available from AT&T, featuring speeds up to 1 gigabit per second.[3] And today, AT&T announced it is tripling Internet speeds to 300 megabit per second for all current 100 megabit per second customers. The speed upgrade will occur automatically by October 15.

Additionally, speeds on the AT&T GigaPower network will now start as low as $80 a month for 300Mbps, and as low as $110 a month for up to 1Gbps.[4] Existing customers will see the new lower price reflected on their next bill.

"Our customers love the incredibly fast Internet speeds we offer with AT&T GigaPower," said Shelley Goodman, AT&T Illinois vice president and general manager. "We're excited to bring the faster speeds to even more customers in the greater Chicago metro area."

The new Internet service gives customers some of the fastest online speeds available anywhere. Customers can

[3] Internet speed claims represent maximum network service capability speeds. Actual customer speeds may vary and are not guaranteed. Actual speeds vary based on factors including site traffic, content provider server capacity, internal network management factors, customer device capabilities and use of other U-verse services. Max speeds may not be realized if 2 or more HD shows viewed at same time. For more info, go to www.att.com/speed101

[4] U-verse with AT&T GigaPower Premier offer is available with agreement from customer to participate in AT&T Internet Preferences. Other equipment fees may apply. AT&T may use Web browsing information, like the search terms entered and the Web pages visited, to provide customers with relevant offers and ads tailored to their interests. Different prices and offers may apply for small businesses.

[5] Speed/time estimates are examples.

**About AT&T**

AT&T Inc. (NYSE:T) helps millions around the globe connect with leading entertainment, mobile, high speed Internet and voice services. We're the world's largest provider of pay TV. We have TV customers in the U.S. and 11 Latin American countries. In the U.S., our wireless network offers the nation's strongest LTE signal and the most reliable 4G LTE network. We offer the best global wireless coverage*. And we help businesses worldwide serve their customers better with our mobility and secure cloud solutions.

Additional information about AT&T products and services is available at http://about.att.com. Follow our news on Twitter at @ATT, on Facebook at http://www.facebook.com/att and YouTube at http://www.youtube.com/att.

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Reliability and signal strength claims based on nationwide carriers' LTE. Signal strength claim based ONLY on avg. LTE signal strength. LTE not available everywhere.

*Global coverage claim based on offering discounted voice and data roaming; LTE roaming; voice roaming; and world-capable smartphone and tablets in more countries than any other U.S. based carrier. Coverage not available in all areas. Coverage may vary per country and be limited/restricted in some countries.

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*commercial development areas where access to available fiber can be used to attract businesses that require large bandwith The City could leverage the community fiber optic network for economic development incentives or use it to help lower the cost of operating a business in UA, thereby providing a competitive advantage*

In one case, the city will be providing dark fiber to a new Ohio State University Medical facility that is currently under construction, Talley told us. That arrangement is a condition of a $500,000 grant that the state of Ohio has given Upper Arlington to build its fiber-optic network. Dark fiber, fiber-optic cable currently not in use, is particularly important for medical centers because it offers more control over network quality and allows for very fast networks at affordable budgets.

Also the city will be entering into an IRU (Indefeasible Right of Use) with the fiber construction contractor Thayer, that will enable them to market and sublease fiber strands by other third parties, he said.

Given the direction of the Upper Arlington broadband network, the community will be getting a system that will have many potential benefits but little risk with the city serving as its anchor tenant.

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(89%); TELECOMMUNICATIONS SERVICES (89%); INTERNET & WWW (89%); BANDWIDTH (78%); STREAMING MEDIA (78%); FIBER OPTICS (77%); CUSTOMER ACQUISITION STRATEGY (69%); PHOTO & VIDEO SHARING (68%); MARKET SHARE (67%)

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# U-verse with AT&T GigaPower Expands to Farmers Branch, Frisco, Plano, Mequite and Surrounding Areas

CONSUMER / Dallas, TX, Jun 25, 2015

**DALLAS, June 25**– Today, AT&T* launched U-verse® with AT&T GigaPower℠ to residential and small business locations in parts of Farmers Branch, Frisco, Plano, Mesquite and surrounding communities.** Customers in these areas have a new choice for ultra-fast Internet access from AT&T – delivering the speed customers need to power all of their devices and connect them to the content that matters most.

Ultra-fast Internet speeds up to 1 gigabit per second can improve the customer experience for consumers and small businesses using the network to connect to the cloud, videoconferencing, online gaming or for other services. Customers can download 25 songs in less than a second or their favorite HD movie in less than 36 seconds.***

U-verse with AT&T GigaPower customers also get high-speed Internet with 99.9 percent reliability and the fastest, most powerful Wi-Fi signal through an upgraded residential gateway that takes advantage of the latest in Wi-Fi technology. The new gateway connects more devices with faster speeds from nearly anywhere in the home or business.

Customers who subscribe to U-verse with AT&T GigaPower will continue to have access to award-winning U-verse

*more info, go to www.att.com/speed101*

***** U-verse with AT&T GigaPower Premier offer is available with agreement from customer to participate in AT&T Internet Preferences. Other equipment fees may apply. AT&T may use Web browsing information, like the search terms entered and the Web pages visited, to provide customers with relevant offers and ads tailored to their interests.*

**About AT&T**

AT&T Inc. (NYSE:T) helps millions of people and businesses around the globe stay connected through leading wireless, high-speed Internet, voice and cloud-based services. We're helping people mobilize their worlds with state-of-the-art communications, entertainment services and amazing innovations like connected cars and devices for homes, offices and points in between. Our U.S. wireless network offers customers the nation's strongest LTE signal and the nation's most reliable 4G LTE network. We offer the best global wireless coverage.* We're improving how our customers stay entertained and informed with AT&T U-verse® TV and High Speed Internet services. And businesses worldwide are serving their customers better with AT&T's mobility and highly secure cloud solutions.

Additional information about AT&T products and services is available at http://about.att.com. Follow our news on Twitter at @ATT, on Facebook at http://www.facebook.com/att and YouTube at http://www.youtube.com/att.

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Reliability and signal strength claims based on nationwide carriers' LTE. Signal strength claim based ONLY on avg. LTE signal strength. LTE not available everywhere.

*Global coverage claim based on offering voice and data roaming in more countries than any other U.S. based carrier, and offering the most wireless smartphones and tablets that work in the most countries.

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services. For example, they can watch and record up to five HD programs at the same time. AT&T GigaPower subscribers will also be able to record and store more of their favorite shows--up to 900 hours of SD or 330 hours of HD programming. Customers can access the AT&T U-verse App on more than 30 smartphones and tablets to watch more than 230 live TV channels in their home, and up to 150 live TV channels while on the go - that's more live TV channels on the go than cable. Customers can also stream video on-demand, schedule DVR recordings, and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $120 a month, or speeds at 100Mbps as low as $90 a month, with a one year price guarantee.****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $150 a month, or speeds at 100Mbps and qualifying TV service as low as $120 a month, with a one year price guarantee.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $180 a month, or speeds at 100Mbps with qualifying TV service and Unlimited U-verse Voice as low as $150 a month, with a two year price guarantee.

"We are proud to be one of the first cities to launch the AT&T GigaPower network," said Atlanta Mayor Kasim Reed. "Internet access is essential to participate in the 21st century economy. The AT&T GigaPower network will expand high speed internet service in our communities, help our city bridge the digital divide, and strengthen our economy."

"We're excited to launch in these cities as the first locations where we will offer ultra-high speeds to local consumers and employers in the area," said Beth Shiroishi, president of AT&T Georgia. "The AT&T GigaPower network will help encourage economic development in the area by facilitating a new wave of innovation through enhanced opportunities for education, health, research and small business growth."

"The announcement that AT&T is launching gigabit speed Internet service to Sandy Springs is terrific news for economic development," said Sandy Springs Mayor Rusty Paul. "It brands Sandy Springs and our region as the leading edge of a technology revolution. It gives our companies and employees a technology that will spur operational efficiencies. And given our tech savvy population, it will open the door to innovations in products and services heretofore unimagined or not available without significant expense."

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T is considering expanding its all-fiber network to up to 100 cities and municipalities across 25 markets. U-verse with AT&T GigaPower is currently available to many consumers and small businesses across parts of nine markets – Atlanta, Austin, Cupertino, Dallas, Fort Worth, Houston, Kansas City, Raleigh-Durham and Winston-Salem. AT&T has already announced plans to deliver AT&T GigaPower in parts of eight more markets – Charlotte and Greensboro, N.C.; Chicago; Jacksonville, Fla.; Miami; Nashville, Tenn.; St. Louis and San Antonio.

Frost & Sullivan recently recognized AT&T for its leadership in high-speed Internet services, awarding the company the 2015 North American Competitive Strategy and Innovation Leadership of the Year Award for Broadband. The analyst firm praised AT&T for its "aggressive pursuit of higher bandwidth access" for customers through its AT&T GigaPower network initiative.

Additionally, AT&T has committed that upon approval of its proposed acquisition of DIRECTV, the company will expand the AT&T GigaPower network to an additional 2 million customer locations. All of these 2 million locations are over and above what the company announced in 2014.

AT&T has invested in Georgia communications networks, people and local communities for 136 years. Between 2012 through 2014, AT&T invested $2.8 billion in its best-in-class wireless and wired networks in Atlanta, driving a wide range of upgrades to enhance reliability, coverage, speed and performance for residents and business

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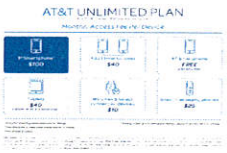


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gateway that takes advantage of the latest in Wi-Fi technology. The new gateway lets you connect more devices with faster speeds from nearly anywhere in your home or business.

Customers who subscribe to U-verse with AT&T GigaPower will continue to have access to award-winning TV services. For example, they can watch and record up to five HD programs at the same time. AT&T GigaPower subscribers will also be able to record and store more of their favorite shows--up to 900 hours of SD or 330 hours of HD programming. Customers can access the AT&T U-verse App on more than 30 smartphones and tablets to watch more than 220 live TV channels in their home, and up to 130 live TV channels while on the go - that's more live TV channels on the go than cable. Customers can also stream video on-demand, schedule DVR recordings, and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $110 a month, or speeds at 300Mbps as low as $80 a month, with a one year price guarantee.****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $150 a month, or speeds at 300Mbps and qualifying TV service as low as $120 a month, with a one year price guarantee.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $180 a month, or speeds at 300Mbps with qualifying TV service and Unlimited U-verse Voice as low as $150 a month, with a two year price guarantee.

"We're thrilled to launch U-verse with AT&T GigaPower in the Houston area and deliver ultra high-speed Internet access and services to local consumers and businesses," said Dave Nichols, president of AT&T Texas. "The AT&T GigaPower network will help drive a new wave of technology growth, innovation and economic development and will open new opportunities for Houston businesses to better utilize next-generation apps and technologies that empower them to remain competitive in our interconnected, global economy."

"We've moved quickly to increase competition for blazing-fast Internet speeds, and we're really excited about the wealth of new and enhanced opportunities in education, health, research and small business growth this network will deliver," said Larry Evans, vice president and general manager, AT&T South Texas. "And, this is just the beginning. We look forward to continuing to expand our AT&T GigaPower network in the Houston area where there are strong investment cases and receptive customers."

"This expansion of U-verse with AT&T GigaPower is great news for Houston—especially for our students," said Houston Mayor Pro-Tem Ed Gonzales. "More access to high-speed broadband allows our students to better connect to research and educational applications—empowering them to think beyond the walls of their local classrooms and libraries and better preparing them for the opportunities of the future."

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T is considering expanding its all-fiber network to up to 100 cities and municipalities across 25 markets. U-verse with AT&T GigaPower is currently available to many consumers and small businesses across parts of eight markets – Austin, Cupertino, Dallas, Fort Worth, Houston, Kansas City, Raleigh-Durham and Winston-Salem. AT&T has already announced plans to deliver AT&T GigaPower in parts of nine more markets – Atlanta; Charlotte and Greensboro, N.C.; Chicago; Jacksonville, Fla.; Miami; Nashville, Tenn.; St. Louis and San Antonio.

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U-verse with AT&T GigaPower customers also get high-speed Internet with 99.9 percent reliability and the fastest, most powerful Wi-Fi signal through an upgraded residential gateway that takes advantage of the latest in Wi-Fi technology. The new gateway connects more devices over Wi-Fi with faster speeds from nearly anywhere in the home or business.

Customers who subscribe to U-verse with AT&T GigaPower will continue to have access to award-winning U-verse TV services. For example, they can watch and record up to five HD programs at the same time. AT&T GigaPower subscribers will also be able to record and store more of their favorite shows--up to 900 hours of SD or 330 hours of HD programming. Customers can access the AT&T U-verse App on more than 30 smartphones and tablets to watch more than 230 live TV channels in their home, and more than 170 live TV channels while on the go -- that's more than twice as many live TV channels on the go than cable. Customers can also stream video on demand, schedule DVR recordings, and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include a three-year price guarantee and waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $70 a month.*****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $120 a month.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $150 a month.

"We're excited to launch our ultra-high-speed AT&T GigaPower network in the Charlotte area. Residents and small businesses want the latest technologies and AT&T is delivering," said Venessa Harrison, AT&T North Carolina president. "The AT&T GigaPower network will help encourage economic growth by facilitating a new wave of innovation through enhanced opportunities for education, health, research and small business growth."

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T plans to expand its 100 percent fiber network in up to 25 markets. U-verse with AT&T GigaPower has officially launched in parts of the Atlanta, Austin, Charlotte, Chicago, Cupertino, Dallas, Fort Worth, Houston, Nashville, Kansas City, Raleigh-Durham and Winston-Salem markets. Plans have also been announced to launch AT&T GigaPower in parts of the Greensboro, Jacksonville, Miami, St. Louis and San Antonio markets.

Additionally, AT&T has committed that upon approval of its proposed acquisition of DIRECTV, the company will expand the AT&T GigaPower network to an additional 2 million customer locations. All of these 2 million locations are over and above what the company announced in 2014.

Frost & Sullivan recently recognized AT&T for its leadership in high-speed Internet services, awarding the company the 2015 North American Competitive Strategy and Innovation Leadership of the Year Award for Broadband. The analyst firm praised AT&T for its "aggressive pursuit of higher bandwidth access" for customers through its AT&T GigaPower network initiative.

AT&T has invested in North Carolina communications networks, people and local communities for 136 years. Between 2012 through 2014, AT&T invested more than $1.6 billion in its best-in-class wireless and wired networks in North Carolina, driving a wide range of upgrades to enhance reliability, coverage, speed and performance for residents and business customers. AT&T employs more than 6,700 people across the state.

For more information on U-verse with AT&T GigaPower, or to check availability, please visit att.com/gigapower.

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Ultra-fast Internet speeds up to 1 gigabit per second can improve the customer experience for consumers and small businesses using the network to connect to the cloud, videoconferencing, online gaming or for other services. Customers can download 25 songs in less than a second or their favorite HD movie in less than 36 seconds.****

U-verse with AT&T GigaPower customers also get high-speed Internet with 99.9 percent reliability and the fastest, most powerful Wi-Fi signal through an upgraded residential gateway that takes advantage of the latest in Wi-Fi technology. The new gateway connects more devices over Wi-Fi with faster speeds from nearly anywhere in the home or business.

Customers who subscribe to U-verse with AT&T GigaPower will continue to have access to award-winning U-verse TV and Voice services. For example, they can watch and record up to five HD programs at the same time. AT&T GigaPower subscribers will also be able to record and store more of their favorite shows--up to 900 hours of SD or 330 hours of HD programming. Customers can access the AT&T U-verse App on more than 30 smartphones and tablets to watch more than 240 live TV channels in their home, and more than 200 live TV channels while on the go -- that's more than twice as many live TV channels on the go than cable. Customers can also stream video on demand, schedule DVR recordings, and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $120 a month, or speeds at 100Mbps as low as $90 a month, with a one year price guarantee.*****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $150 a month, or speeds at 100Mbps and qualifying TV service as low as $120 a month, with a one year price guarantee.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $180 a month, or speeds at 100Mbps with qualifying TV service and Unlimited U-verse Voice as low as $150 a month, with a two year price guarantee.

"We're excited to deliver our ultrafast Internet service to residents and small businesses in Chicago," said Paul La Schiazza, AT&T Illinois President. "AT&T continues to deliver the new technology that customers want today, and we're moving quickly to educate potential customers in Chicago about the capabilities of AT&T's high-speed Internet and best-in-class television services"

Consumers and small businesses interested in learning more about the service and availability, can stop by the AT&T Michigan Ave Flagship Store (600 N Michigan Avenue, Chicago, IL 60611) on Saturday, July 18 from 12 to 4 pm. Attendees will have a chance to win a Chicago Blackhawks or Chicago Bulls "speed-painting" that is crafted right before their eyes, take home a customized screen printed t-shirt with a Blackhawks or Bulls design or win items autographed by local sports-stars. U-verse and AT&T GigaPower representatives will also be on site to answer questions or provide additional information.

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T plans to expand its 100 percent fiber network in up to 25 markets. U-verse with AT&T GigaPower has officially launched in parts of the Atlanta, Austin, Charlotte, Chicago, Cupertino, Dallas, Fort Worth, Houston, Kansas City, Nashville, Raleigh-Durham and Winston-Salem markets. Plans have also been announced to launch AT&T GigaPower in parts of the Greensboro, Jacksonville, Miami, St. Louis and San Antonio markets.

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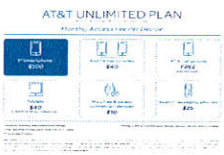


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- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $120 a month, or speeds at 100Mbps as low as $90 a month, with a one year price guarantee.*****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $150 a month, or speeds at 100Mbps and qualifying TV service as low as $120 a month, with a one year price guarantee.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $180 a month, or speeds at 100Mbps with qualifying TV service and Unlimited U-verse Voice as low as $150 a month, with a two year price guarantee.

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T plans to expand its 100 percent fiber network in up to 25 markets. U-verse with AT&T GigaPower has launched in parts of 14 markets – Atlanta, Austin, Charlotte, Chicago, Cupertino, Dallas, Fort Lauderdale, Fort Worth, Houston, Kansas City, Miami, Nashville, Raleigh-Durham and Winston-Salem markets. Plans have also been announced to launch AT&T GigaPower in parts of four additional markets – Greensboro, Jacksonville, St. Louis and San Antonio.

Additionally, AT&T has committed that upon approval of its proposed acquisition of DIRECTV, the company will expand the AT&T GigaPower network to an additional 2 million customer locations. All of these 2 million locations are over and above what the company announced in 2014.

AT&T has invested in Florida communications networks, people and local communities for 135 years. Between 2012 through 2014, AT&T invested nearly $2.8 billion in its Florida wireless and wireline networks. AT&T employs more than 15,000 people across the state.

For more information on U-verse with AT&T GigaPower, or to check availability, please visit att.com/gigapower.

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in parts of Allen, Arlington, Dallas, Euless, Fairview, Farmers Branch, Fort Worth, Frisco, Granbury, Highland Park, Irving, McKinney, Mesquite, North Richland Hills, Plano, University Park, Weatherford, Willow Park and surrounding communities.

U-verse with AT&T GigaPower offers Internet speeds up to 1 gigabit per second. It can improve the experience for customers when connecting to the cloud, doing a videoconference, playing online games and more.

The high-speed Internet service is 99.9 percent reliable. It offers the fastest, most powerful Wi-Fi signal with an upgraded home gateway using the latest technology. The new gateway connects more devices with faster speeds from nearly anywhere in the home or business.

Customers who sign up for AT&T GigaPower will also have access to award-winning U-verse TV and Voice services. New customers can watch and record up to six HD programs at the same time. AT&T GigaPower customers will also be able to record and store more of their favorite shows – up to 900 hours of SD or 330 hours of HD programming.

Customers can use the AT&T U-verse App on smartphones and tablets to watch more than 250 live TV channels in their home and more than 210 live TV channels while on the go. Customers can also stream video on demand, schedule DVR recordings and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $110 a month, or speeds at 300Mbps as low as $80 a month, with a one year price guarantee.[4]
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $150 a month, or speeds at 300Mbps and qualifying TV service as low as $120 a month, with a one year price guarantee.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $180 a month, or speeds at 300Mbps with qualifying TV service and Unlimited U-verse Voice as low as $150 a month, with a two year price guarantee.

The success of the first AT&T GigaPower market in Austin, Texas led to a major expansion in 2014. AT&T plans to expand its 100 percent fiber-optic network in up to 25 markets. The company has launched U-verse with AT&T GigaPower in 15 markets. AT&T has announced plans to offer AT&T GigaPower in parts of the Jacksonville, St. Louis and San Antonio markets.

AT&T will continue to roll out its fastest Internet services over its all-fiber network to reach more than 14 million residential and commercial locations.

AT&T has invested in Texas communications networks, people and local communities for 136 years, and employs more than 36,000 people across the state.

For more information on U-verse with AT&T GigaPower, or to check availability, please visit att.com/gigapower.

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# Upgraded U-verse with AT&T GigaPower Offers Launch in Nashville Area

CONSUMER / Nashville, Tennessee , Sep 29, 2015

*Better Deals and Faster Speeds Await More Customers*

**NASHVILLE, Sept. 29, 2015** – Faster speeds and lower prices are now available for U-verse® with AT&T GigaPower℠ customers in parts of Clarksville, Franklin, Lebanon, Murfreesboro, Nashville, Smyrna and surrounding communities.[1]

Speeds up to 1Gbps on the AT&T[2] GigaPower network will now start as low as $70 a month.[3] Customers currently subscribing to U-verse with AT&T GigaPower with speeds at 100 megabits per second and up to 1 gigabit per second will see the new lower price on their next bill. Existing 100Mbps customers will also see their Internet speeds upgraded to up to 1 gigabit automatically by October 15.

"Our customers love the incredibly fast Internet speeds we offer with AT&T GigaPower," said Kristi Turner, AT&T Tennessee vice president and general manager. "We're excited to bring the service to even more customers in the Nashville metro area."

The new Internet service gives customers some of the fastest online speeds available anywhere. Customers can download 25 songs in less than a second, a TV show in three seconds or their favorite HD movie in less than 36 seconds.[4]

U-verse with AT&T GigaPower offers Internet speeds up to 1 gigabit per second.[4] It can improve the experience for

[4] Speed/time estimates are examples. Internet speed claims represent maximum network service capability speeds. Actual customer speeds may vary and are not guaranteed. Actual speeds vary based on factors including site traffic, content provider server capacity, internal network management factors, customer device capabilities and use of other U-verse services. Max speeds may not be realized if 2 or more HD shows viewed at same time. For more info, go to www.att.com/speed101

**About AT&T**

AT&T Inc. (NYSE:T) helps millions around the globe connect with leading entertainment, mobile, high speed Internet and voice services. We're the world's largest provider of pay TV. We have TV customers in the U.S. and 11 Latin American countries. In the U.S., our wireless network offers the nation's strongest LTE signal and the most reliable 4G LTE network. We offer the best global wireless coverage*. And we help businesses worldwide serve their customers better with our mobility and secure cloud solutions.

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Reliability and signal strength claims based on nationwide carriers' LTE. Signal strength claim based ONLY on avg. LTE signal strength. LTE not available everywhere.

*Global coverage claim based on offering discounted voice and data roaming; LTE roaming; voice roaming; and world-capable smartphone and tablets in more countries than any other U.S. based carrier. Coverage not available in all areas. Coverage may vary per country and be limited/restricted in some countries.

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new technologies.

The AT&T GigaPower network offers ultra-fast Internet speeds up to 1 gigabit per second to improve the customer experience for consumers and small businesses connecting to the cloud, videoconferencing, online gaming and more. Customers can also download 25 songs in less than a second or their favorite HD movie in less than 36 seconds.***

"AT&T has played a critical role in bringing high-speed connectivity to the Research Triangle," said Tracy Futhey, vice president for Information Technology at Duke University and chair of the North Carolina Next Generation Network Steering Committee. "We look forward to continuing to work with AT&T to bring new entertainment and connectivity options to area residents and businesses."

The launch of AT&T GigaPower in Durham marks a significant milestone in delivering service to all six NCNGN communities. The service previously launched in Cary, Carrboro, Chapel Hill, Raleigh and Winston-Salem.

"Our engineers and technicians have been hard at work for many months designing and building a new 100-percent-fiber network in Durham," said Venessa Harrison, President of AT&T North Carolina. "We are thrilled that their efforts begin to pay off today for customers and the community as we launch AT&T GigaPower in Durham."

U-verse with AT&T GigaPower customers also get high-speed Internet with 99.9 percent reliability and the fastest, most powerful Wi-Fi signal. Enhancements are made available through an upgraded residential gateway that takes advantage of the latest in Wi-Fi technology. The new gateway connects more devices over Wi-Fi with faster speeds from nearly anywhere in the home or business.

Customers who subscribe to U-verse with AT&T GigaPower will continue to have access to award-winning U-verse TV and Voice services. For example, they can watch and record up to six HD programs at the same time. AT&T GigaPower subscribers will also be able to record and store more of their favorite shows--up to 900 hours of SD or 330 hours of HD programming. Customers can access the AT&T U-verse App on smartphones and tablets to watch more than 240 live TV channels in their home, and more than 200 live TV channels while on the go -- that's more than twice as many live TV channels on the go than cable. Customers can also stream video on demand, schedule DVR recordings, and access other features from the U-verse app.

Consumers in eligible areas can choose from a variety of plans. AT&T offers single, double and triple play bundles, so customers can select a combination of services to fit their needs. The packages below include a three-year price guarantee and waivers of equipment, installation and activation fees.

- U-verse High Speed Internet Premier: Internet speeds up to 1Gbps starting as low as $70 a month.*****
- U-verse High Speed Internet Premier + TV: Internet speeds up to 1Gbps and qualifying TV service starting as low as $120 a month.
- U-verse High Speed Internet Premier + TV + Voice: Internet speeds up to 1Gbps with qualifying TV service and Unlimited U-verse Voice starting as low as $150 a month.

The success of the first AT&T GigaPower market in Austin led to a major expansion beginning in 2014. AT&T plans to expand its 100 percent fiber network in up to 25 markets. U-verse with AT&T GigaPower has officially launched in 15 markets, and plans have been announced to launch AT&T GigaPower in parts of the Jacksonville, St. Louis and San Antonio markets.

U-verse with AT&T GigaPower also launched today in parts of Greensboro. Other communities in North Carolina where AT&T GigaPower is available include Apex, Carrboro, Cary, Chapel Hill, Charlotte, Morrisville, Raleigh and Winston-Salem.

Additionally, AT&T has committed that upon approval of its proposed acquisition of DIRECTV, the company will expand the AT&T GigaPower network to an additional 2 million customer locations. All of these 2 million locations are over and above what the company announced in 2014.

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"The availability of advanced communications infrastructure impacts a region's quality of life and its prospects for vibrant economic growth," said Marlene Sanford, president of the Triad Real Estate & Building Industry Coalition (TREBIC). "We appreciate the leadership of Mayor Vaughan and the City Council in creating an environment that welcomes investments in advanced technologies, like the AT&T GigaPower network."

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"Residents and small businesses want the latest technologies and AT&T is delivering," said Venessa Harrison, president of AT&T North Carolina. "The AT&T GigaPower network will help encourage economic development by facilitating a new wave of creativity and innovation through enhanced opportunities for education, health, research and small business growth."

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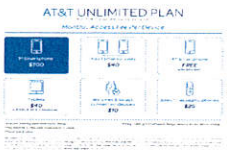
Frost & Sullivan recently recognized AT&T for its leadership in high-speed Internet services, awarding the company the 2015 North American Competitive Strategy and Innovation Leadership of the Year Award for Broadband. The analyst firm praised AT&T for its "aggressive pursuit of higher bandwidth access" for customers through its AT&T GigaPower network initiative.

AT&T has invested in North Carolina communications networks, people and local communities for 136 years.

Jordan Spieth at the AT&T Pebble Beach Pro-Am on the..

GigaPower Expands in Four New Markets

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High-speed fiber could put Valpo on same playing field as major cities

'Valparaiso Fiber Project' could become reality

Robert Earnshaw

Rob covers urban affairs and other matters in Valparaiso and sometimes beyond. Previously he covered Hammond, Gary and East Chicago. He's also written for Inspired Living magazine and pens a culture blog for The Times.

## Currents

Gallery: White Sox Spring Training

Gallery: March 2016 editorial cartoons

# *VEA Launches* Optical Fiber Broadband Service in Southwestern Nevada

ICT Monitor Worldwide

October 21, 2015 Wednesday

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**Length:** 461 words

## Body

Valley Electric Association, Inc. (VEA), a member-owned electric cooperative headquartered in Pahrump, Nevada, recently hosted a ribbon-cutting ceremony to commemorate the ***launch*** of its optical fiber broadband communications service in southwestern Nevada at the Pahrump Community Library. The library is the first facility to receive service through VEA's advanced optical fiber network. VEA will eventually provide broadband service across its entire service territory, which spans 6,800 square miles, offering download speeds of up to 1 ***gigabit*** per second.

The event included presentations from VEA leaders, Nevada Assemblyman James Oscarson, Rep. Cresent Hardy, Zachary Heit from the Office of Governor Brian Sandoval, Faraz Khan from Sen. Harry Reid's Office and Pahrump Community Library Director Susan Wonderly, in addition to a special video message from Reid.

The event served to raise awareness of VEA's efforts to provide high-quality broadband service across its service area while building Nevada's first all-fiber community. The first phase of the broadband initiative will include a significant portion of Pahrump, in addition to Fish Lake Valley. Construction is currently underway for the first phase of this project. Residential prices will start at $49.95 per month, with service provided through VEA subsidiary Valley Communications Association.

VEA connected the Pahrump Community Library to its optical fiber network for free, and the cooperative will provide service to the facility at a speed of 1 ***gigabit*** per second. More than 21,000 community members utilize the local library for Internet access each year.

"This improved broadband service will provide the library and the entire Pahrump community with improved capabilities to access the wide range of content and valuable educational resources available on the Internet," said Tom Husted, CEO of VEA. "This library represents the beginning of VEA's broadband initiative, serving as a starting point for an innovative new service that will improve the quality of life for community members while promoting economic development and creating new local jobs."

In his video message during the ribbon-cutting event in Pahrump, Reid expressed his pride in VEA's forward-thinking efforts.

"Valley Electric is located a long way from the bright lights of the Las Vegas Strip, but the work that has been done by Valley Electric over the past many decades has been really exemplary." Reid said. "I'm so impressed with the work that they've done."

The broadband ***launch*** event represents a significant milestone for VEA, as the cooperative expects the new revenue generated from the optical fiber broadband service to promote future rate stability for the cooperative's member-owners. 2015 Global Data Point.

## Classification

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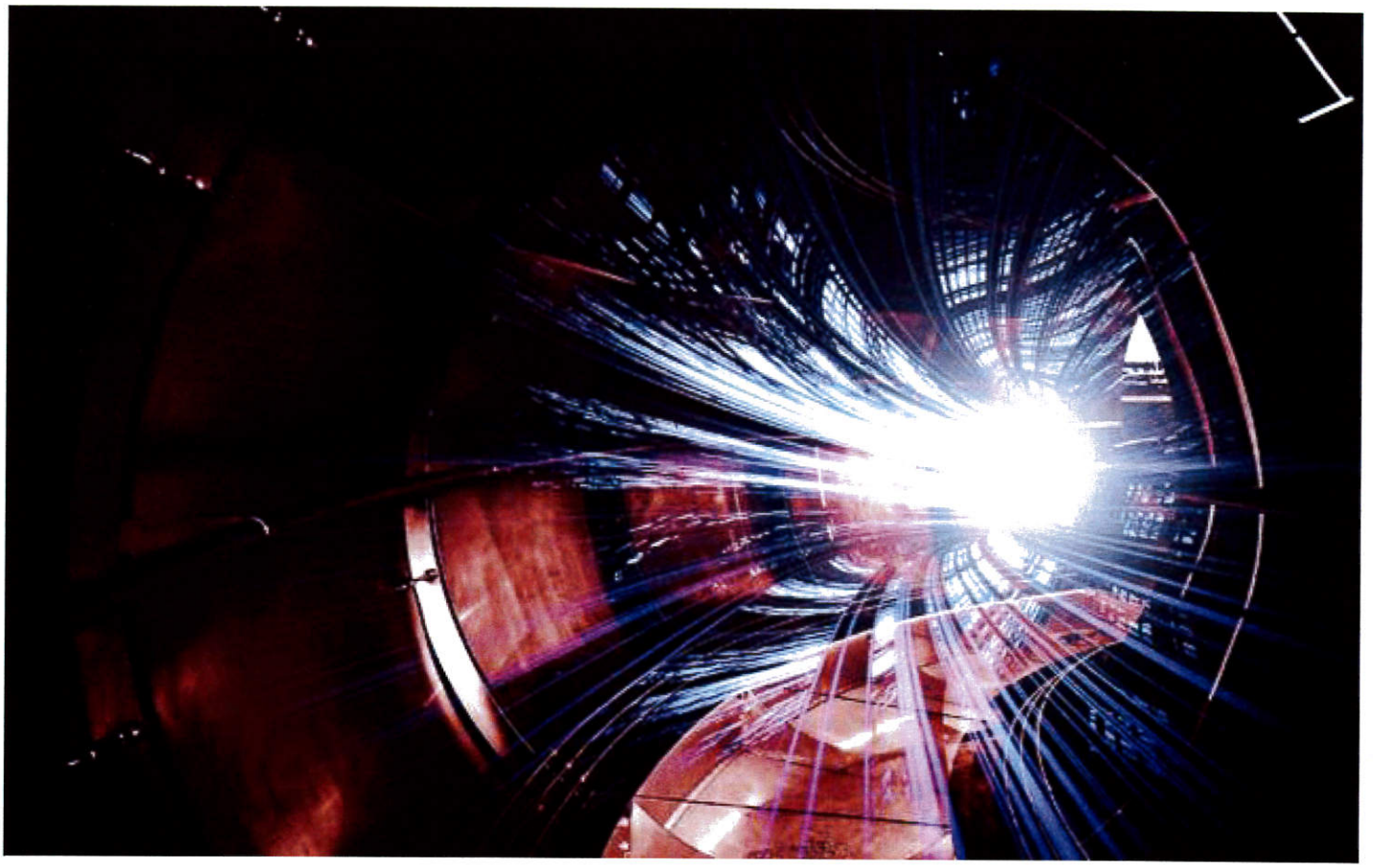

03.24.2015 Product & Services (/about/featured-article/product-services)

# Verizon to Deploy Next-Generation 100G Metro Network in U.S.

## Ciena and Cisco Selected as Suppliers for Advanced 100G Metro Network to Address Exponential Traffic Growth

**NEW YORK –** Continuing to lead in 100G technology, Verizon is moving to a next-generation 100G metro network in the U.S. that will deliver improved scalability, functionality and efficiency.

To meet Verizon's mission of offering its customers high-capacity video and wireless solutions, the company will modernize its metro optical network, using scalable, packet-optimized transport solutions from Ciena and Cisco. Using these 100G flexible CDC ROADMs will enable Verizon to advance and scale its network while maintaining existing services and reducing service-activation times as well as network operation and maintenance costs.

"Deploying a new coherent, optimized and highly scalable metro network means Verizon stays ahead of the growth trajectory while providing an even more robust network infrastructure for future demand," said Lee Hicks, vice president of Verizon network planning. "Ciena and Cisco met not only our technology requirements but the aggressive timeline to deploy our next-generation 100G-and-above metro network."

Verizon will test and deploy Ciena's metro-optimized 6500 packet optical technology and the Cisco Network Convergence System on portions of its 100G metro network this year, with plans to turn up live traffic in 2016. Supplier volumes will be guided by ongoing testing, support and performance.

"In today's Web-scale world, advanced, next-generation metro networks with high degrees of packet convergence and software intelligence are critical to the future of connecting increasing amounts of content to users," said Francois Locoh-Donou, senior vice president, Global Products Group at Ciena. "Leveraging the latest capabilities in our 6500 platform for metro applications where density, scale and cost are equally important, Verizon will benefit from an end-to-end solution that can deliver a truly on-demand experience for its customers."

Said Kelly Ahuja, senior vice president of Cisco's Service Provider Business group: "Verizon and Cisco are long-standing technology and business partners, and we are pleased to play a key role in Verizon's optical network modernization program. Cisco has made key investments in next-generation optical technologies to enable Verizon to realize its vision to transform its network architecture to achieve the speed and operational efficiency required to meet the demands of today, while capturing growth opportunities over the next decade."

This new architecture gives the company the same advantages in its metro network that it has seen in its 100G long-haul network, including increased capacity, superior latency and improved scalability. Verizon is a leader in 100G technology, having successfully completed several industry firsts, beginning in 2007 with a successful field trial of 100G optical traffic on a live system.

**Media Contacts**

0 (https://www.facebook.com/share.php?u=http://www.verizon.com/about/news/verizon-deploy-next-generation-100g-metro-network-us) (http://twitter.com/share?text=http://www.verizon.com/about/news/verizon-deploy-next-generation-100g-metro-network-us) (http://www.linkedin.com/shareArticle?mini=true&url=http://www.verizon.com/about/news/verizon-deploy-next-generation-100g-metro-network-us) (https://plus.google.com/share?u=http://www.verizon.com/about/news/verizon-deploy-next-generation-100g-metro-network-us)

# *Vidalia begins work on technology center construction*

The Natchez Democrat (Mississippi)

January 21, 2016 Thursday

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**Section:** STATE AND REGIONAL NEWS

**Length:** 586 words

**Byline:** Vershal Hogan, The Natchez Democrat, Miss.

## Body

Jan. 21--VIDALIA -- The City of Vidalia began this week work on the building that will replace its former City Hall location.

The new building, located on North Spruce Street, will serve as a technology center and will ultimately house the city's information technology office and utility metering department.

It will also serve as a business incubator for technology-focused businesses, and is meant to increase and support local entrepreneurs, Concordia Parish Economic Development Director Heather Malone said.

The ***project*** is being funded in part by a $1.2 million grant from the U.S. Department of Commerce's Economic Development Administration that requires a 40-percent match in local funds. The contract for the ***project*** was awarded to Wilmar Construction for $1.22 million.

The building is a part of the larger Vidalia ***Broadband*** Initiative, a ***project*** under way for several years that has largely been completed out of the public view.

Previous phases of the ***project*** have included installing fiber cable infrastructure under the Mississippi River bridge and down Carter Street and installing Wi-Fi on the Vidalia Riverfront and in the municipal and adjacent recreation complex on the western side of town.

The ultimate goal of the initiative is to provide the infrastructure that will allow Internet access speeds of 1-gigabit per second to businesses and industries in the area as well as residents.

"This building will showcase the ***Broadband*** Initiative, the city's commitment to technology and entrepreneurship as well as highlighting the city's newly adopted building codes," Malone said.

Vidalia Information Technology Director Bobby Paul said the 6,300-square foot building would include 2,000-square feet for the fiber optic technology infrastructure.

The business incubator area will have two offices for administrative people and between 16 and 20 cubicles, a conference room and computer and business machine access, he said.

In its capacity housing utility metering, the building will allow the city to remotely read and even turn on and off water and power. Residents will also be able to monitor their utility usage in real time.

"Eventually, it will all tie into our utility grid, and that will allow us to use smart grid technology and see problems and correct them before they become a problem for the end users of the utility system," Paul said.

Mayor Hyram Copeland said he hopes the new building will serve as a "welcoming feature" for people crossing the Mississippi River bridge into Vidalia, and, "We hope the updated design will make all of our residents proud to call Vidalia home."

# Wave Launches Residential Gigabit Internet Service in San Francisco

Posted on June 11, 2015 (http://www.wavebroadband.com/wave-launches-residential-gigabit-internet-service-in-san-francisco/) by Heidi (http://www.wavebroadband.com/author/heidi/)
June 11, 2015

Wave, a gigabit fiber and broadband services company, today announced the launch of its Wave G gigabit service in the San Francisco Bay Area. Wave G symmetrical gigabit and 100 Mbps internet service is now live and available at San Francisco's NEMA, a 750-unit property in the city's Mid-Market neighborhood.

Wave has provided gigabit service since 2008 to thousands of Seattle-area residents under the CondoInternet brand and plans to expand its gigabit offerings in San Francisco to other apartments and condos in the coming months. It is offering its gigabit service for a promotional rate of $80 per month.

Wave recently announced a $130 million financing to accelerate the expansion of its fiber network in California, Oregon, and Washington. Since acquiring CondoInternet in September 2013, Wave has invested heavily in expanding its gigabit service by building out its fiber network, hiring additional staff and taking other measures to improve and expand its infrastructure. CondoInternet has provided gigabit internet service in Seattle since 2008 and has passed more than 20,000 area homes.

"As a company that has provided robust and reliable gigabit service to tens of thousands of consumers for the past six years, we are excited to extend our gigabit offerings to San Francisco for the first time, especially in a premier development like NEMA," said John van Oppen, SVP of CondoInternet and Wave. "We look forward to bringing our high performance gigabit service to Bay Area residents who expect a leading customer experience at home as well as at work."

**COMMUNITY EVENT SET FOR JUNE 13**

San Francisco property managers and residents who have interest in gigabit service at their communities are invited to join Wave G for a meet-and-greet and Q&A event in downtown San Francisco's Marvelous Coffee and Wine Bar (1408 Market Street) on Saturday, June 13, from 10:00a.m.-Noon. San Francisco property managers, developers and residents can also register their interest in gigabit internet service on the Wave G website (http://gowaveg.com/our-buildings/new-building-request/ (http://cts.businesswire.com/ct/CT?id=smartlink&url=http%3A%2F%2Fgowaveg.com%2Four-buildings%2Fnew-building-request%2F&esheet=51121835&newsitemid=20150611005282&lan=en-US&anchor=http%3A%2F%2Fgowaveg.com%2Four-buildings%2Fnew-building-request%2F&index=2&md5=d04d9ae9a9542e659177d8715dafc9db)).

**About Wave**

Wave is a gigabit fiber and broadband services company, providing true high-speed internet service and a variety of related products and options for business and residential customers in key areas of Washington, Oregon and California

# Wilson Moves to Expand Greenlight Network to Neighboring Town

*Wed, December 16, 2015 | Posted by* [*ternste (/users/ternste)*]

Thanks to a new interlocal agreement, the City of Wilson, North Carolina will soon expand (http://www.localnetchoice.org/connections/wilson-greenlight-stretches-its-gigabit-to-its-rural-neighbors/) its Greenlight community broadband network (http://www.localnetchoice.org/connections/wilson-greenlight-stretches-its-gigabit-to- ts-rural-neighbors/) to the nearby Town of Pinetops. Officials expect to complete the expansion of the gigabit fiber network by April 2016. Pinetops, a town of 1,300, is less than 20 miles from Wilson, population 50,000.

**We're Waiting...**

For Brenda Harrell, Pinetops Interim Town Manager, the agreement has been a long time coming after years of frustration over their limited broadband access options.

> *"Current providers haven't made significant upgrades to our broadband service through the years," "They haven't found us worth the investment Through this partnership with Greenlight and our neighbors in Wilson, we are able to meet a critical need for our residents "*

As far back as 2010, city leaders in Wilson were in negotiations with Pinetops officials on a proposal to expand the Greenlight network to reach Pinetops. But those negotiations reached an impasse in 2011 when the State of North Carolina *passed* (/glossary/1#term20) H129. Since then, officials in Wilson and in surrounding communities have been waiting for a time when Wilson could extend their the Greenlight network footprint.

The new agreement became possible in the wake of the FCC decision in February to overturn North Carolina's anti-muni HB 129, allowing North Carolina communities to start considering the option to build their own broadband networks or expand on existing networks. While the state has appealed that decision in hopes of preserving the law, this agreement indicates Wilson officials are ›king confidently ahead with the expectation that the state's appeal will fail.

**Looking Back, and to the Future**

Last November, when the New York Times wrote about the fight (http://www.nytimes.com/2014/11/10/technology/in-rural-america-challenging-a-roadblock-to-high-speed-internet.html) in communities around the nation for the right to build and expand community broadband networks, they talked to Gregory Bethea, the now retired town manager of Pinetops, North Carolina:

> *"If you want to have economic development in a town like this, you've got to have fiber," Bethea told them*

And that's what this agreement is about: giving Pinetops the local authority necessary to create their own economic opportunities.

In that article the Times also quoted Will Aycock, the General Manager of Wilson's Greenlight network. At the time, Aycock was already looking beyond the state's anti-muni law to future expansion:

> *"We would probably be building tomorrow if the law changed today," Mr Aycock said "We're not saying that we're going to build out all of eastern Carolina or even all of our service territory tomorrow But there are areas where we'd like to go now "*

With this new agreement in place, Aycock is now able to see those plans for expansion come to fruition. Upon reaching the agreement, he said:

> *"Our commitment to improving the delivery of City services through our smart grid initiatives has made broadband service to Pinetops possible, as the same fiber that supports the smart grid system will be leveraged to deliver next generation broadband "*

Tweet

expect to cut down on local transmission costs and inadequate speeds that can limit the number of businesses interested in using the data center.

Doug Tate, Alpha's president and CEO, said building the company's own fiber is essential, to remove that "local lag and make his company more competitive and profitable.

Alpha's proposal to create the high-speed fiber-optic route from downtown Charleston to South Charleston's West Virginia Regional Technology Park comes at a time when other ***broadband*** and gigabit Internet ***projects*** have attracted the interest of some state leaders.

Sen. Chris Walters, R-Putnam, said he intends to push a bill next year in the Legislature that would finance the creation of a publicly owned fiber-optic network that connects every county seat of West Virginia. In September, the WVEDA approved a $3 million loan to help Citynet, a Bridgeport-based Internet provider, install fiber-optic connections to every home and business in that city.

Alpha's proposal highlights the ever-increasing importance of affordable, high-speed ***broadband*** connections. In a modern economy that relies on information being accessible instantaneously, fiber-optic networks, in some ways, have become as important as a well-financed highway system and a reliable electric grid.

"It's an increase in competition, which is first and foremost, Walters said. "More competition leads to better service and more affordable cost, which is what we are in dire need of in West Virginia.

Other ***broadband*** providers in the region have largely focused on supplying megabit services to as many homes and businesses as possible, but Alpha officials said their plan is focused on more of a niche market, namely businesses looking for gigabit speeds and the ability to store their data remotely and securely at the data center.

Diana Sole Walko, chairwoman of the Charleston Regional Chamber of Commerce, knows how businesses can be limited by ***broadband*** speed, even when it's faster than the federal standard of 25 megabits per second.

When MotionMasters, her production company, needs to send videos to its customers, Walko actually has to send physical hard drives through the postal system - a practice that is quickly becoming unacceptable, she said.

"If I have high-definition videos or complex engineering and architectural designs, anything that basically requires a bigger pipe, we can't do that here, she said. "It should be shocking that we are hampered in this way.

Alpha's fiber won't reach her Dunbar-based business, but Walko said she thinks the ***project*** is the first step in changing the ***broadband*** market in the region.

When Alpha officials first started brainstorming about the idea of running fiber-optic cable into downtown Charleston, Dennie said, they planned to use CSX's right-of-way on the south side of the Kanawha River and to cross over at the Patrick Street and South Side bridges.

However, that plan was pushed aside for an approach that would create an underground system, which won't be vulnerable to inclement weather or would-be thieves that might mistake the fiber-optic cable for copper wiring.

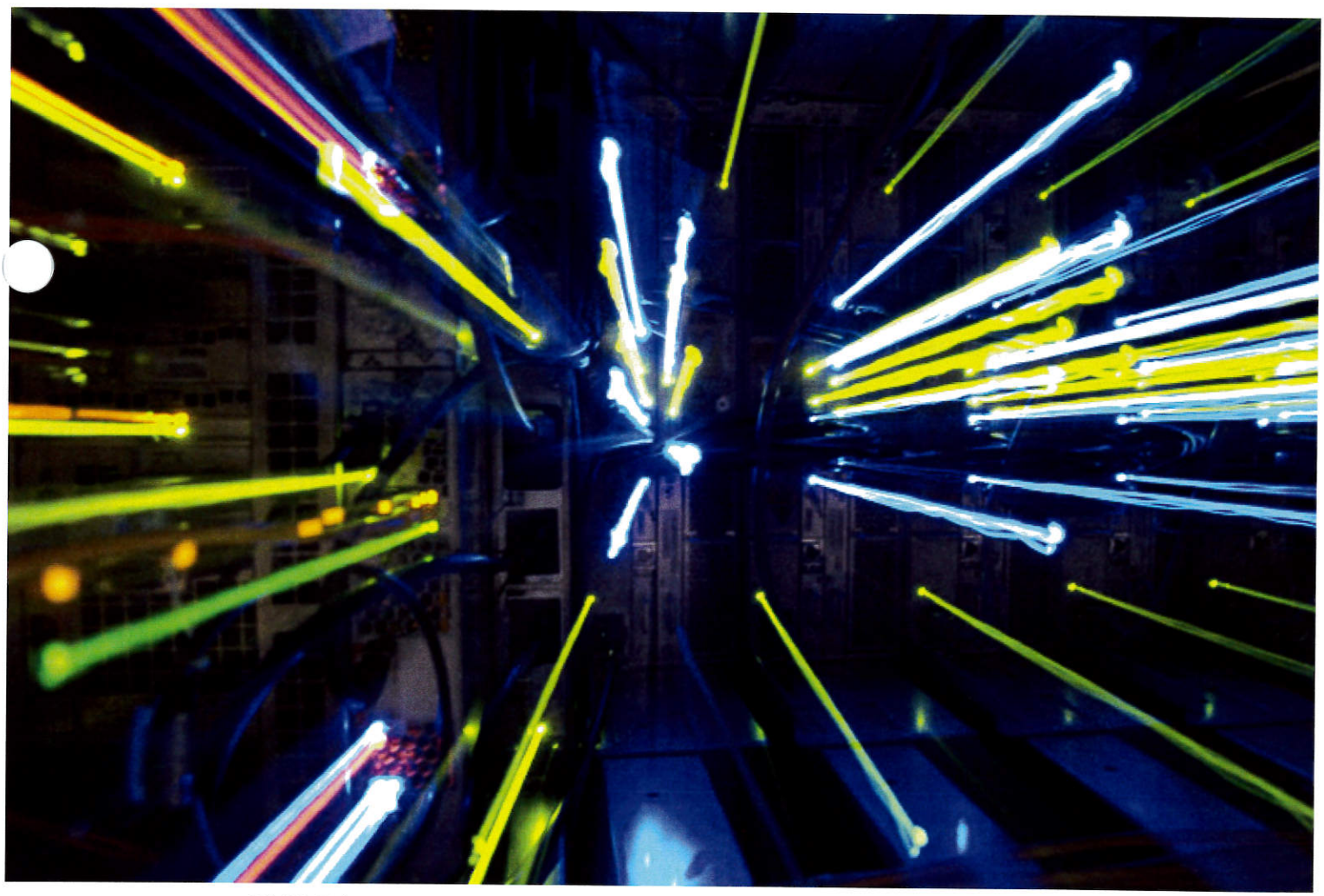
Using directional drilling, the company would install the fiber-optic lines under the Kanawha and Elk rivers, instead of over them. While putting the entire fiber-optic line underground is much more expensive, Dennie said, it also makes repairs or expansions to the fiber-optic route much easier.

The design of the subterranean network includes rigid plastic sleeves that shield the fiber-optic threads, which are capable of carrying data at the speed of light. That small plastic tubing also gives the company enough room to add additional strands of fiber in the future and allows for easy repairs to sections of the line.

# San Francisco's Gigabit Master Plan: A Sign of the Times

*The diversity in recent municipal broadband projects history indicate a trend of innovation. No longer content to wait for private industry, cities large and small are building the kinds of networks and partnerships that serve the persistent demand for connectivity.*

BY COLIN WOOD (HTTP://WWW.GOVTECH.COM/AUTHORS/COLIN-WOOD.HTML) / MARCH 15, 2016



FLICKR/AXEL SCHWENKE (HTTPS://WWW.FLICKR.COM/PHOTOS/SCHWENKE/1408946445/)

cost of the network to the city would vary depending on partnerships chosen. A publicly funded broadband utility network would cost the city an estimated $867.3 million in construction costs plus an additional $231.7 million annually in maintenance costs. Accounting for subscriber revenue, the city could expect an annual deficit of $145 million. For this reason — and also to promote market competition — the report instead recommended a public-private partnership model wherein all homes and businesses would be charged a utility fee averaging $26 per month for baseline Internet access. Tiered pricing models based on service type or bandwidth use could offset operational costs and potentially lower the baseline fee.

The Municipal Fiber Advisory Panel, which will advise policymakers on how the network should expand, is co-chaired by CIO Miguel Gamiño and Chief Innovation Officer Jay Nath.

San Francisco's examination of a citywide fiber network is founded on the digital divide, the disparity in access to technology between societal classes, and also a general lack of access to high-speed Internet. Less than 3 percent of people in San Francisco have access to gigabit connectivity, while more than 100,000 residents, or 12 percent of the population, do not have any Internet access at home. An additional 50,000 residents, or 6 percent of the population, only have access to dial-up speed Internet.

in the release. "After this analysis, we are more committed than ever to bringing low-cost, Gigabit-speed Internet to everybody in San Francisco."

The report, which recommended a public-private partnership model wherein all homes and businesses would be charged a utility fee averaging $26 per month for baseline Internet access, outlines San Francisco's examination of three success stories in municipal broadband: the famed gigabit network run by EPB in Chattanooga (http://www.govtech.com/network/Gig-City-Chattanooga-Broadband-Boosted-to-Gigs.html), Tenn.; the Google Fiber and Kansas City partnership (http://www.govtech.com/network/Free-Google-Fiber-Service-Now-Available-in-Kansas-City-Public-Housing.html); and the Westminster, Md., partnership with

And the company's willingness to enter lease partnerships with cities like Huntsville, (http://www.govtech.com/question-of-the-day/Question-of-the-Day-for-02232016.html) Atlanta and San Francisco demonstrates a willingness to adapt to local needs and new dynamics in the market. Google's bold entrepreneurism also makes a new market appear more approachable to smaller companies, so companies like Ting (https://ting.com/internet), which began as a cellular service provider leasing tower bandwidth from major providers, are testing the market in Charlottesville, Va., and Westminster, Md., while keeping an eye on Greater Sandpoint (https://ting.com/blog/internet/sandpoint/), Idaho, and Holly Springs (http://www.dslreports.com/shownews/Ting-to-Offer-Gigabit-Broadband-in-Fourth-Market-136424), N.C.

When the Federal Communication Commission classified broadband as a utility under Title II last year, the main headline pertained to issues of net neutrality, but the policy change, along with this administration's egalitarian leaning, had the side effect of subtly re-framing how people think Internet access should be considered. New models of municipal broadband emerged in parallel with the attitude that Internet is a service that everyone should be able to take for granted. That idea was more controversial five years ago than it is today.

Google Fiber's changing model is a good sign, Mitchell said, because it allows them to expand faster, but it's also a little scary if cities don't open their networks to foster competition.

"I would like to live in a world where there's a lot of companies like Google that are doing this, not just one or two," Mitchell said. "I don't want to see Google having 50 million subscribers. The fear in my mind is any company getting to large in this regard gives them too much power."

When one company has that much market share, he said, it gives them outside power to influence legislation.

"We see this both in D.C. and state capitols," Mitchell added. "Google hasn't been one to abuse that to my knowledge yet, but you certainly see it from the cable companies and the telephone companies. So my worry would be that as Google becomes the only game in town for super-fast internet in a number of places, they would have more power. And that's a criticism I would have of any one entity having that kind of power."

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# Mediacom announces 'Project Gigabit,' $1 billion in upgrades

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**DES MOINES, Iowa —** Mediacom announced Monday a $1 billion plan to bring 1 gigabit per second broadband service to 3 million homes and businesses it serves.

The company, Iowa's largest cable company, announced the project will take up to three years to complete.

The company said, "Project Gigabit will build upon the residential gigabit product launches completed by Mediacom in 2015 and the widely available Gigabit+ Fiber SolutionsTM offered by Mediacom Business today."

The first wave of communities to receive the upgrade are planned before the end of this year. Mediacom said it connected its first

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The following table sets forth by level, within the fair value hierarchy, the pension and postretirement assets and liabilities at fair value as of December 31, 2012:

| Pension Assets and Liabilities at Fair Value as of December 31, 2012 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Non-interest bearing cash | $ 144 | $ - | $ - | $ 144 |
| Interest bearing cash | 56 | 235 | - | 291 |
| Foreign currency contracts | - | 1 | - | 1 |
| Equity securities: | | | | |
| Domestic equities | 8,291 | - | - | 8,291 |
| International equities | 6,361 | 29 | - | 6,390 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 543 | 14 | 557 |
| Mortgage-backed securities | - | 2,324 | - | 2,324 |
| Collateralized mortgage-backed securities | - | 311 | - | 311 |
| Collateralized mortgage obligations/REMICS | - | 523 | 1 | 524 |
| Other Corporate and other bonds and notes | 140 | 4,903 | 600 | 5,643 |
| Government and municipal bonds | 50 | 5,301 | - | 5,351 |
| Private equity funds | - | - | 5,797 | 5,797 |
| Real estate and real assets | - | - | 4,766 | 4,766 |
| Commingled funds | - | 4,927 | 426 | 5,353 |
| Securities lending collateral | 868 | 1,930 | 1 | 2,799 |
| Receivable for variation margin | 72 | - | - | 72 |
| Assets at fair value | 15,982 | 21,027 | 11,605 | 48,614 |
| Investments sold short and other liabilities at fair value | 563 | 7 | - | 570 |
| Total plan net assets at fair value | $ 15,419 | $ 21,020 | $ 11,605 | $ 48,044 |
| Other assets (liabilities)[1] | | | | (2,984) |
| **Total Plan Net Assets** | | | | **$ 45,060** |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

| Postretirement Assets and Liabilities at Fair Value as of December 31, 2012 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Interest bearing cash | $ 169 | $ 243 | $ - | $ 412 |
| Equity securities: | | | | |
| Domestic equities | 2,575 | - | - | 2,575 |
| International equities | 2,685 | 1 | - | 2,686 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 29 | - | 29 |
| Collateralized mortgage-backed securities | - | 79 | - | 79 |
| Collateralized mortgage obligations | - | 46 | - | 46 |
| Other Corporate and other bonds and notes | 1 | 383 | 17 | 401 |
| Government and municipal bonds | 22 | 598 | - | 620 |
| Commingled funds | 82 | 2,038 | 4 | 2,124 |
| Private equity assets | - | - | 343 | 343 |
| Real assets | - | - | 110 | 110 |
| Securities lending collateral | 544 | 81 | - | 625 |
| Assets at fair value | 6,078 | 3,498 | 474 | 10,050 |
| Total plan net assets at fair value | $ 6,078 | $ 3,498 | $ 474 | $ 10,050 |
| Other assets (liabilities)[1] | | | | (755) |
| **Total Plan Net Assets** | | | | **$ 9,295** |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

The tables below set forth a summary of changes in the fair value of the Level 3 pension and postretirement assets for the year ended December 31, 2012:

| Pension Assets | Equities | Fixed Income Funds | Private Equity Funds | Real Estate and Real Assets | Total |
|---|---|---|---|---|---|
| Balance at beginning of year | $ 4 | $ 824 | $ 5,931 | $ 5,213 | $ 11,972 |
| Realized gains (losses) | (1) | 16 | 459 | 165 | 639 |
| Unrealized gains (losses) | 1 | 33 | 32 | 10 | 76 |
| Transfers in | - | 120 | 12 | 24 | 156 |
| Transfers out | - | (2) | - | - | (2) |
| Purchases | - | 142 | 610 | 918 | 1,670 |
| Sales | (4) | (91) | (1,247) | (1,564) | (2,906) |
| **Balance at end of year** | **$ -** | **$ 1,042** | **$ 5,797** | **$ 4,766** | **$ 11,605** |

| Postretirement Assets | Fixed Income Funds | Private Equity Funds | Real Assets | Total |
|---|---|---|---|---|
| Balance at beginning of year | $ 24 | $ 437 | $ 124 | $ 585 |
| Realized gains (losses) | - | 58 | 16 | 74 |
| Unrealized gains (losses) | - | (39) | (5) | (44) |
| Purchases | - | 20 | 33 | 53 |
| Sales | (3) | (133) | (58) | (194) |
| **Balance at end of year** | **$ 21** | **$ 343** | **$ 110** | **$ 474** |

The following tables set forth by level, within the fair value hierarchy, the pension and postretirement assets and liabilities at fair value as of December 31, 2011:

| Pension Assets and Liabilities at Fair Value as of December 31, 2011 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Non-interest bearing cash | $ 64 | $ 1 | $ - | $ 65 |
| Interest bearing cash | 1 | - | - | 1 |
| Foreign currency contracts | - | 6 | - | 6 |
| Equity securities: | | | | |
| Domestic equities | 8,299 | 5 | - | 8,304 |
| International equities | 5,873 | 62 | 4 | 5,939 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 413 | 8 | 421 |
| Mortgage-backed securities | - | 3,038 | - | 3,038 |
| Collateralized mortgage-backed securities | - | 316 | - | 316 |
| Collateralized mortgage obligations/REMICS | - | 490 | - | 490 |
| Other Corporate and other bonds and notes | 105 | 5,386 | 420 | 5,911 |
| Government and municipal bonds | 71 | 4,695 | - | 4,766 |
| Private equity funds | - | 1 | 5,931 | 5,932 |
| Real estate and real assets | - | 10 | 5,213 | 5,223 |
| Commingled funds | - | 6,092 | 393 | 6,485 |
| Securities lending collateral | 1,295 | 2,879 | 3 | 4,177 |
| Assets at fair value | 15,708 | 23,394 | 11,972 | 51,074 |
| | | | | |
| Investments sold short and other liabilities at fair value | 600 | 6 | - | 606 |
| Total plan net assets at fair value | $ 15,108 | $ 23,388 | $ 11,972 | $ 50,468 |
| Other assets (liabilities)[1] | | | | (4,561) |
| Total Plan Net Assets | | | | $ 45,907 |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

| Postretirement Assets and Liabilities at Fair Value as of December 31, 2011 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Interest bearing cash | $ 30 | $ 340 | $ - | $ 370 |
| Equity securities: | | | | |
| Domestic equities | 2,964 | 1 | - | 2,965 |
| International equities | 2,579 | 1 | - | 2,580 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 51 | - | 51 |
| Collateralized mortgage-backed securities | - | 60 | - | 60 |
| Collateralized mortgage obligations | - | 28 | - | 28 |
| Other Corporate and other bonds and notes | - | 334 | 19 | 353 |
| Government and municipal bonds | 48 | 619 | - | 667 |
| Commingled funds | 175 | 2,245 | 5 | 2,425 |
| Private equity assets | - | 3 | 437 | 440 |
| Real assets | - | - | 124 | 124 |
| Securities lending collateral | 780 | 108 | - | 888 |
| Receivable for foreign exchange contracts | 3 | - | - | 3 |
| Assets at fair value | 6,579 | 3,790 | 585 | 10,954 |
| | | | | |
| Foreign exchange contracts payable | 3 | - | - | 3 |
| Liabilities at fair value | 3 | - | - | 3 |
| Total plan net assets at fair value | $ 6,576 | $ 3,790 | $ 585 | $ 10,951 |
| Other assets (liabilities)[1] | | | | (1,061) |
| Total Plan Net Assets | | | | $ 9,890 |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

The tables below set forth a summary of changes in the fair value of the Level 3 pension and postretirement assets for the year ended December 31, 2011:

| Pension Assets | Equities | Fixed Income Funds | Private Equity Funds | Real Estate and Real Assets | Total |
|---|---|---|---|---|---|
| Balance at beginning of year | $ - | $ 441 | $ 5,617 | $ 4,570 | $ 10,628 |
| Realized gains (losses) | (1) | 17 | 164 | 2 | 182 |
| Unrealized gains (losses) | 1 | (6) | 448 | 666 | 1,109 |
| Transfers in | 3 | 393 | - | - | 396 |
| Purchases | 1 | 95 | 844 | 859 | 1,799 |
| Sales | - | (116) | (1,142) | (884) | (2,142) |
| Balance at end of year | $ 4 | $ 824 | $ 5,931 | $ 5,213 | $ 11,972 |

| Postretirement Assets | Fixed Income Funds | Private Equity Funds | Real Assets | Total |
|---|---|---|---|---|
| Balance at beginning of year | $ 45 | $ 496 | $ 157 | $ 698 |
| Realized gains (losses) | - | 70 | (28) | 42 |
| Unrealized gains (losses) | - | (23) | 31 | 8 |
| Purchases | 8 | 175 | 53 | 236 |
| Sales | (29) | (281) | (89) | (399) |
| Balance at end of year | $ 24 | $ 437 | $ 124 | $ 585 |

**Estimated Future Benefit Payments**

Expected benefit payments are estimated using the same assumptions used in determining our benefit obligation at December 31, 2012. Because benefit payments will depend on future employment and compensation levels, average years employed, average life spans, and payment elections, among other factors, changes in any of these factors could significantly affect these expected amounts. The following table provides expected benefit payments under our pension and postretirement plans:

| | Pension Benefits | Postretirement Benefits | Medicare Subsidy Receipts |
|---|---|---|---|
| 2013 | $ 4,697 | $ 2,371 | $ (18) |
| 2014 | 4,395 | 2,249 | (20) |
| 2015 | 4,282 | 2,180 | (23) |
| 2016 | 4,215 | 2,131 | (26) |
| 2017 | 4,169 | 2,076 | (30) |
| Years 2018 - 2022 | 20,286 | 9,924 | (195) |

**Supplemental Retirement Plans**

We also provide certain senior- and middle-management employees with nonqualified, unfunded supplemental retirement and savings plans. While these plans are unfunded, we have assets in a designated nonbankruptcy remote trust that are independently managed and used to provide for these benefits. These plans include supplemental pension benefits as well as compensation-deferral plans, some of which include a corresponding match by us based on a percentage of the compensation deferral.

We use the same significant assumptions for the discount rate and composite rate of compensation increase used in determining the projected benefit obligation and the net pension and postemployment benefit cost. The following tables provide the plans' benefit obligations and fair value of assets at December 31 and the components of the supplemental retirement pension benefit cost. The net amount recorded as "Other noncurrent liabilities" on our consolidated balance sheets at December 31, 2012, was $2,456 and $2,294 at December 31, 2011.

The following table provides information for our supplemental retirement plans with accumulated benefit obligations in excess of plan assets:

| | 2012 | 2011 |
|---|---|---|
| Projected benefit obligation | $ (2,456) | $ (2,294) |
| Accumulated benefit obligation | (2,392) | (2,223) |
| Fair value of plan assets | - | - |

The following tables present the components of net periodic benefit cost and other changes in plan assets and benefit obligations recognized in OCI:

| **Net Periodic Benefit Cost** | 2012 | 2011 | 2010 |
|---|---|---|---|
| Service cost – benefits earned during the period | $ 10 | $ 14 | $ 12 |
| Interest cost on projected benefit obligation | 116 | 126 | 134 |
| Amortization of prior service cost (credit) | - | 2 | 2 |
| Actuarial (gain) loss | 230 | 81 | 186 |
| Net supplemental retirement pension cost | $ 356 | $ 223 | $ 334 |

| **Other Changes Recognized in Other Comprehensive Income** | 2012 | 2011 | 2010 |
|---|---|---|---|
| Prior service (cost) credit | $ (1) | $ 6 | $ (5) |
| Amortization of prior service cost (credit) | - | 1 | (2) |
| Total recognized in other comprehensive (income) loss (net of tax) | $ (1) | $ 7 | $ (7) |

The estimated prior service credit for our supplemental retirement plan benefits that will be amortized from accumulated OCI into net periodic benefit cost over the next fiscal year is $1.

Deferred compensation expense was $118 in 2012, $96 in 2011 and $96 in 2010. Our deferred compensation liability, included in "Other noncurrent liabilities," was $1,061 at December 31, 2012, and $1,010 at December 31, 2011.

**Contributory Savings Plans**

We maintain contributory savings plans that cover substantially all employees. Under the savings plans, we match in cash or company stock a stated percentage of eligible employee contributions, subject to a specified ceiling. There are no debt-financed shares held by the Employee Stock Ownership Plans, allocated or unallocated.

Our match of employee contributions to the savings plans is fulfilled with purchases of our stock on the open market or company cash. Benefit cost is based on the cost of shares or units allocated to participating employees' accounts and was $634, $636 and $607 for the years ended December 31, 2012, 2011 and 2010.

## NOTE 12. SHARE-BASED PAYMENTS

We account for our share-based payment arrangements based on the fair value of the awards on their respective grant date, which may affect our ability to fully realize the value shown on our consolidated balance sheets of deferred tax assets associated with compensation expense. We record a valuation allowance when our future taxable income is not expected to be sufficient to recover the asset. Accordingly, there can be no assurance that the current stock price of our common shares will rise to levels sufficient to realize the entire tax benefit currently reflected on our consolidated balance sheets. However, to the extent we generate excess tax benefits (i.e., that additional tax benefits in excess of the deferred taxes associated with compensation expense previously recognized) the potential future impact on income would be reduced.

At December 31, 2012, we had various share-based payment arrangements, which we describe in the following discussion. The compensation cost recognized for those plans was included in operating expenses in our consolidated statements of income. The total income tax benefit recognized in the consolidated statements of income for share-based payment arrangements was $195 for 2012, compared to $187 for 2011 and $196 for 2010.

Under our various plans, senior and other management employees and nonemployee directors have received nonvested stock and stock units. We grant performance stock units, which are nonvested stock units, based upon our stock price at the date of grant and award them in the form of AT&T common stock and cash at the end of a three-year period, subject to the achievement of certain performance goals. We treat the cash portion of these awards as a liability. We grant forfeitable restricted stock and stock units, which are valued at the market price of our common stock at the date of grant and vest typically over a two- to seven-year period. We also grant other nonvested stock units and award them in cash at the end of a three-year period, subject to the achievement of certain market based conditions. As of December 31, 2012, we were authorized to issue up to 111 million shares of common stock (in addition to shares that may be issued upon exercise of outstanding options or upon vesting of performance stock units or other nonvested stock units) to officers, employees and directors pursuant to these various plans.

The compensation cost that we have charged against income for our share-based payment arrangements was as follows:

| | **2012** | 2011 | 2010 |
|---|---|---|---|
| Performance stock units | **$ 397** | $ 388 | $ 411 |
| Restricted stock and stock units | **102** | 91 | 85 |
| Other nonvested stock units | **12** | 4 | 11 |
| Other | **-** | 6 | 6 |
| Total | **$ 511** | $ 489 | $ 513 |

A summary of option activity as of December 31, 2012, and changes during the year then ended, is presented below (shares in millions):

| Options | Shares | Weighted-Average Exercise Price | Weighted-Average Remaining Contractual Term (Years) | Aggregate Intrinsic Value[1] |
|---|---|---|---|---|
| Outstanding at January 1, 2012 | 66 | $ 30.62 | 1.99 | $ 148 |
| Exercised | (18) | - | | |
| Forfeited or expired | (31) | - | | |
| Outstanding at December 31, 2012 | 17 | 27.38 | 4.53 | 123 |
| Exercisable at December 31, 2012 | 17 | $ 27.37 | 4.51 | $ 123 |

[1] Aggregate intrinsic value includes only those options with intrinsic value (options where the exercise price is below the market price).

It is our policy to satisfy share option exercises using our treasury stock. Cash received from stock option exercises was $517 for 2012, $250 for 2011 and $55 for 2010.

A summary of the status of our nonvested stock units as of December 31, 2012, and changes during the year then ended is presented as follows (shares in millions):

| Nonvested Stock Units | Shares | Weighted-Average Grant-Date Fair Value |
|---|---|---|
| Nonvested at January 1, 2012 | 27 | $ 26.53 |
| Granted | 13 | 30.18 |
| Vested | (13) | 25.87 |
| Forfeited | (1) | 28.32 |
| **Nonvested at December 31, 2012** | **26** | **$ 28.55** |

As of December 31, 2012, there was $314 of total unrecognized compensation cost related to nonvested share-based payment arrangements granted. That cost is expected to be recognized over a weighted-average period of two years. The total fair value of shares vested during the year was $333 for 2012, compared to $360 for 2011 and $397 for 2010.

## NOTE 13. STOCKHOLDERS' EQUITY

**Stock Repurchase Program** From time to time, we repurchase shares of common stock for distribution through our employee benefit plans or in connection with certain acquisitions. In December 2010, the Board of Directors authorized the repurchase of up to 300 million shares of AT&T common stock. We began buying back stock under this program in 2012 and completed the purchase of authorized shares that year. In July 2012, the Board of Directors authorized the repurchase of an additional 300 million shares, under which we are currently purchasing shares. For the year ended December 31, 2012, we had repurchased approximately 371 million shares totaling $12,752 under these authorizations. We expect to continue repurchasing our common stock and plan to complete the repurchases under the July 2012 authorization as early as mid-year.

To implement these authorizations, we use open market repurchase programs, relying on Rule 10b5-1 of the Securities Exchange Act of 1934 where feasible. We also use accelerated share repurchase programs with large financial institutions to repurchase our stock.

**Authorized Shares** There are 14 billion authorized common shares of AT&T stock and 10 million authorized preferred shares of AT&T stock. As of December 31, 2012 and 2011, no preferred shares were outstanding.

**Dividend Declarations** In November 2012, the Company declared an increase in its quarterly dividend to $0.45 per share of common stock. In December 2011, the Company declared a quarterly dividend of $0.44 per share of common stock, which reflected an increase from the $0.43 quarterly dividend declared in December 2010.

## NOTE 14. ADDITIONAL FINANCIAL INFORMATION

| | December 31, | |
|---|---|---|
| **Consolidated Balance Sheets** | **2012** | 2011 |
| Accounts payable and accrued liabilities: | | |
| Accounts payable | **$ 12,076** | $ 10,485 |
| Accrued payroll and commissions | **2,332** | 2,170 |
| Current portion of employee benefit obligation | **2,116** | 2,288 |
| Accrued interest | **1,588** | 1,576 |
| Other | **2,799** | 3,437 |
| Total accounts payable and accrued liabilities | **$ 20,911** | $ 19,956 |

| **Consolidated Statements of Income** | **2012** | 2011 | 2010 |
|---|---|---|---|
| Advertising expense | **$ 2,910** | $ 3,135 | $ 2,982 |
| Interest expense incurred | **$ 3,707** | $ 3,697 | $ 3,766 |
| Capitalized interest | **(263)** | (162) | (772) |
| Total interest expense | **$ 3,444** | $ 3,535 | $ 2,994 |

| **Consolidated Statements of Cash Flows** | **2012** | 2011 | 2010 |
|---|---|---|---|
| Cash paid during the year for: | | | |
| Interest | **$ 3,696** | $ 3,722 | $ 3,882 |
| Income taxes, net of refunds | **458** | 32 | 3,538 |

| **Consolidated Statements of Changes in Stockholders' Equity** | **2012** | 2011 | 2010 |
|---|---|---|---|
| Foreign currency translation adjustment | **$ (284)** | $ (371) | $ (494) |
| Net unrealized gains (losses) on available-for-sale securities | **272** | 222 | 316 |
| Net unrealized gains (losses) on cash flow hedges | **(110)** | (421) | (180) |
| Defined benefit postretirement plans | **5,358** | 3,750 | 3,070 |
| Accumulated other comprehensive income | **$ 5,236** | $ 3,180 | $ 2,712 |

**Labor Contracts** As of January 31, 2013, we employed approximately 242,000 persons. Approximately 55 percent of our employees are represented by the Communications Workers of America (CWA), the International Brotherhood of Electrical Workers or other unions. Contracts covering approximately 77,000 (as of December 31, 2012) employees expired during 2012 and we have reached new contracts covering approximately 57,000 of those employees. Contracts covering wireline employees in California, Connecticut and Nevada expired in April 2012 and remain subject to negotiation. In addition, during 2012, we entered into a new national four-year contract covering only benefits with the approximately 40,000 employees in our mobility business; contracts covering wages and other non-benefit working terms for these mobility employees are structured on a regional basis and one regional contract for 20,000 employees expired during February 2013. Contracts covering approximately 30,000 non-mobility employees will expire during 2013, including approximately 20,000 wireline employees in our five-state Southwest region. On February 6, 2013, we announced a tentative agreement with the CWA covering the wireline employees in our Southwest region; this agreement is subject to ratification by these employees. After expiration of the current agreements, work stoppages or labor disruptions may occur in the absence of new contracts or other agreements being reached.

**American Tower Corp. Agreement** In August 2000, we reached an agreement with American Tower Corp. (American Tower) under which we granted American Tower the exclusive rights to lease space on a number of our communications towers. In exchange, we received a combination of cash and equity instruments as complete prepayment of rent with the closing of each leasing agreement. The value of the prepayments was recorded as deferred revenue and recognized in income as revenue over the life of the leases. The balance of deferred revenue was $420 in 2012, $450 in 2011, and $480 in 2010.

No customer accounted for more than 10% of consolidated revenues in 2012, 2011 or 2010.

## NOTE 15. CONTINGENT LIABILITIES

We are party to numerous lawsuits, regulatory proceedings and other matters arising in the ordinary course of business. In evaluating these matters on an ongoing basis, we take into account amounts already accrued on the balance sheet. In our opinion, although the outcomes of these proceedings are uncertain, they should not have a material adverse effect on our financial position, results of operations or cash flows.

We have contractual obligations to purchase certain goods or services from various other parties. Our purchase obligations are expected to be approximately $3,744 in 2013, $3,890 in total for 2014 and 2015, $1,469 in total for 2016 and 2017 and $457 in total for years thereafter.

See Note 9 for a discussion of collateral and credit-risk contingencies.

## NOTE 16. QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

The following tables represent our quarterly financial results:

| | 2012 Calendar Quarter | | | | |
|---|---|---|---|---|---|
| | **First** | **Second** | **Third** | **Fourth[2]** | **Annual** |
| Total Operating Revenues | $ 31,822 | $ 31,575 | $ 31,459 | $ 32,578 | $ 127,434 |
| Operating Income (Loss) | 6,101 | 6,817 | 6,037 | (5,958) | 12,997 |
| Net Income (Loss) | 3,652 | 3,965 | 3,701 | (3,779) | 7,539 |
| Net Income (Loss) Attributable to AT&T | 3,584 | 3,902 | 3,635 | (3,857) | 7,264 |
| Basic Earnings (Loss) Per Share Attributable to AT&T[1] | $ 0.60 | $ 0.67 | $ 0.63 | $ (0.68) | $ 1.25 |
| Diluted Earnings (Loss) Per Share Attributable to AT&T[1] | $ 0.60 | $ 0.66 | $ 0.63 | $ (0.68) | $ 1.25 |
| Stock Price | | | | | |
| High | $ 31.97 | $ 36.00 | $ 38.58 | $ 38.43 | |
| Low | 29.02 | 29.95 | 34.24 | 32.71 | |
| Close | 31.23 | 35.66 | 37.70 | 33.71 | |

1 Quarterly earnings per share impacts may not add to full-year earnings per share impacts due to the difference in weighted-average common shares for the quarters versus the weighted-average common shares for the year.

2 Includes an actuarial loss on pension and postretirement benefit plans (Note 11).

| | 2011 Calendar Quarter | | | | |
|---|---|---|---|---|---|
| | First | Second | Third | Fourth[2] | Annual |
| Total Operating Revenues | $ 31,247 | $ 31,495 | $ 31,478 | $ 32,503 | $ 126,723 |
| Operating Income (Loss) | 5,808 | 6,165 | 6,235 | (8,990) | 9,218 |
| Net Income (Loss) | 3,468 | 3,658 | 3,686 | (6,628) | 4,184 |
| Net Income (Loss) Attributable to AT&T | 3,408 | 3,591 | 3,623 | (6,678) | 3,944 |
| Basic Earnings (Loss) Per Share Attributable to AT&T[1] | $ 0.57 | $ 0.60 | $ 0.61 | $ (1.12) | $ 0.66 |
| Diluted Earnings (Loss) Per Share Attributable to AT&T[1] | $ 0.57 | $ 0.60 | $ 0.61 | $ (1.12) | $ 0.66 |
| Stock Price | | | | | |
| High | $ 30.97 | $ 31.94 | $ 31.78 | $ 30.30 | |
| Low | 27.20 | 29.91 | 27.29 | 27.41 | |
| Close | 30.61 | 31.41 | 28.52 | 30.24 | |

1 Quarterly earnings per share impacts may not add to full-year earnings per share impacts due to the difference in weighted-average common shares for the quarters versus theweighted-average common shares for the year.

2 Includes an actuarial loss on pension and postretirement benefit plans (Note 11), T-Mobile breakup fee (Note 4) and impairment of intangible assets (Note 6).

## Report of Management

The consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles. The integrity and objectivity of the data in these financial statements, including estimates and judgments relating to matters not concluded by year end, are the responsibility of management, as is all other information included in the Annual Report, unless otherwise indicated.

The financial statements of AT&T Inc. (AT&T) have been audited by Ernst & Young LLP, Independent Registered Public Accounting Firm. Management has made available to Ernst & Young LLP all of AT&T's financial records and related data, as well as the minutes of stockholders' and directors' meetings. Furthermore, management believes that all representations made to Ernst & Young LLP during its audit were valid and appropriate.

Management maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed by AT&T is recorded, processed, summarized, accumulated and communicated to its management, including its principal executive and principal financial officers, to allow timely decisions regarding required disclosure, and reported within the time periods specified by the Securities and Exchange Commission's rules and forms.

Management also seeks to ensure the objectivity and integrity of its financial data by the careful selection of its managers, by organizational arrangements that provide an appropriate division of responsibility and by communication programs aimed at ensuring that its policies, standards and managerial authorities are understood throughout the organization.

The Audit Committee of the Board of Directors meets periodically with management, the internal auditors and the independent auditors to review the manner in which they are performing their respective responsibilities and to discuss auditing, internal accounting controls and financial reporting matters. Both the internal auditors and the independent auditors periodically meet alone with the Audit Committee and have access to the Audit Committee at any time.

**Assessment of Internal Control**

The management of AT&T is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) or 15d-15(f) under the Securities Exchange Act of 1934. AT&T's internal control system was designed to provide reasonable assurance to the company's management and Board of Directors regarding the preparation and fair presentation of published financial statements.

AT&T management assessed the effectiveness of the company's internal control over financial reporting as of December 31, 2012. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework*. Based on its assessment, AT&T management believes that, as of December 31, 2012, the Company's internal control over financial reporting is effective based on those criteria.

Ernst & Young LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report, has issued an attestation report on the company's internal control over financial reporting.

/s/ Randall Stephenson
Randall Stephenson
Chairman of the Board,
Chief Executive Officer and President

/s/ John J. Stephens
John J. Stephens
Senior Executive Vice President and
Chief Financial Officer

**Report of Independent Registered Public Accounting Firm**

The Board of Directors and Stockholders of AT&T Inc.

We have audited the accompanying consolidated balance sheets of AT&T Inc. (the Company) as of December 31, 2012 and 2011, and the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2012. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Company at December 31, 2012 and 2011, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2012, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company's internal control over financial reporting as of December 31, 2012, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 22, 2013 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP
Dallas, Texas
February 22, 2013

**Report of Independent Registered Public Accounting Firm on Internal Control over Financial Reporting**

The Board of Directors and Stockholders of AT&T Inc.

We have audited AT&T Inc.'s (the Company) internal control over financial reporting as of December 31, 2012, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the COSO criteria). The Company's management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2012, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of the Company as of December 31, 2012 and 2011, and the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2012 and our report dated February 22, 2013 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP
Dallas, Texas
February 22, 2013

Exhibit 21

**PRINCIPAL SUBSIDIARIES OF**

**AT&T INC., AS OF DECEMBER 31, 2012**

**2012 AT&T INC. REPORT TO STOCKHOLDERS**

**SECURITIES AND EXCHANGE COMMISSION ("SEC")**

**FORM 10-K filed February 22, 2013**

| Legal Name | State of Incorporation/Formation | Conducts Business Under |
|---|---|---|
| Illinois Bell Telephone Company | Illinois | AT&T Illinois; AT&T Wholesale |
| Indiana Bell Telephone Company, Incorporated | Indiana | AT&T Indiana; AT&T Wholesale |
| Michigan Bell Telephone Company | Michigan | AT&T Michigan; AT&T Wholesale |
| Nevada Bell Telephone Company | Nevada | AT&T Nevada; AT&T Wholesale |
| Pacific Bell Telephone Company | California | AT&T California; AT&T Wholesale; AT&T DataComm |
| AT&T International, Inc. | Delaware | AT&T International |
| SBC Internet Services, LLC | California | AT&T Internet Services |
| SBC Long Distance, LLC | Delaware | AT&T Long Distance |
| AT&T Teleholdings, Inc. | Delaware | AT&T Midwest; AT&T West; AT&T East |
| Southwestern Bell Telephone Company | Delaware | AT&T Arkansas; AT&T Kansas; AT&T Missouri; AT&T Oklahoma; AT&T Texas; AT&T Southwest; AT&T DataComm; AT&T Wholesale |
| The Ohio Bell Telephone Company | Ohio | AT&T Ohio; AT&T Wholesale |
| The Southern New England Telephone Company | Connecticut | AT&T Connecticut |
| Wisconsin Bell, Inc. | Wisconsin | AT&T Wisconsin; AT&T Wholesale |
| AT&T Corp. | New York | AT&T Corp.; ACC Business; AT&T Wholesale; Lucky Dog Phone Co.; AT&T Business Solutions; AT&T Advanced Solutions |
| AT&T Communications of New York, Inc. | New York | same |
| Teleport Communications New York | New York | same |
| BellSouth Corporation | Georgia | AT&T South |

| | | |
|---|---|---|
| BellSouth Telecommunications, LLC | Georgia | AT&T Alabama<br>AT&T Florida<br>AT&T Georgia<br>AT&T Kentucky<br>AT&T Louisiana<br>AT&T Mississippi<br>AT&T North Carolina<br>AT&T South Carolina<br>AT&T Tennessee<br>AT&T Southeast |
| AT&T Mobility LLC | Delaware | AT&T Mobility |
| AT&T Mobility II LLC | Delaware | AT&T Mobility |
| New Cingular Wireless Services, Inc. | Delaware | AT&T Mobility |

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in this Annual Report (Form 10-K) of AT&T Inc. (AT&T) of our reports dated February 22, 2013, with respect to the consolidated financial statements of AT&T and the effectiveness of internal control over financial reporting of AT&T, included in the 2012 Annual Report to Stockholders of AT&T.

Our audits also included the financial statement schedule of AT&T listed in Item 15(a). This schedule is the responsibility of AT&T's management. Our responsibility is to express an opinion based on our audits. In our opinion, as to which the date is February 22, 2013, the financial statement schedule referred to above, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

We consent to the incorporation by reference of our reports dated February 22, 2013, with respect to the consolidated financial statements and schedule of AT&T and the effectiveness of internal control over financial reporting of AT&T included in this Annual Report (Form 10-K) of AT&T for the year ended December 31, 2012, in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-34062) pertaining to the Stock Savings Plan,
(2) Registration Statement (Form S-8 No. 333-95887) pertaining to the 1995 Management Stock Option Plan,
(3) Registration Statement (Form S-8 No. 333-54398) pertaining to the 1996 Stock and Incentive Plan and the 2001 Incentive Plan,
(4) Registration Statement (Form S-8 No. 333-120894) pertaining to the AT&T Stock Purchase and Deferral Plan and Cash Deferral Plan,
(5) Registration Statement (Form S-8 No. 333-129814) pertaining to the AT&T Savings Plan and certain other plans,
(6) Registration Statement (Form S-3 No. 333-165543) of AT&T and the related Prospectuses,
(7) Registration Statement (Form S-8 No. 333-135517) pertaining to the 2006 Incentive Plan,
(8) Registration Statement (Form S-8 No. 333-139749) pertaining to the BellSouth Retirement Savings Plan and certain other BellSouth plans,
(9) Registration Statement (Form S-8 No. 333-173078) pertaining to the AT&T Savings Plan, AT&T Savings and Security Plan, AT&T Long Term Savings and Security Plan, AT&T Retirement Savings Plan, AT&T Puerto Rico Savings Plan, AT&T Puerto Rico Retirement Savings Plan, AT&T of Puerto Rico, Inc. Long Term Savings and Security Plan, and the BellSouth Savings and Security Plan,
(10) Registration Statement (Form S-8 No. 333-152822) pertaining to the AT&T Non-Employee Director Stock Purchase Plan, and
(11) Registration Statement (Form S-8 No. 333-173079) pertaining to the AT&T 2011 Incentive Plan

/s/ Ernst & Young LLP

Dallas, Texas
February 22, 2013

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Jonathan P. Klug, John J. Stephens, Paul W. Stephens, Wayne Watts, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ Randall L. Stephenson
Randall L. Stephenson
Chairman of the Board, Chief Executive Officer and President

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Randall L. Stephenson, Jonathan P. Klug, John J. Stephens, Paul W. Stephens, Wayne Watts, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ Gilbert F. Amelio |
| Date | Gilbert F. Amelio<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ Reuben V. Anderson |
| Date | Reuben V. Anderson<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ James H. Blanchard
James H. Blanchard
Director

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ Jaime Chico Pardo
Jaime Chico Pardo
Director

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ Scott T. Ford
Scott T. Ford
Director

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ James P. Kelly |
| Date | James P. Kelly<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ Jon C. Madonna
Jon C. Madonna
Director

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ Michael B. McCallister
Michael B. McCallister
Director

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

February 1, 2013
Date

/s/ John B. McCoy
John B. McCoy
Director

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ Joyce M. Roché |
| Date | Joyce M. Roché<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ Matthew K. Rose |
| Date | Matthew K. Rose<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| February 1, 2013 | /s/ Laura D'Andrea Tyson |
| Date | Laura D'Andrea Tyson<br>Director |

Exhibit 31.1

**CERTIFICATION**

I, Randall Stephenson, certify that:

1. I have reviewed this report on Form 10-K of AT&T Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2013

/s/ Randall Stephenson
Randall Stephenson
Chairman of the Board,
Chief Executive Officer and President

Exhibit 31.2

**CERTIFICATION**

I, John J. Stephens, certify that:

1. I have reviewed this report on Form 10-K of AT&T Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2013

/s/ John J. Stephens
John J. Stephens
Senior Executive Vice President
and Chief Financial Officer

Exhibit 32

**Certification of Periodic Financial Reports**

Pursuant to 18 U.S.C. Section 1350, each of the undersigned officers of AT&T Inc. (the "Company") hereby certifies that the Company's Annual Report on Form 10-K for the year ended December 31, 2012 (the "Report") fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

February 22, 2013

By: /s/ Randall Stephenson.
Randall Stephenson
Chairman of the Board, Chief Executive Officer
and President

February 22, 2013

By: /s/ John J. Stephens.
John J. Stephens
Senior Executive Vice President
and Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document. This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 ("Exchange Act") or otherwise subject to liability under that section. This certification shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Exchange Act except to the extent this Exhibit 32 is expressly and specifically incorporated by reference in any such filing.

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to AT&T Inc. and will be retained by AT&T Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

**FORM 10-K**

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

(Mark One)
☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)**

**OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the fiscal year ended December 31, 2015**

**OR**

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d)**

**OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the transition period from _____ to**

Commission File Number: 1-8610

**AT&T INC.**

Incorporated under the laws of the State of Delaware
I.R.S. Employer Identification Number 43-1301883

208 S. Akard St., Dallas, Texas, 75202
Telephone Number 210-821-4105

Securities registered pursuant to Section 12(b) of the Act: (See attached Schedule A)

Securities registered pursuant to Section 12(g) of the Act: None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes [X] No [ ]

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes [ ] No [X]

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [X] No [ ]

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes [X] No [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [ X ]

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definition of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

| | |
|---|---|
| Large accelerated filer [X] | Accelerated filer [ ] |
| Non-accelerated filer [ ] | Smaller reporting company [ ] |
| (Do not check if a smaller reporting company) | |

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).
Yes [ ] No [X]

Based on the closing price of $35.52 per share on June 30, 2015, the aggregate market value of our voting and non-voting common stock held by non-affiliates was $184 billion.

At February 10, 2016, common shares outstanding were 6,151,208,898.

**SCHEDULE A**

Securities Registered Pursuant To Section 12(b) Of The Act:

| Title of each class | Name of each exchange on which registered |
|---|---|
| Common Shares (Par Value $1.00 Per Share) | New York Stock Exchange |
| 5.875% AT&T Inc. Global Notes due April 28, 2017 | New York Stock Exchange |
| Floating Rate AT&T Inc. Global Notes due June 4, 2019 | New York Stock Exchange |
| 1.875% AT&T Inc. Global Notes due December 4, 2020 | New York Stock Exchange |
| 2.65% AT&T Inc. Global Notes due December 17, 2021 | New York Stock Exchange |
| 1.45% AT&T Inc. Global Notes due June 1, 2022 | New York Stock Exchange |
| 2.50% AT&T Inc. Global Notes due March 15, 2023 | New York Stock Exchange |
| 1.30% AT&T Inc. Global Notes due September 5, 2023 | New York Stock Exchange |
| 2.40% AT&T Inc. Global Notes due March 15, 2024 | New York Stock Exchange |
| 3.50% AT&T Inc. Global Notes due December 17, 2025 | New York Stock Exchange |
| 2.60% AT&T Inc. Global Notes due December 17, 2029 | New York Stock Exchange |
| 3.55% AT&T Inc. Global Notes due December 17, 2032 | New York Stock Exchange |
| 3.375% AT&T Inc. Global Notes due March 15, 2034 | New York Stock Exchange |
| 2.45% AT&T Inc. Global Notes due March 15, 2035 | New York Stock Exchange |
| 7.00% AT&T Inc. Global Notes due April 30, 2040 | New York Stock Exchange |
| 4.25% AT&T Inc. Global Notes due June 1, 2043 | New York Stock Exchange |
| 4.875% AT&T Inc. Global Notes due June 1, 2044 | New York Stock Exchange |

## PART I

## ITEM 1. BUSINESS

### GENERAL

AT&T Inc. ("AT&T," "we" or the "Company") is a holding company incorporated under the laws of the State of Delaware in 1983 and has its principal executive offices at 208 S. Akard St., Dallas, Texas, 75202 (telephone number 210-821-4105). We maintain an Internet website at www.att.com. (This website address is for information only and is not intended to be an active link or to incorporate any website information into this document.) We make available, free of charge, on our website our annual report on Form 10-K, our quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission (SEC). We also make available on that website, and in print, if any stockholder or other person so requests, our "Code of Ethics" applicable to all employees and Directors, our "Corporate Governance Guidelines," and the charters for all committees of our Board of Directors, including Audit, Human Resources and Corporate Governance and Nominating. Any changes to our Code of Ethics or waiver of our Code of Ethics for senior financial officers, executive officers or Directors will be posted on that website.

**History**

AT&T, formerly known as SBC Communications Inc. (SBC), was formed as one of several regional holding companies created to hold AT&T Corp.'s (ATTC) local telephone companies. On January 1, 1984, we were spun-off from ATTC pursuant to an anti-trust consent decree, becoming an independent publicly-traded telecommunications services provider. At formation, we primarily operated in five southwestern states. Our subsidiaries merged with Pacific Telesis Group in 1997, Southern New England Telecommunications Corporation in 1998 and Ameritech Corporation in 1999, thereby expanding our wireline operations as the incumbent local exchange carrier (ILEC) into a total of 13 states. In November 2005, one of our subsidiaries merged with ATTC, creating one of the world's leading telecommunications providers. In connection with the merger, we changed the name of our company from "SBC Communications Inc." to "AT&T Inc." In December 2006, one of our subsidiaries merged with BellSouth Corporation (BellSouth) making us the ILEC in an additional nine states. With the BellSouth acquisition, we also acquired BellSouth's 40 percent economic interest in AT&T Mobility LLC (AT&T Mobility), formerly Cingular Wireless LLC, resulting in 100 percent ownership of AT&T Mobility. In 2014, we completed the acquisition of wireless provider Leap Wireless International, Inc. (Leap) and sold our ILEC operations in Connecticut, which we had previously acquired in 1998. In 2015, we completed acquisitions of wireless properties in Mexico and DIRECTV, a leading provider of digital television entertainment services in both the United States and Latin America. Our services and products are marketed under the AT&T, Cricket, DIRECTV, SKY, Iusacell, Unefon and Nextel Mexico brand names.

**Scope**

We are a leading provider of communications and digital entertainment services in the United States and the world. We offer our services and products to consumers in the U.S., Mexico and Latin America and to businesses and other providers of telecommunications services worldwide. We also own and operate three regional sports networks, and retain non-controlling interests in another regional sports network and a network dedicated to game-related programming as well as Internet interactive game playing.

The services and products that we offer vary by market, and include: wireless communications, data/broadband and Internet services, digital video services, local and long-distance telephone services, telecommunications equipment, managed networking, and wholesale services. In conjunction with our July 24, 2015 acquisition of DIRECTV, we re-organized our operating subsidiaries as follows, corresponding to our operating segments for financial reporting purposes:

- Business Solutions business units provide services to business, governmental and wholesale customers and individual subscribers who purchase wireless services through employer-sponsored plans. We provide advanced IP-based services including Virtual Private Networks (VPN), Ethernet-related products and broadband, collectively referred to as strategic business services, as well as traditional data and voice products. We utilize our wireless and wired network and are marketed to provide a complete communications solution to our business customers.
- Entertainment Group business units provide video, internet and voice communication services to residential customers located in the U.S. or in U.S. territories. We utilize our copper and IP-based (referred to as "wired" or "wireline") network and/or our satellite technology.
- Consumer Mobility business units provide nationwide wireless service to consumers, and wireless wholesale and resale subscribers located in the U.S. or in U.S. territories. We utilize our U.S. wireless network to provide voice and data services, including high speed internet, video entertainment and home monitoring services.

**Integration of Data/Broadband and Entertainment Services**

As the communications industry continues to move toward Internet-based technologies that are capable of blending traditional wireline and wireless services, we plan to offer services that take advantage of these new and more sophisticated technologies. In particular, we intend to continue to focus on expanding our high-speed Internet and video offerings and on developing IP-based services that allow customers to unite their home or business fixed services with their mobile service. During 2016, we will continue to develop and provide unique integrated video, mobile and broadband solutions.

**International**

We believe that the wireless model in the U.S., with exploding demand for mobile Internet service and the associated economic benefits, will be repeated around the world as companies invest in high-speed mobile networks. Due in part to recent changes in the legal and regulatory framework in Mexico, during 2015 we invested in Mexican wireless operations to establish a unique, seamless, cross-border North American wireless network covering 355 million people and businesses in the U.S. and Mexico. During 2016, we will continue to build a world-class mobile business and network in Mexico.

We provide businesses voice applications over IP-based networks (i.e., Enhanced Virtual Private Networks or "EVPN"). Over the past several years, we have built out our new IP/MPLS (Internet Protocol/MultiProtocol Label Switching) network, to supplement our IP-based product set, and eventually replace our older circuit-based networks and services. These products allow us to provide highly complex global data networks. Additional IP-based services include Internet access and network integration, dedicated Internet and enterprise networking services. These advanced IP-based services continued to grow during 2015 as customers shift from our older circuit-based services. We expect this trend to continue in 2016 as customers continue to use more services based on Internet access and demand ever-increasing transmission speeds, especially for video. To align with these trends, we continue to reconfigure our wireline network to take advantage of the latest technologies and services.

Network integration services include installation of business data systems, local area networking and other data networking offerings. Internet access services include a wide range of products including access service, dedicated access, web hosting, managed services, e-mail and high-speed access services. Our managed web-hosting services for businesses provide network, server and security infrastructure as well as built-in data storage and include application performance management, database management, hardware and operating system management. Our hosting services also provide customers with secure access to detailed reporting information about their infrastructure and applications. These services are rapidly evolving to a cloud delivery model, providing customers with on-demand data storage and computing capabilities from a centrally-managed network (referred to as the cloud) accessible from a variety of different devices and locations.

Packet services consist of data networks using packet switching and transmission technologies, including traditional circuit-based and IP connectivity services. Packet services enable customers to transmit large volumes of data economically and securely and are used for local area network (LAN) interconnection and inter-office communications. High-speed packet services are used extensively by enterprise (large business) customers.

Enterprise networking services provide comprehensive support from network design, implementation and installation to ongoing network operations and management for networks of varying scales, including LANs and virtual private networks. These services include applications such as e-mail, order entry systems, employee directories, human resource transactions and other database applications. We also offer Wi-Fi service.

**Legacy Voice and Data Services** – Voice services include traditional local and long-distance service provided to business and governmental customers, and wholesale access to our network and individual network elements provided to competitors. We also provide wholesale switched access service to other service providers. Our circuit-based, traditional data products include switched and dedicated transport services that allow business customers to transmit data at high speeds, as well as DSL Internet access.

Revenues from our traditional voice services continue to decline as customers switch to wireless or VoIP services provided by either us, cable or other Internet-based providers. In addition, the continuing slow economic growth and business starts have led some wireline customers to terminate their business phone service. We have responded by offering packages of combined voice and data services, including broadband and video, and intend to continue this strategy during 2016.

**Other Services** – Other service revenues include project-based revenue, which is nonrecurring in nature, as well as revenues from other managed services, outsourcing, government professional service and equipment.

We provide intrastate, interstate and international wholesale networking capacity to other service providers. We offer a combination of high-volume transmission capacity and conventional dedicated line services on a regional, national and international basis to our wholesale customers, which are primarily wireless carriers, interexchange carriers, Internet service providers (ISPs) and facility-based and switchless resellers.

**Wireless Equipment** – We sell a wide variety of handsets, wirelessly enabled computers (e.g., tablets and notebooks) and personal computer wireless data cards manufactured by various suppliers for use with our voice and data services. We sell through our own company-owned stores, agents or third-party retail stores. Like other wireless service providers, we have historically provided postpaid contract subscribers substantial equipment subsidies to initiate, renew or upgrade service. To reduce these subsidies and provide our customers with more service options, in 2013, we launched our AT&T Next program, which allows customers to buy handsets on an installment basis in exchange for discounted service charges, along with other benefits, and we also offer new customers the opportunity to bring their own device. Due to the popularity of this program, in late December 2015, we announced that we would no longer offer subsidized equipment to the majority of customers. Accordingly, we expect equipment revenues to continue to increase in 2016 along with a proportionate decline in service revenues. We also sell accessories, such as carrying cases, hands-free devices, and other items, to consumers, as well as to agents and third-party distributors for resale.

**CONSUMER MOBILITY**

This segment consists of AT&T Mobility operations that provide wireless services to consumers, and wireless wholesale and resale subscribers located in the U.S. or U.S. territories. Wireless services include data and voice services, including long-distance service and roaming services. Roaming services enable our subscribers to utilize other carriers' networks when they are "roaming" outside our network footprint. The Consumer Mobility segment provided approximately 24% of 2015 total segment operating revenues and 35% of our 2015 total segment contribution. We classify our subscribers as either postpaid, prepaid, connected device or reseller. At December 31, 2015, we served nearly 55.0 million Consumer Mobility subscribers, including 28.8 million postpaid, 11.5 million prepaid, 13.7 million reseller and 929,000 connected devices. We divide our revenue into the following categories: postpaid wireless, prepaid wireless, other services, and equipment.

**Postpaid Wireless** – We offer a comprehensive range of high-quality nationwide wireless voice and data communications services in a variety of pricing plans. Wireless data services continue to be a growing area of Consumer Mobility's business, representing an increasing share of overall subscriber revenue. Subscribers continue to upgrade their handsets to more advanced integrated devices, contributing to growth from wireless data services. We offer Mobile Share plans which allow sharing of voice, text and data across multiple devices, AT&T Next, a program allowing subscribers to more frequently upgrade handsets using an installment payment plan and in January 2015 began offering Rollover Data on Mobile Share plans, which allows unused shareable plan data to be rolled over and used within the next month. Such offerings are intended to encourage existing subscribers to upgrade their current services and/or add connected devices, attract subscribers from other providers, and minimize subscriber churn. Participation in these plans continues to increase. Customers in our "connected device" category (e.g., users of session-based tablets, monitoring devices and automobile systems) purchase those devices from third-party suppliers that buy data access supported by our network. We continue to upgrade our network and coordinate with equipment manufacturers and applications developers in order to further capitalize on the continued growth in the demand for wireless data services.

During 2015, we offered postpaid wireless service under two alternatives: (1) for subscribers purchasing a device on installments under the AT&T Next program or for those that bring their own device, no annual service contract is signed but the device must be paid in full if the customer chooses to drop their service from AT&T; and (2) for subscribers who purchase their equipment under the traditional device subsidy model, service contracts are for two year periods with an increasing portion of these subscribers receiving unlimited voice and texting services in conjunction with data services purchased through our Mobile Share plans. Market maturity, competition and the migration of subscribers to employer plans offered by our Business Solutions segment have slowed the growth in subscribers.

**Prepaid Wireless** – We offer nationwide wireless voice and data communications to certain customers who prefer to pay in advance. Services are offered under the Cricket or Go Phone brands and are typically monthly prepaid services.

**Other Service** – Other services includes consulting, revenues from advertising, application and co-location services as well as fees we charge to other carriers for providing roaming services to their customers when their customers utilize our network.

**Equipment** – We sell a wide variety of handsets, wirelessly enabled computers (e.g., tablets and notebooks) and personal computer wireless data cards manufactured by various suppliers for use with our voice and data services. We sell through our own company-owned stores, agents or third-party retail stores. Like other wireless service providers, we have historically provided postpaid contract subscribers substantial equipment subsidies to initiate, renew or upgrade service. To reduce these subsidies and provide our customers with more service options, in 2014, we launched our AT&T Next program, which allows customers to buy handsets on an installment basis in exchange for discounted service charges, along with other benefits, and we also offer new customers the opportunity to bring their own device. Due to the popularity of this program, in late December 2015, we announced that we would no longer offer subsidized equipment. Accordingly, we expect equipment revenues to continue to increase in 2016 along with a proportionate decline in service revenues. We also sell accessories, such as carrying cases, hands-free devices, and other items, to consumers, as well as to agents and third-party distributors for resale.

Additional information on our Consumer Mobility segment is contained in the Annual Report in the "Operating Environment Overview" section beginning on page 22 and is incorporated herein by reference pursuant to General Instruction G(2).

**MAJOR CLASSES OF SERVICE**

The following table sets forth the percentage of total consolidated reported operating revenues by any class of service that accounted for 10% or more of our consolidated total operating revenues in any of the last three fiscal years:

| | Percentage of Total Consolidated Operating Revenues | | |
|---|---|---|---|
| | **2015** | 2014 | 2013 |
| **Business Solutions Segment** | | | |
| Wireless service | **21 %** | 23 % | 23 % |
| Legacy voice and data services | **12** | 15 | 17 |
| Equipment [1] | **6** | 6 | 4 |
| **Entertainment Group Segment** | | | |
| Video entertainment | **14** | 5 | 5 |
| Legacy voice and data services | **4** | 6 | 8 |
| Equipment [2] | - | - | - |
| **Consumer Mobility Segment** | | | |
| Wireless service [3] | **20** | 23 | 25 |
| Equipment | **4** | 4 | 3 |
| **International Segment** | | | |
| Wireless service | **1** | - | - |
| Video entertainment | **1** | - | - |
| Equipment | - | - | - |

[1] Includes customer premises equipment of $929 million in 2015, $979 million in 2014, and $1,046 million in 2013 that is reported as other service and equipment revenues in our Business Solutions segment.

[2] Includes customer premises equipment of $22 million in 2015, $40 million in 2014, and $66 million in 2013 that is reported as other service and equipment revenues in our Entertainment Group segment.

[3] Includes the combined service revenues for postpaid and prepaid services.

Additional information on our geographical distribution of revenues is contained in the Annual Report in the "Segment Geography" section beginning on page 55 and is incorporated herein by reference pursuant to General Instruction G(2).

## GOVERNMENT REGULATION

Wireless communications providers must be licensed by the Federal Communications Commission (FCC) to provide communications services at specified spectrum frequencies within specified geographic areas and must comply with the rules and policies governing the use of the spectrum as adopted by the FCC. The FCC's rules have a direct impact on whether the wireless industry has sufficient spectrum available to support the high quality, innovative services our customers demand. Wireless licenses are issued for a fixed time period, typically ten years, and we must seek renewal of these licenses. While the FCC has generally renewed licenses given to operating companies such as us, the FCC has authority to both revoke a license for cause and to deny a license renewal if a renewal is not in the public interest. Additionally, while wireless communications providers' prices and service offerings are generally not subject to regulation, the federal government and various states are considering new regulations and legislation relating to various aspects of wireless services.

The Communications Act of 1934 and other related acts give the FCC broad authority to regulate the U.S. operations of our satellite services, which are licensed by the FCC. In addition, states representing a majority of our local service access lines have adopted legislation that enables us to provide IP-based video service through a single statewide or state-approved franchise (as opposed to the need to acquire hundreds or even thousands of municipal-approved franchises) to offer competitive video services. We also are supporting efforts to update and improve regulatory treatment for retail services. Regulatory reform and passage of legislation is uncertain and depends on many factors.

In February 2015, the FCC released an order in response to the D.C. Circuit's January 2014 decision adopting new rules, and reclassifying both fixed and mobile consumer broadband Internet access services as telecommunications services, subject to comprehensive regulation under the Telecommunications Act of 1996. The FCC's decision significantly expands the FCC's existing authority to regulate the provision of fixed and mobile broadband Internet access services. The FCC also asserted jurisdiction over Internet interconnection arrangements, which until now have been unregulated. These actions could have an adverse impact on our fixed and mobile broadband services and operating results. AT&T and several other parties, including US Telecom and CTIA trade groups, have appealed the FCC's order.

## RESEARCH AND DEVELOPMENT

AT&T scientists and engineers conduct research in a variety of areas, including IP networking; advanced network design and architecture; network and cyber security; network operations support systems; satellite technology; and data mining techniques. The majority of the development activities are performed by AT&T Services, Inc. The developers within AT&T Services, Inc. work with our business units to create new services and invent tools and systems to manage secure and reliable networks for us and our customers. In recent years, we initiated a technology outreach effort aimed at venture capital funded startups with the objective of rapidly introducing new solutions, products and applications developed by third parties. We also have a research agreement with Ericsson. Research and development expenses were $1,693 million in 2015, $1,730 million in 2014, and $1,488 million in 2013.

## EMPLOYEES

As of January 31, 2016, we employed approximately 281,000 persons. Approximately 45 percent of our employees are represented by the Communications Workers of America, the International Brotherhood of Electrical Workers or other unions. Four-year contracts covering approximately 24,000 traditional wireline employees in our Southeast region were ratified on December 4, 2015. Contracts covering approximately 9,000 mobility employees in the Southwest region and nearly 16,000 traditional wireline employees in our West region will expire in 2016. After expiration of the current agreements, work stoppages or labor disruptions may occur in the absence of new contracts or other agreements being reached. A separate contract covering only benefits with approximately 40,000 employees in our mobility business expires in 2016, though there is a no strike/no lock-out clause. Contracts covering wages and other non-benefit working terms for these mobility employees are structured on a regional basis.

At December 31, 2015, we had approximately 322,422 retirees who, along with their dependents, were eligible to receive retiree benefits.

- The impact on our networks, including satellites operated by DIRECTV, and business from major equipment failures; security breaches related to the network or customer information; our inability to obtain handsets, equipment/software or have handsets, equipment/software serviced, and in the case of satellites launched, in a timely and cost-effective manner from suppliers; or severe weather conditions, natural disasters, pandemics, energy shortages, wars or terrorist attacks.
- The issuance by the Financial Accounting Standards Board or other accounting oversight bodies of new accounting standards or changes to existing standards.
- The issuance by the Internal Revenue Service and/or state or foreign tax authorities of new tax regulations or changes to existing standards and actions by federal, state, local or foreign tax agencies and judicial authorities with respect to applying applicable tax laws and regulations and the resolution of disputes with any taxing jurisdictions.
- Our ability to integrate our acquisition of DIRECTV.
- Our ability to adequately fund our wireless operations, including payment for additional spectrum, network upgrades and technological advancements.
- Our increased exposure to video competition and foreign economies due to our recent acquisitions of DIRECTV and Mexican wireless properties, including foreign exchange fluctuations , as well as regulatory and political uncertainty in Latin America.
- Changes in our corporate strategies, such as changing network requirements or acquisitions and dispositions, which may require significant amounts of cash or stock, to respond to competition and regulatory, legislative and technological developments.
- The uncertainty surrounding further congressional action to address spending reductions, which may result in a significant reduction in government spending and reluctance of businesses and consumers to spend in general and on our products and services specifically, due to this fiscal uncertainty.

Readers are cautioned that other factors discussed in this report, although not enumerated here, also could materially affect our future earnings.

**EXECUTIVE OFFICERS OF THE REGISTRANT**
**(As of February 1, 2016)**

| Name | Age | Position | Held Since |
|---|---|---|---|
| Randall L. Stephenson | 55 | Chairman of the Board, Chief Executive Officer and President | 6/2007 |
| William A. Blase Jr. | 60 | Senior Executive Vice President – Human Resources | 6/2007 |
| James W. Cicconi | 63 | Senior Executive Vice President – External and Legislative Affairs | 11/2008 |
| Ralph de la Vega | 64 | Vice Chairman, AT&T Inc. and Chief Executive Officer, AT&T Business Solutions and AT&T International, LLC | 2/2016 |
| John M. Donovan | 55 | Chief Strategy Officer and Group President – AT&T Technology and Operations | 2/2016 |
| David S. Huntley | 57 | Chief Compliance Officer | 12/2014 |
| Lori M. Lee | 50 | Senior Executive Vice President and Global Marketing Officer | 4/2015 |
| David R. McAtee II | 47 | Senior Executive Vice President and General Counsel | 10/2015 |
| John T. Stankey | 53 | Chief Executive Officer-AT&T Entertainment Group, AT&T Services, Inc. | 7/2015 |
| John J. Stephens | 56 | Senior Executive Vice President and Chief Financial Officer | 6/2011 |

All of the above executive officers have held high-level managerial positions with AT&T or its subsidiaries for more than the past five years, except for Mr. McAtee. Mr. McAtee was a partner of Haynes and Boone, LLP, a law firm based in Dallas, Texas, from January 2002 to December 2011. Mr. McAtee joined AT&T as Senior Vice President and Assistant General Counsel in January 2012. He served as Senior Associate General Counsel from March 2015 to September 2015. Executive officers are not appointed to a fixed term of office.

## ITEM 6. SELECTED FINANCIAL DATA

Information required by this Item is included in the Annual Report under the heading "Selected Financial and Operating Data" on page 10, which is incorporated herein by reference pursuant to General Instruction G(2).

## ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION

Information required by this Item is included in the Annual Report on pages 11 through 40, which is incorporated herein by reference pursuant to General Instruction G(2).

## ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Information required by this Item is included in the Annual Report under the heading "Market Risk" on page 35, which is incorporated herein by reference pursuant to General Instruction G(2).

## ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Information required by this Item is included in the Annual Report on pages 41 through 79, which is incorporated herein by reference pursuant to General Instruction G(2).

## ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

During our two most recent fiscal years, there has been no change in the independent accountant engaged as the principal accountant to audit our financial statements and the independent accountant has not expressed reliance on other independent accountants in its reports during such time period.

## ITEM 9A. CONTROLS AND PROCEDURES

### Disclosure Controls and Procedures

The registrant maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed by the registrant is recorded, processed, summarized, accumulated and communicated to its management, including its principal executive and principal financial officers, to allow timely decisions regarding required disclosure, and reported within the time periods specified in the SEC's rules and forms. The Chief Executive Officer and Chief Financial Officer have performed an evaluation of the effectiveness of the design and operation of the registrant's disclosure controls and procedures as of December 31, 2015. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the registrant's disclosure controls and procedures were effective as of December 31, 2015.

### Internal Control Over Financial Reporting

(a) Management's Annual Report on Internal Control over Financial Reporting

The management of AT&T is responsible for establishing and maintaining adequate internal control over financial reporting. AT&T's internal control system was designed to provide reasonable assurance as to the integrity and reliability of the published financial statements. AT&T management assessed the effectiveness of the company's internal control over financial reporting as of December 31, 2015. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework* (2013 framework). We have excluded from the scope of our assessment of internal control over financial reporting the operations and related assets of DIRECTV and Mexico wireless operations (Mexico), which we acquired in 2015. At December 31, 2015 and for the period from acquisition through December 31, 2015, total assets and operating revenues subject to DIRECTV's internal control over financial reporting represented 20.3% and 9.9% of AT&T's consolidated total assets and total revenues as of and for the year ended December 31, 2015. At December 31, 2015 and for the period from acquisition through December 31, 2015, total assets and operating revenues subject to Mexico's internal control over financial reporting represented 1.6% and 1.3% of AT&T's consolidated total assets and total revenues as of and for the year ended December 31, 2015. Based on its assessment, AT&T management believes that, as of December 31, 2015, the Company's internal control over financial reporting is effective based on those criteria.

## ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information required by Item 404 of Regulation S-K is included in the registrant's Proxy Statement under the heading "Related Person Transactions," which is incorporated herein by reference pursuant to General Instruction G(3). Information required by Item 407(a) of Regulation S-K is included in the registrant's Proxy Statement under the heading "Independence of Directors," which is incorporated herein by reference pursuant to General Instruction G(3).

## ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information required by this Item is included in the registrant's Proxy Statement under the heading "Principal Accountant Fees and Services," which is incorporated herein by reference pursuant to General Instruction G(3).

**Part IV**

## ITEM 15. EXHIBITS and FINANCIAL STATEMENT SCHEDULES

(a) Documents filed as a part of the report:

| | Page |
|---|---|
| (1) Report of Independent Registered Public Accounting Firm | * |
| Financial Statements covered by Report of Independent Registered Public Accounting Firm: | |
| Consolidated Statements of Income | * |
| Consolidated Statements of Comprehensive Income | * |
| Consolidated Balance Sheets | * |
| Consolidated Statements of Cash Flows | * |
| Consolidated Statements of Changes in Stockholders' Equity | * |
| Notes to Consolidated Financial Statements | * |

* Incorporated herein by reference to the appropriate portions of the registrant's Annual Report to Stockholders for the fiscal year ended December 31, 2015. (See Part II.)

| | Page |
|---|---|
| (2) Financial Statement Schedules: | |
| II - Valuation and Qualifying Accounts | 24 |

Financial statement schedules other than those listed above have been omitted because the required information is contained in the financial statements and notes thereto, or because such schedules are not required or applicable.

(3) Exhibits:

Exhibits identified in parentheses below, on file with the SEC, are incorporated herein by reference as exhibits hereto. Unless otherwise indicated, all exhibits so incorporated are from File No. 1-8610.

| Exhibit Number | |
|---|---|
| 2 | Agreement and Plan of Merger, dated as of May 18, 2014, among AT&T Inc., DIRECTV and Steam Merger Sub LLC. (Exhibit 10.1 to Form 8-K dated May 18, 2014.) |
| 3-a | Restated Certificate of Incorporation, filed with the Secretary of State of Delaware on December 13, 2013. (Exhibit 3.1 to Form 8-K dated December 13, 2013.) |
| 3-b | Bylaws amended December 18, 2015. (Exhibit 3 to Form 8-K dated December 18, 2015.) |
| 4-a | No instrument which defines the rights of holders of long-term debt of the registrant and all of its consolidated subsidiaries is filed herewith pursuant to Regulation S-K, Item 601(b)(4)(iii)(A), except for the instruments referred to in 4-b, 4-c, 4-d, 4-e, 4-f, 4-g, 4-h, 4-i, and 4-j below. Pursuant to this regulation, the registrant hereby agrees to furnish a copy of any such instrument not filed herewith to the SEC upon request. |

| | |
|---|---|
| 10-i | Cash Deferral Plan, amended and restated September 24, 2015. (Exhibit 10-b to Form 10-Q filed for September 30, 2015.) |
| 10-j | Master Trust Agreement for AT&T Inc. Deferred Compensation Plans and Other Executive Benefit Plans and subsequent amendments dated August 1, 1995 and November 1, 1999. (Exhibit 10-dd to Form 10-K for 2009.) |
| 10-k | Officer Disability Plan, amended and restated effective January 1, 2010. (Exhibit 10-i to Form 10-Q filed for June 30, 2009.) |
| 10-l | AT&T Inc. Health Plan, amended July 28, 2015 and effective January 1, 2016. |
| 10-m | Pension Benefit Makeup Plan No.1, amended and restated December 31, 2011. |
| 10-n | AT&T Inc. Equity Retention and Hedging Policy. (Exhibit 10.2 to Form 8-K dated December 15, 2011.) |
| 10-o | Administrative Plan, amended and restated effective September 24, 2015. (Exhibit 10-c to Form 10-Q filed for September 30, 2015.) |
| 10-p | AT&T Inc. Non-Employee Director Stock and Deferral Plan, amended September 25, 2015. (Exhibit 99.1 to Form 8-K dated September 25, 2015.) |
| 10-q | AT&T Inc. Non-Employee Director Stock Purchase Plan, effective June 27, 2008. (Exhibit 10-t to Form 10-K for 2013.) |
| 10-r | Communications Concession Program for Directors, amended and restated February 1, 2013. (Exhibit 10-aa to Form 10-K for 2012.) |
| 10-s | Form of Indemnity Agreement, effective July 1, 1986, between SBC (now AT&T Inc.) and its directors and officers. (Exhibit 10-bb to Form 10-K for 2011.) |
| 10-t | Transition Agreement by and between BellSouth Corporation and Rafael de la Vega, dated December 29, 2003. (Exhibit 10-cc to Form 10-K for 2011.) |
| 10-u | AT&T Corp. Executive Deferred Compensation Plan (formerly known as AT&T Corp. Senior Management Incentive Award Deferral Plan), amended and restated January 1, 2008. (Exhibit 10-aa to Form 10-K for 2013.) |
| 10-v | Master Trust Agreement for AT&T Corp. Deferred Compensation Plans and Other Executive Benefit Plans, effective January 13, 1994. (Exhibit 10-nn to Form 10-K for 2011.) |
| 10-v(i) | First Amendment to Master Trust Agreement, effective December 23, 1997. (Exhibit 10-nn(i) to Form 10-K for 2011.) |
| 10-w | AT&T Corp. Non-Qualified Pension Plan, as amended and restated effective December 31, 2008. (Exhibit 10-cc to Form 10-K for 2013.) |
| 10-x | AT&T Corp. Excess Benefit and Compensation Plan, as amended and restated effective December 31, 2008. (Exhibit 10-dd to Form 10-K for 2013.) |
| 10-y | BellSouth Corporation Nonqualified Deferred Compensation Plan, dated January 1, 2005. (Exhibit 10-ss to Form 10-K for 2011.) |
| 10-z | BellSouth Corporation Deferred Compensation Plan for Non-Employee Directors, dated March 9, 1984. (Exhibit 10-uu to Form 10-K for 2011.) |

| | |
|---|---|
| 31.1 | Certification of Principal Executive Officer |
| 31.2 | Certification of Principal Financial Officer |
| 32 | Section 1350 Certification |
| 99 | Supplemental Interim Financial Information |
| 101 | XBRL Instance Document |

We will furnish to stockholders upon request, and without charge, a copy of the Annual Report to Stockholders and the Proxy Statement, portions of which are incorporated by reference in the Form 10-K. We will furnish any other exhibit at cost.

**AT&T INC.**
**SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS**
**Allowance for Deferred Tax Assets**
Dollars in Millions

| COL. A | COL. B | COL. C | | | COL. D | COL. E |
|---|---|---|---|---|---|---|
| | | Additions | | | | |
| | Balance at Beginning of Period | (1) Charged to Costs and Expenses | (2) Charged to Other Accounts (a) | (3) Acquisitions (b) | Deductions (c) | Balance at End of Period |
| **Year 2015** | **$ 1,182** | **283** | **373** | **420** | **117** | **$ 2,141** |
| Year 2014 | $ 927 | - | 445 | - | 190 | $ 1,182 |
| Year 2013 | $ 886 | 94 | - | - | 53 | $ 927 |

(a) Includes current year reclassifications from other balance sheet accounts.
(b) Acquisitions of DIRECTV and wireless properties in Mexico in 2015.
(c) Reductions to valuation allowances related to deferred tax assets.

Exhibit 10-I

# AT&T HEALTH PLAN

Effective: January 1, 1987
Previously Amended and Restated: January 1, 2015
Amended and Restated Effective: January 1, 2016 (unless otherwise provided herein)

**2.5** **AT&T**. "AT&T" shall mean AT&T Inc. References to "Company" shall mean AT&T.

**2.6** **Basic Plan(s)**. "Basic Plan(s)" shall mean AT&T's group medical (known as the "Silver Option" in the "AT&T Medical Plan" (or the "AT&T International Health Plan" for Officers serving in expatriate positions with the Company)), dental (non-DHMO option), and vision care plans (including the AT&T Retiree Vision Care Program). For a Participant who Retired on or before August 31, 1992, Basic Plans shall mean the AT&T Medical and Group Life Insurance Plan–CustomCare ("CustomCare") and dental (non-DHMO option) plans. For this purpose, the Plan Administrator maintains governing records setting forth the names of those Participants who Retired on or before August 31, 1992.

**2.7** **CEO**. "CEO" shall mean the Chief Executive Officer of AT&T Inc.

**2.8** **COBRA**. "COBRA" shall mean the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended.

**2.9** **Coinsurance.** "Coinsurance" shall mean the amount an Active Participant must pay each time he receives Covered Health Services, after he meets the applicable Annual Deductible. Coinsurance payments are calculated as a percentage of Covered Health Services, rather than a set dollar amount. Coinsurance does not apply to Preventive Care, Dental Services and Vision Services (or Medical Services for Retired Participants as provided in Section 4.1(c)). The applicable Coinsurance percentage is set forth in Appendix A to this Plan.

**2.10** **Committee**. "Committee" shall mean the Human Resources Committee of the Board of Directors of AT&T Inc.

**2.11** **Covered Benefits**. "Covered Benefits" shall mean the benefits provided by the Plan, as provided for and governed by Section 4.1 of the Plan.

**2.12** **Covered Health Services**. "Covered Health Services" means all Medical Services or Preventive Care that would qualify as deductible medical expenses for federal income tax purposes, whether deducted or not. Dental Services and Vision Services are not included in the definition of Covered Health Services.

**2.13** **Dental Services**. "Dental Services" shall mean services for dental and orthodontic care. The Plan Administrator, in its sole discretion, shall determine whether a particular service is classified as Preventive Care or a Dental, Medical or Vision Service.

**2.14** **Dependent(s)**. "Dependent(s)" shall mean those individuals who would qualify as a Participant's dependent(s) under the terms of the group medical Basic Plan in which the Participant participates (or last previously participated with respect to Medicare Eligible Retired Participants (the "Prior Basic Plan"), or, if applicable, Substitute Basic Coverage.

**2.15** **Disability.** "Disability" shall mean qualification for long term disability benefits under Section 3.1 of the Officer Disability Plan.

**2.28** **Qualified Dependent**. "Qualified Dependent" shall mean a Dependent who loses coverage under a COBRA eligible program due to a Qualifying Event.

**2.29** **Qualifying Event**. "Qualifying Event" shall mean any of the following events if, but for COBRA continuation coverage, they would result in a Participant's loss of coverage under this Plan:

(1) death of a covered Eligible Employee;
(2) termination (other than by reason of such Eligible Employee's gross misconduct) of an Employee's employment;
(3) reduction in hours of an Eligible Employee;
(4) divorce or legal separation of an Eligible Employee or dissolution of an Eligible Employee's registered domestic partnership;
(5) an Eligible Employee's entitlement to Medicare benefits; or
(6) a Dependent child ceasing to qualify as a Dependent under the group medical Basic Plan,(or, if applicable, Substitute Basic Coverage) or with respect to a Dependent child who is a Medicare Eligible Retired Participant, the child's ceasing to otherwise qualify under the Prior Basic Plan.

**2.30** **Retire, Retired or Retirement**. "Retire," "Retired" or "Retirement" shall mean the termination of an Active Employee Participant's employment with AT&T or any of its Subsidiaries, for reasons other than death, on or after the earlier of the following dates: (1) the date such Active Employee Participant has attained age 55, and, for an Active Employee Participant on or after January 1, 2002, has five (5) years of service, or (2) the date the Active Employee Participant has attained one of the following combinations of age and service at termination of employment on or after April 1, 1997:

| Net Credited Service | Age |
|---|---|
| 25 years or more | 50 or older |
| 30 years or more | Any age |

**2.31** **Retired Participant**. "Retired Participant" shall mean a Retired Employee Participant and his Dependents.

**2.32** **Retired Employee Participant**. "Retired Employee Participant" shall mean a former Active Employee Participant who has Retired within the meaning of Section 2.30 and who meets the additional requirements of Section 3.2 to be eligible for coverage in Retirement.

**2.33** **SEVP-HR**."SEVP-HR" shall mean AT&T's highest ranking Officer, specifically responsible for human resources matters.

**2.34** **Subsidiary**. "Subsidiary" shall mean any corporation, partnership, venture or other entity in which AT&T holds, directly or indirectly, a 50% or greater ownership interest. The Committee may, at its sole discretion, designate any other corporation, partnership, venture or other entity a Subsidiary for the purpose of participating in this Plan. Notwithstanding anything herein to the contrary, unless designated a "Subsidiary" pursuant to the immediately preceding sentence, Cingular Wireless LLC, Sterling Commerce, Inc., and their respective subsidiaries shall not be considered a Subsidiary under this Plan.

## ARTICLE 4 BENEFITS

**4.1** **Covered Benefits**. Subject to the limitations in this Plan (including but not limited to the loyalty conditions set forth in Article 8 below), this Plan provides the benefits described below. Monthly Contributions for participation in this Plan, the Basic Plans, Medicare, or any other health plan are not considered "services", and are therefore are not Covered Benefits under this Plan.

**(a) Active Participants (Medical Services and Preventive Care) -**

Medical Services - After the Annual Deductible has been met, 100% payment of Covered Health Services not paid under the AT&T Medical Plan (or AT&T International Health Plan with respect to Officers serving in expatriate positions with the Company) or Medicare minus the amount of Coinsurance, until the Active Participant reaches the Annual Out-of-Pocket Maximum, at which time coverage is 100% of Covered Health Services not paid under the AT&T Medical Plan (or AT&T International Health Plan with respect to Officers serving in expatriate positions with the Company) .

Preventive Care - Preventive Care, whether received as a "Network/ONA" service or "Non-Network" service, as defined in the AT&T Medical Plan, is covered at 100%, not subject to the Annual Deductible or Coinsurance.

**(b) Active Participants (Dental Services and Vision Services) -**

100% payment, through reimbursement or otherwise, of all Dental Services and Vision Services not paid under the Active Participant's (i) Basic Plans or (ii) Medicare, provided expenses for such services would qualify as deductible medical expenses for federal income tax purposes, whether deducted or not.

**(c) Retired Participants –**

100% payment, through reimbursement or otherwise, of all Medical, Dental, Vision and Preventive services not paid under the Retired Participant's (i) Basic Plans or Substitute Basic Coverage, if either is applicable or (ii) Medicare, provided expenses for such services would qualify as deductible medical expenses for federal income tax purposes, whether deducted or not.

**4.2** **Covered Benefit Limits**. **RESERVED**

**4.3** **Priority of Paying Covered Claims**. Claims for benefits will be applied against the various health plans, as applicable, and coordinated with Medicare in the following order:

(1) Medicare, to the extent the Participant is eligible therefore and such claim is actually paid by Medicare,
(2) Basic Plans, if applicable,
(3) CarePlus, if elected,
(4) Long Term Care Plan, if elected,
(5) this Plan.

(6) The Active Employee Participant (or Retired Employee Participant) participates in an activity that constitutes engaging in competitive activity with AT&T or engaging in conduct disloyal to AT&T under Article 8, in which case participation ceases for the Active Employee Participant (or Retired Employee Participant) and his/her Dependent(s); or

(7) Discontinuance of the Plan by AT&T, or, with respect to a Subsidiary's Active Employee Participants (or Retired Employee Participants), such Subsidiary's failure to make the benefits hereunder available to Active Employee Participants employed by it (or its Retired Employee Participants).

**5.2** **Dependents Failure to Participate in Basic Plans**. If a Dependent, other than a Medicare Eligible Retired Participant, ceases participation under a Basic Plan or, if applicable, Substitute Basic Coverage, such Dependent's participation under this Plan will cease with the same effective date.

**5.3** **Death**. In the event of the Active Employee Participant's (or Retired Employee's Participant's) death, his Dependents may continue participation in this Plan as follows:

(1) In the event of the death of a Retired Employee Participant such Retired Employee Participant's Dependents may continue participation in this Plan, eligible for the Covered Benefits described in Section 4.1(c) of the Plan, for so long as such Dependents are participating in the Basic Plans (or, if applicable, Substitute Basic Coverage) or with respect to a Dependent who is a Medicare Eligible Retired Participant, for so long as such Dependent would have otherwise been eligible for participation under the terms of the Prior Basic Plan and are paying any applicable contributions for this Plan as provided in Article 7. If a surviving spouse of such deceased Active Employee Participant otherwise eligible for participation in the Plan remarries, his/her participation and the participation of any otherwise eligible Dependents will cease with the effective date of his/ her marriage.

(2) In the event of an in-service death of an Active Employee Participant eligible to participate in the Plan in Retirement as provided under Article 3.2, who was Retirement eligible, within the meaning of Section 2.30, at the time of death, such Active Employee Participant's surviving Dependents may continue participation in this Plan, eligible for the Covered Benefits described in Section 4.1(a) and (b), for so long as such Dependents are participating in the Basic Plans (or, if applicable Substitute Basic Coverage) or with respect to a Dependent who is a Medicare Eligible Retired Participant, for so long as such Dependent would have otherwise been eligible for participation under the terms of the Prior Basic Plan and are paying any applicable contributions for this Plan as provided in Article 7. If a surviving spouse of such deceased Active Employee Participant otherwise eligible for participation in the Plan remarries, his/her participation and the participation of any otherwise eligible Dependents will cease with the effective date of his/ her marriage.

## ARTICLE 7 COSTS

7.1 **Provision of Benefits under the Plan**. Except as provided below in this Article 7 with respect to required Monthly Contributions or with respect to any required Coinsurance, the benefits available to Participants under this Plan shall be provided through an insurance policy maintained by AT&T.

7.2 **Active Participant Contributions**. An Active Participant electing to participate in the Plan will pay Monthly Contributions to participate in the Plan while in active service, while on Leave of Absence or while receiving short term disability benefits under the Officer Disability Plan. The Monthly Contribution for participation may change annually, effective at the beginning of each Plan Year. Contributions to be made by Active Participants electing to participate in the Plan shall be set annually by the SEVP-HR, determined in the SEVP-HR's sole and absolute discretion. The SEVP-HR may adopt tiered rates for similarly situated groups of Participants based on factors such as the number of Dependents covered or Medicare eligibility. Notwithstanding the foregoing, required Monthly Contributions for Executive Officers shall be approved by the Committee.

7.3 **Retired Participant Contributions**. Retired Participants who elect to participate will pay Monthly Contributions to participate in the Plan. The Monthly Contribution for participation may change annually, effective at the beginning of each Plan Year. Contributions to be made by Retired Participants who elect to participate shall be set annually by the SEVP-HR (in his/her sole and absolute discretion), to the extent their contributions have not previously been provided for in a separate agreement.

7.4 **Survivor Contributions.** Upon the death of a Participant, the Participant's Dependents shall be required to pay Monthly Contributions to participate in the Plan. The Monthly Contributions shall be set annually by the SEVP-HR, in the SEVP-HR's sole and absolute discretion. Any changes to the Monthly Contributions shall be effective at the beginning of each Plan Year.

7.5 **Contributions for Participants on Disability**. Participants continuing benefits while on Disability shall be required to pay Monthly Contributions to participate in the Plan. The Monthly Contributions shall be set annually by the SEVP-HR, determined in the SEVP-HR's sole and absolute discretion. Any changes to the Monthly Contributions shall be effective at the beginning of each Plan Year.

renegotiate, reduce, or otherwise cease or modify its relationship with AT&T or its affiliate; or (iii) soliciting, encouraging, or inducing any customer or active prospective customer with whom Participant had business contact, whether in person or by other media, on behalf of any Employer Business during the two (2) years prior to the termination of Participant's employment for any reason ("Customer"), to terminate, discontinue, renegotiate, reduce, or otherwise cease or modify its relationship with any Employer Business, or to purchase competing goods or services from a business competing with any Employer Business, or accepting or servicing business from such Customer on behalf of himself or any other business. "Engaging in conduct disloyal to AT&T" also means, disclosing Confidential Information to any third party or using Confidential Information, other than for an Employer Business, or failing to return any Confidential Information to the Employer Business following termination of employment.

(4) "Confidential Information" shall mean all information belonging to, or otherwise relating to, an Employer Business, which is not generally known, regardless of the manner in which it is stored or conveyed to the Participant, and which the Employer Business has taken reasonable measures under the circumstances to protect from unauthorized use or disclosure. Confidential Information includes trade secrets as well as other proprietary knowledge, information, know-how, and non-public intellectual property rights, including unpublished or pending patent applications and all related patent rights, formulae, processes, discoveries, improvements, ideas, conceptions, compilations of data, and data, whether or not patentable or copyrightable and whether or not it has been conceived, originated, discovered, or developed in whole or in part by the Participant. For example, Confidential Information includes, but is not limited to, information concerning the Employer Business' business plans, budgets, operations, products, strategies, marketing, sales, inventions, designs, costs, legal strategies, finances, employees, customers, prospective customers, licensees, or licensors; information received from third parties under confidential conditions; or other valuable financial, commercial, business, technical or marketing information concerning the Employer Business, or any of the products or services made, developed or sold by the Employer Business. Confidential Information does not include information that (i) was generally known to the public at the time of disclosure; (ii) was lawfully received by the Participant from a third party; (iii) was known to the Participant prior to receipt from the Employer Business; or (iv) was independently developed by the Participant or independent third parties; in each of the foregoing circumstances, this exception applies only if such public knowledge or possession by an independent third party was without breach by the Participant or any third party of any obligation of confidentiality or non-use, including but not limited to the obligations and restrictions set forth in this Plan.

(3) If the Plan Administrator determines in its sole discretion either (I) that AT&T or its affiliate that employed the Participant terminated the Participant's employment for cause, or (II) that equitable relief enforcing the Participant's covenants under this Article 8 is either not reasonably available, not ordered by a court of competent jurisdiction, or circumvented because the Participant has sued in state court, or has otherwise sought remedies not available under ERISA, then in any and all of such instances the Participant shall not be entitled to collect any Plan benefits, and if any Plan benefits have been paid to the, the Participant shall immediately repay all Plan benefits to the Plan (with such repayments being used within such year for increased benefits for other Participants in any manner determined in the Plan Administrator's discretion) upon written demand from the Plan Administrator. Furthermore, the Participant shall hold AT&T and its affiliates harmless from any loss, expense, or damage that may arise from any of the conduct described in clauses (I) and (II) hereof.

## ARTICLE 9 MISCELLANEOUS

**9.1** **Administration**. The Plan Administrator is the named fiduciary of the Plan and has the power and duty to do all things necessary to carry out the terms of the Plan. The Plan Administrator has the sole and absolute discretion to interpret the provisions of the Plan, to make findings of fact, to determine the rights and status of Participants and other under the Plan, to determine which expenses and benefits qualify as Covered Health Services or Covered Benefits, to make all benefit determinations under the Plan, to decide disputes under the Plan and to delegate all or a part of this discretion to third parties and insurers. To the fullest extent permitted by law, such interpretations, findings, determinations and decisions shall be final, binding and conclusive on all persons for all purposes of the Plan. The Plan Administrator may delegate any or all of its authority and responsibility under the Plan to other individuals, committees, third party administrators, claims administrators or insurers for any purpose, including, but not limited to the processing of benefits and claims related thereto. In carrying out these functions, these individuals or entities have been delegated responsibility and discretion for interpreting the provisions of the Plan, making findings of fact, determining the rights and status of Participants and others under the Plan, and deciding disputes under the Plan and such interpretations, findings, determinations and decisions shall be final, binding and conclusive on all persons for all purposes of the Plan.

**9.2** **Amendments and Termination**. This Plan may be modified or terminated at any time in accordance with the provisions of AT&T's Schedule of Authorizations.

**9.3** **Newborns' and Mothers' Health Protection Act of 1996**. To the extent this Plan provides benefits for hospital lengths of stay in connection with childbirth, the Plan will cover the minimum length of stay required for deliveries (i.e., a 48-hour hospital stay after a vaginal delivery or a 96-hour stay following a delivery by Cesarean section.) The mother's or newborn's attending physician, after consulting with the mother, may discharge the mother or her newborn earlier than the minimum length of stay otherwise required by law. Such coverage shall be subject to all other provisions of this Plan.

months. If the military leave is for a period of 31 days or more, the individual may be required to pay 102 percent of the total premium (determined in the same manner as a COBRA continuation coverage premium). If coverage is not continued during the entire period of the military leave because the individual declines to pay the premium or the leave extends beyond 18 months, the coverage must be reinstated upon reemployment with no pre-existing condition exclusions (other than for service-related illnesses or injuries) or waiting periods (other than those applicable to all Eligible Employees).

**9.8** **Qualified Medical Child Support Orders**. The Plan will comply with any Qualified Medical Child Support Order issued by a court of competent jurisdiction or administrative body that requires the Plan to provide medical coverage to a Dependent child of an Active Employee or Retired Employee Participant. The Plan Administrator will establish reasonable procedures for determining whether a court order or administrative decree requiring medical coverage for a Dependent child meets the requirements for a Qualified Medical Child Support Order. The cost of coverage or any additional cost of such coverage, if any, shall be borne by the Participant.

**9.9** **Right of Recovery**. If the Plan has made an erroneous or excess payment to any Participant, the Plan Administrator shall be entitled to recover such excess from the individual or entity to whom such payments were made. The recovery of such overpayment may be made by offsetting the amount of any other benefit or amount payable by the amount of the overpayment under the Plan.

## ARTICLE 10 COBRA

**10.1** **Continuation of Coverage Under COBRA**. Participants shall have all COBRA continuation rights required by federal law and all conversion rights. COBRA continuation coverage shall be continued as provided in this Article 10.

**10.2** **COBRA Continuation Coverage for Terminated Participants**. A covered Active Employee Participant may elect COBRA continuation coverage, at his/her own expense, if his participation under this Plan would terminate as a result of one of the following Qualifying Events: an Employee's termination of employment or reduction of hours with an Employer.

**10.3** **COBRA Continuation Coverage for Dependents**. A Qualified Dependent may elect COBRA continuation coverage, at his/her own expense, if his/her participation under this Plan would terminate as a result of a Qualifying Event.

**10.4** **Period of Continuation Coverage for Covered Participants**. A covered Active Employee Participant who qualifies for COBRA continuation coverage as a result of a Participant's termination of employment or reduction in hours of employment described in Subsection 10.2 may elect COBRA continuation coverage for up to 18 months measured from the date of the Qualifying Event.

Covered Participants and Qualified Dependents must make the continuation coverage payment prior to the first day of the month in which such coverage will take effect. However, a covered Participant or Qualified Dependent has 45 days from the date of an affirmative election to pay the continuation coverage payment for the first month's payment and the cost for the period between the date medical coverage would otherwise have terminated due to the Qualifying Event and the date the covered Participant and/or Qualified Dependent actually elects COBRA continuation coverage.

The covered Participant and/or Qualified Dependent shall have a 30-day grace period to make the continuation coverage payments due thereafter. Continuation coverage payments must be postmarked on or before the completion of the 30-day grace period. If continuation coverage payments are not made on a timely basis, COBRA continuation coverage will terminate as of the last day of the month for which timely premiums were made. The 30-day grace period shall not apply to the 45-day period for the first month's payment of COBRA premiums as set out in the section above.

If payment is received that is significantly less than the required continuation coverage payment, then continuation coverage will terminate as of the last day of the month for which premiums were paid. A payment is considered significantly less than the amount due if it is greater than the lesser of $50 or 10% of the required continuation coverage payment. Upon receipt of a continuation coverage payment that is insignificantly less than the required amount, the Plan Administrator must notify the covered Participant or Qualified Dependent of the amount of the shortfall and provide them with an additional 30-day grace period from the date of the notice for this payment only.

**10.7** **Limitation on Participant's Rights to COBRA Continuation Coverage**.

(1) If a Qualified Dependent loses, or will lose medical coverage under this Plan as a result of divorce, legal separation, entitlement to Medicare, or ceasing to be a Dependent, such Qualified Dependent is responsible for notifying the Plan Administrator in writing within 60 days of the Qualifying Event. Failure to make timely notification will terminate the Qualified Dependent's rights to COBRA continuation coverage under this Article.

(2) A Participant must complete and return the required enrollment materials within 60 days from the later of (a) the date of loss of coverage, or (b) the date the Plan Administrator sends notice of eligibility for COBRA continuation coverage. Failure to enroll for COBRA continuation coverage during this 60-day period will terminate all rights to COBRA continuation coverage under this Article. An affirmative election of COBRA continuation coverage by a Participant or his/her spouse shall be deemed to be an election for that Participant's Dependent(s) who would otherwise lose coverage under the Plan.

**10.8** **Subsequent Qualifying Event**. If a second Qualifying Event occurs during an 18-month extension explained above, coverage may be continued for a maximum of 36 months from the date of the first Qualifying Event. In the event the Dependent loses coverage due to a Qualifying Event and after such date the Participant becomes entitled to Medicare, the Dependent shall have available up to 36 months of coverage measured from the date of the Qualifying Event that causes the loss of coverage. If the Participant was entitled to Medicare prior to the Qualifying Event, the Dependent shall have up to 36 months of coverage measured from the date of entitlement to Medicare.

(2) Modifying, amending or terminating the group health benefits under the HIPAA Plan.

In addition, the HIPAA Plan or a health insurance insurer with respect to the HIPAA Plan may disclose to the Plan Sponsor of the HIPAA Plan (or its affiliates) information on whether an individual is participating in the group health benefits provided by the HIPAA Plan or is enrolled in, or has ceased enrollment with health insurance offered by the HIPAA Plan.

**11.4 The HIPAA Plan Will Use and Disclose PHI as Required by Law or as Permitted by the Authorization of the Participant or Beneficiary.**

Upon submission of an authorization signed by a Participant, beneficiary, subscriber or personal representative that meets HIPAA requirements, the HIPAA Plan will disclose PHI.

In addition, PHI will be disclosed to the extent permitted or required by law, without the submission of an authorization form.

**11.5 Disclosure of PHI to the Plan Sponsor.** The HIPAA Plan will disclose information to the Plan Sponsor only upon certification from the Plan Sponsor that the HIPAA Plan documents have been amended to incorporate the assurances provided below.

The Plan Sponsor agrees to:

(1) not use or further disclose PHI other than as permitted or required by the HIPAA Plan document or as required by law;

(2) ensure that any affiliates or agents, including a subcontractor, to whom the Plan Sponsor provides PHI received from the HIPAA Plan, agrees to the same restrictions and conditions that apply to the Plan Sponsor with respect to such PHI;

(3) not use or disclose PHI for employment-related actions and decisions unless authorized by the individual to whom the PHI relates;

(4) not use or disclose PHI in connection with any other benefits or employee benefit plan of the Plan Sponsor or its affiliates unless permitted by the Plan or authorized by an individual to whom the PHI relates;

(5) report to the Plan any PHI use or disclosure that is inconsistent with the uses or disclosures provided for of which it becomes aware;

(6) make PHI available to an individual in accordance with HIPAA's access rules;

(7) make PHI available for amendment and incorporate any amendments to PHI in accordance with HIPAA;

**11.7 Enforcement.**

Enforcement of this Article 11 shall be as provided for by HIPAA. In particular, participants and beneficiaries are not authorized to sue with regard to purported breaches of this Article 11 except as explicitly permitted by HIPAA.

## ARTICLE 12 CLAIM AND APPEAL PROCESS

**12.1 Claims for Benefits under the Plan.** – See Appendix B.

**12.2 Claims Related to Basic Eligibility for Coverage under the Plan and Claims Related to the Article 8 Loyalty Conditions.**

(a) Claims. A person who believes that he or she is being denied a benefit to which he or she is entitled under this Plan (hereinafter referred to as a "Claimant") based on a claim for basic eligibility for coverage under the Plan or a claim related to the Article 8 Loyalty Conditions may file a written request for such benefit with the Executive Compensation Administration Department, setting forth his or her claim. The request must be addressed to the AT&T Executive Compensation Administration Department at its then principal place of business.

(b) Claim Decision. Upon receipt of a claim, the AT&T Executive Compensation Administration Department shall review the claim and provide the Claimant with a written notice of its decision within a reasonable period of time, not to exceed ninety (90) days, after the claim is received. If the AT&T Executive Compensation Administration Department determines that special circumstances require an extension of time beyond the initial ninety (90)- day claim review period, the AT&T Executive Compensation Administration Department shall notify the Claimant in writing within the initial ninety (90)-day period and explain the special circumstances that require the extension and state the date by which the AT&T Executive Compensation Administration Department expects to render its decision on the claim. If this notice is provided, the AT&T Executive Compensation Administration Department may take up to an additional ninety (90) days (for a total of one hundred eighty (180) days after receipt of the claim) to render its decision on the claim.

If the claim is denied by the AT&T Executive Compensation Administration Department, in whole or in part, the AT&T Executive Compensation Administration Department shall provide a written decision using language calculated to be understood by the Claimant and setting forth: (i) the specific reason or reasons for such denial; (ii) specific references to pertinent provisions of this Plan on which such denial is based; (iii) a description of any additional material or information necessary for the Claimant to perfect his or her claim and an explanation of why such material or such information is necessary; (iv) a description of the Plan's procedures for review of denied claims and the steps to be taken if the Claimant wishes to submit the claim for review; (v) the time limits for requesting a review of a denied claim under this section and for conducting the review under this section ; and (vi) a statement of the Claimant's right to bring a civil action under Section 502(a) of ERISA if the claim is denied following review under this section.

Appendix A

**AT&T Health Plan**

**2016 Monthly Contributions, Annual Deductible, Coinsurance Percentages and Annual Out-of-Pocket Maximum**

**Active Participants**

| | |
|---|---|
| Monthly Contributions | Individual - $67<br>Individual + Spouse - $83<br>Individual + 1 or More Children - $67<br>Individual + Spouse + 1 or More Children - $162 |
| Annual Deductible (combined with group medical plan annual deductible) | Individual - $1,500<br>Individual + 1 or More - $3,000<br>Individual + Spouse + 1 or More Children - $2,600 |
| Coinsurance Percentage (Note 1) | 10% after the Annual Deductible is met. Coinsurance applies until the Annual Out-of-Pocket Maximum is reached. |
| Annual Out-of-Pocket Maximum | Individual - $4,000<br>Individual + 1 or More - $8,000 |

Note 1: For prescription pharmacy services, the Coinsurance shall equal the lesser of (i) the Coinsurance Percentage multiplied by the amount of the Covered Health Services or (ii) the amount payable by the Participant for such services under the Basic Plan.

**Retired Participants – Monthly Contributions**

| | | |
|---|---|---|
| Retired Prior to August 31, 1992 and Surviving Spouses | Individual - $183<br>Individual + Spouse - $183<br>Individual + 2 or More - $183 | |
| Retired on or after September 1, 1992 and Surviving Spouses<br><br>*Note: The Plan Administrator shall maintain records governing whether a Retired Participant is in Class A, B, C or D.* | Class A | Individual - $461<br>Individual + Spouse - $754<br>Individual + 1 or More Children - $461<br>Individual + Spouse + 1 or More Children - $717 |
| | Class B | Individual - $564<br>Individual + Spouse - $922<br>Individual + 1 or More Children - $564<br>Individual + Spouse + 1 or More Children - $878 |
| | Class C | Individual - $712<br>Individual + Spouse - $1,153<br>Individual + 1 or More Children - $712<br>Individual + Spouse + 1 or More Children - $1,108 |
| | Class D | Individual - $868<br>Individual + Spouse - $1,777<br>Individual + 1 or More Children - $868<br>Individual + Spouse + 1 or More Children - $1,760 |

**Monthly Contributions for COBRA Continuation Coverage**

| | |
|---|---|
| Active COBRA | Individual - $769<br>Individual + Spouse - $1,577<br>Individual + 1 or More Children - $1,270<br>Individual + Spouse + 1 or More Children - $2,202 |
| Retired Prior to August 31, 1992 and Surviving Spouses COBRA | Individual - $1,284<br>Individual + 1 - $2,631<br>Individual + 2 or More - $3,615 |
| Retired on or after September 1, 1992 and Surviving Spouses COBRA | Individual - $1,286<br>Individual + Spouse - $2,635<br>Individual + 1 or More Children - $2,315<br>Individual + Spouse + 1 or More Children - $3,859 |

*Pre-Service Claims*

Pre-service claims are those claims that require notification or approval prior to receiving medical care or require notification within a specified time period after service begins as required under the Plan provisions. If your claim is a pre-service claim and is submitted properly with all needed information, you will receive written notice of the claim decision from the Claims Administrator within 15 days of receipt of the claim. If you file a pre-service claim improperly, the Claims Administrator will notify you of the improper filing and how to correct it within five days after the pre-service claim is received. If additional information is needed to process the pre-service claim, the Claims Administrator will notify you of the information needed within 15 days after the claim was received and may request a one-time extension not longer than 15 days and pend your claim until all information is received. Once notified of the extension, you then have 45 days to provide this information. If all of the needed information is received within the 45-day time frame, the Claims Administrator will notify you of the determination within 15 days after the information is received. If you don't provide the needed information within the 45-day period, your claim will be denied. A denial notice will explain the reason for denial, refer to the part of the Plan on which the denial is based, and provide the claim appeal procedures.

*Urgent Care Claims That Require Immediate Action*

Urgent care claims are those claims that require notification or approval prior to receiving medical care in which a delay in treatment could seriously jeopardize your life or health or the ability to regain maximum function or, in the opinion of a physician with knowledge of your medical condition, could cause severe pain. In these situations:

- You will receive notice of the benefit determination in writing or electronically within 72 hours after the Claims Administrator receives all necessary information, taking into account the seriousness of your condition.
- Notice of denial may be oral with a written or electronic confirmation to follow within three days.

If you filed an urgent claim improperly, the Claims Administrator will notify you of the improper filing and how to correct it within 24 hours after the urgent claim was received. If additional information is needed to process the claim, the Claims Administrator will notify you of the information needed within 24 hours after the claim was received. You then have 48 hours to provide the requested information.

You will be notified of a determination no later than 48 hours after either:

- The Claims Administrator's receipt of the requested information.
- The end of the 48-hour period within which you were to provide the additional information, if the information is not received within that time.

A denial notice will explain the reason for denial, refer to the part of the Plan on which the denial is based, and provide the claim appeal procedures.

*Concurrent Care Claims*

If an ongoing course of treatment was previously approved for a specific period of time or number of treatments, and your request to extend the treatment is an urgent care claim as defined above, your request will be decided within 24 hours, provided your request is made at least 24 hours prior to the end of the approved treatment. The Claims Administrator will make a determination on your request for the extended treatment within 24 hours from receipt of your request.

If your request for extended treatment is not made at least 24 hours prior to the end of the approved treatment, the request will be treated as an urgent care claim and decided according to the time frames described above. If an ongoing course of treatment was previously approved for a specific period of time or number of treatments, and you request to extend treatment in a non-urgent circumstance, your request will be considered a new claim and decided according to post-service or pre-service timeframes, whichever applies.

## APPENDIX C

## DISCLOSURE OF GRANDFATHERED STATUS

## MODEL NOTICE

AT&T, as plan sponsor, believes this Plan is a "grandfathered health plan" under the Patient Protection and Affordable Care Act (the "Affordable Care Act"). As permitted by the Affordable Care Act, a grandfathered health plan can preserve certain basic health coverage that was already in effect when that law was enacted. Being a grandfathered health plan means that the plan may not include certain consumer protections of the Affordable Care Act that apply to other plans, for example, the requirement for the provision of preventive health services without any cost sharing. However, grandfathered health plans must comply with certain other consumer protections of the Affordable Care Act, for example, the elimination of lifetime limits on benefits.

Questions regarding which protections apply and which protections do not apply to a grandfathered health plan and what might cause a plan to change from grandfathered health plan status can be directed to the plan administrator at P.O. Box 30558, Salt Lake City, Utah 84130-0558. You may also contact the Employee Benefits Security Administration, U.S. Department of labor at 1-866-444-3272 or www.dol.gov/ebsa/healthreform. This website has a table summarizing which protections do and do not apply to grandfathered health plans.

# AT&T PENSION BENEFIT MAKE UP PLAN NO. 1

## SECTION 1: Purpose and History

1.1. Purpose. The primary purpose of the AT&T Pension Benefit Make Up Plan No. 1 (the "Plan") is to supplement the benefits a Participant is entitled to receive under a pension plan that is qualified under Code Section 401(a) and is sponsored by AT&T Inc. ("AT&T" or the "Company") or one of its Subsidiaries (collectively, the "Pension Plans"). This Plan recognizes compensation earned by an individual who is eligible to participate in this Plan as provided in Section 2 (a "Participant") that is not recognized in the determination of benefits under the Participant's Pension Plan, and this Plan is intended to make up benefits that would otherwise be lost because of such Pension Plan limitations.

The Plan is intended to provide deferred compensation benefits by recognizing compensation earned by a Participant that is in excess of the amount that is recognized under Section 401(a)(17) of the Internal Revenue Code of 1986, as amended (the "Code"), and to provide benefits to the extent such Participant's Pension Plan benefits are limited by the provisions of Code Section 415.

1.2. History. The Plan is effective as of January 1, 2005, and constitutes an amendment and restatement of the plans listed in Attachment A (the "Predecessor Plans"). AT&T and companies whose equity interests are owned 100%, directly or indirectly, by AT&T ("Subsidiary") sponsored the Predecessor Plans for the benefit of their respective eligible employees. No additional benefits shall accrue under the Predecessor Plans after December 31, 2004, and benefits of Participants who terminate employment on or after January 1, 2005 shall be paid solely under this Plan. The Predecessor Plans were intended to supplement participants' Pension Plan benefits by (i) recognizing compensation that is not eligible to be recognized for purposes of calculating Pension Plan benefits, either as a result of statutory limitations or Pension Plan limitations, and/or (ii) providing benefits in excess of the limitations of Code Section 415. This Plan is intended to aggregate all of such Predecessor Plans and provide substantially similar benefits, on a going forward basis. Further, this Plan is intended to satisfy the requirements of Code Section 409A, effective with respect to amounts deferred after December 31, 2004. During the period from January 1, 2005 to December 31, 2008, the Plan has been operated in good faith compliance with the provisions of Code Section 409A, Internal Revenue Service Notice 2005-1, and the final Treasury Regulations for Code Section 409A, and any other generally applicable guidance published in the Internal Revenue Service Bulletin with an effective date prior to January 1, 2009. On or after January 1, 2009, this Plan shall be interpreted and construed consistent with the requirements of Code Section 409A and all applicable guidance issued thereunder.

2.2. Construction of Eligibility Provisions. The eligibility provisions of Section 2.1, above, shall be interpreted in the broadest possible sense in order that this Plan can recognize all base salary and short term incentive compensation, whenever earned, for the purpose of making up any benefit that would otherwise be lost due to the fact that the Pension Plan is unable to recognize any such compensation in determining retirement benefits.

2.3. Loss of Eligibility. In the event that any Participant ceases to satisfy the eligibility conditions of Section 2.1, such Participant shall nevertheless continue to be eligible to receive benefits under this Plan, however, no additional benefits shall accrue under the Plan unless and until he or she shall re-attain eligibility hereunder.

2.4. Ineligible Participant. Notwithstanding any other provision of this Plan to the contrary, if any Participant is determined not to be "in a select group of management or highly compensated employees" within the meaning of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), or the regulations thereunder, such Participant shall not be eligible to continue to accrue a benefit under this Plan on or after such date to the extent benefits hereunder are attributable to compensation in excess of the amount under Code Section 401(a)(17) and not attributable to the limitations imposed by the provisions of Code Section 415.

2.5 No Duplication of Benefits. Notwithstanding any provision of this Plan to the contrary, if a Participant ceases to accrue benefits under this Plan and becomes eligible to receive the equivalent of his/her benefit under this Plan pursuant to the Pension Benefit Make Up Plan No. 2, to the extent such benefit is paid pursuant to such other plan, no duplication of such payment shall be made pursuant to this Plan.

**SECTION 3: Amount of Plan Benefits**

3.1. Amount of Plan Benefits. Subject to the terms and conditions of the Plan, the Plan benefits payable to, or on account of, a Participant under the Plan as of any date shall be an amount as described in the paragraphs below. A participant's Pension Plan Program is one of the non-bargained programs that are defined and operated as part of the AT&T Pension Benefit Plan: Southeast Management Program, AT&T Legacy Management Program, Management Cash Balance Program, Nonbargained Program, and Wireless Program. The Plan benefit is equal to:

(a) the amount of the Participant's benefit under the applicable Pension Plan Program and period of employment in which he or she actively participates (i.e., accrues benefits) on the date of his or her termination of employment that would have been payable to or on account of the Participant under such Pension Plan Program as of that date, determined without regard to the limitations imposed by either Code Section 401(a)(17) or 415 and determined as if all types of compensation that are used to determine the employee's Pension Plan benefit (e.g., base salary and short-term incentive compensation that the Participant is eligible to receive) were recognized for purposes of calculating such amount;

The Plan benefit is FURTHER REDUCED BY:

(c) amount of a BLS SERP participant's frozen BLS SERP benefit.

Notwithstanding the above descriptions, for any Participant who ceased to satisfy the eligibility conditions of Section 2.1(c) due to initial participation in the AT&T Supplemental Employee Retirement Plan on or before December 31, 2008 shall have a Plan benefit equal to the greater of (d) or (e) described below:

(d) the amount described by paragraphs 3.1(a), 3.1(b) and 3.1(c) above determined as of the Participant's actual termination-of-employment date.

(e) the amount described by paragraphs 3.1(a), 3.1(b) and 3.1(c) above determined as if the Participant had terminated employment effective December 31, 2008.

3.2. Participants in Predecessor Plans. If a Participant participated in one or more Predecessor Plans prior to becoming a Participant under this Plan, benefits under this Plan shall be no less than the benefits accrued under the Predecessor Plans, and the benefits under this Plan shall be in lieu of all benefits otherwise payable to him under the Predecessor Plans.

**SECTION 4: Payment of Plan Benefits**

4.1 Distribution of Plan Benefits. Benefits hereunder shall be calculated and distributed upon a Participant's termination of employment; provided, however, distribution of Plan benefits of any Participant who is also an officer of the Company shall commence on the sixth month anniversary of such Participant's termination of employment.

4.2. Form of Plan Benefits. Benefits hereunder shall be paid in the form of a lump sum; provided, however, if the amount of the Participant's lump sum benefit exceeds $50,000 as of his termination of employment, the Plan benefit shall be paid in monthly installments over a period of ten (10) years. .Notwithstanding the foregoing, with respect to any Participant who, prior to termination of employment ceases to satisfy the eligibility conditions of Section 2.1, the form of such Participant's benefit (lump sum or ten (10) year monthly annuity) shall be determined as of the date such Participant ceases to satisfy the eligibility conditions of Section 2.1.

If benefits are distributed in the form of a monthly annuity for ten (10) years, the monthly payments shall be calculated in the same manner that a financial institution would calculate the monthly payments for a 10-year fixed interest loan.

5.2. Source of Benefits; Unsecured Creditor. The obligations of the Company under the Plan are solely contractual. Any amount payable under the terms of the Plan shall be paid from the general assets of the Company or a Subsidiary. Alternatively, amounts payable under the terms of the Plan may be paid from one or more trusts that the Company or a Subsidiary might elect to establish, the assets of which will be subject to the claims of the general creditors of the Company or the Subsidiary that created the trust. Participants and their beneficiaries shall have no legal or equitable rights, interest, or claims in any property or assets of the Company or any Subsidiary. Any and all of the Company's or a Subsidiary's assets shall be, and remain, the general, unpledged, unrestricted assets of the Company or any such Subsidiary. The Company's or a Subsidiary's obligation under the Plan shall be merely that of an unfunded and unsecured promise of the Company or any such Subsidiary to distribute cash under the Plan in the future. If a Participant's term of employment includes service by two Subsidiaries or by the Company and one or more Subsidiaries, the Company or Subsidiary which last employed the Participant shall be solely responsible for the entire benefit payable under the Plan.

5.3. Notices. Any notice or document required to be given to or filed with the Plan Administrator shall be considered to be given or filed if delivered to the Plan Administrator or mailed by registered mail, postage prepaid, to the Plan Administrator.

5.4. Applicable Laws. The Plan shall be construed and administered in accordance with the laws of the State of Texas, to the extent that such laws are not preempted by ERISA or any other laws of the United States of America.

5.5. Gender and Number. Where the context requires, words in any gender shall include any other gender, words in the singular shall include the plural and the plural shall include the singular.

5.6. Benefits Determined as of Termination of Employment. Except as otherwise specifically provided in the Plan, the right to benefits under the Plan and the amount of benefits of a Participant who has terminated or terminates employment with the Company or a Subsidiary shall be determined in accordance with the provisions of the Plan as in effect immediately prior to that termination of employment.

5.7. Benefits Under Predecessor Plans. Notwithstanding any provision of this Plan to the contrary, nothing shall reduce or impair the interests of individuals with respect to benefits that are being paid under a Predecessor Plan as of the effective date of this Plan without the consent of the affected Participant. Notwithstanding any provision of this Plan to the contrary, nothing shall reduce or impair the interests of individuals with respect to benefits that are accrued under a Predecessor Plan as of the effective date of this Plan without the consent of the affected Participant; provided, however, benefits accrued as of December 31, 2004 under the terms of a Predecessor Plan shall only be distributed and paid under the terms of Section 4 of this Plan.

**Attachment A**
**Predecessor Plans**

1. **The AT&T Pension Benefit Make Up Plan No. 1**, which is also the successor plan, effective January 1, 2000, to the SNET Pension Benefit Plan and, effective January 1, 1999, to the Pacific Telesis Group Excess Benefit Plan.

2. **Section 4.10.2 of the AT&T Pension Benefit Plan – Non-Bargained Program**, which are the 415 Excess Benefit Provisions of such plan

3. **The Ameritech Corporate Resource Supplemental Pension Plan**, which is a successor to the Ameritech Senior Management Retirement and Survivor Protection Plan and was established by Ameritech Corporation effective as of January 1, 1986, which, in turn was an amendment, restatement and continuation of the following predecessor plans: the Ameritech Management Supplemental Pension Plan, the Ameritech Senior Management Non-Qualified Pension Plan, the Ameritech Mid-Career Pension Plan, and the retirement and survivor benefit provisions of the Ameritech Senior Management Long Term Disability and Survivor Protection Plan.

4. **The Ameritech Management Supplemental Pension Benefit Plan**

5. Effective January 1, 2009, **The Cingular Wireless SBC Executive Transition Pension Make Up Plan** and **The Cingular Wireless SBC Executive 2005 Transition Pension Make Up Plan**

**Selected Financial and Operating Data**
Dollars in millions except per share amounts

| At December 31 and for the year ended: | 2015 | 2014[1] | 2013[1] | 2012[1] | 2011[1] |
|---|---|---|---|---|---|
| | | As Adjusted | | | |
| **Financial Data** | | | | | |
| Operating revenues | **$ 146,801** | $ 132,447 | $ 128,752 | $ 127,434 | $ 126,723 |
| Operating expenses | **$ 122,016** | $ 120,235 | $ 98,000 | $ 114,380 | $ 117,223 |
| Operating income | **$ 24,785** | $ 12,212 | $ 30,752 | $ 13,054 | $ 9,500 |
| Interest expense | **$ 4,120** | $ 3,613 | $ 3,940 | $ 3,444 | $ 3,535 |
| Equity in net income of affiliates | **$ 79** | $ 175 | $ 642 | $ 752 | $ 784 |
| Other income (expense) - net | **$ (52)** | $ 1,581 | $ 596 | $ 134 | $ 249 |
| Income tax expense | **$ 7,005** | $ 3,619 | $ 9,328 | $ 2,922 | $ 2,639 |
| **Net Income** | **$ 13,687** | $ 6,736 | $ 18,722 | $ 7,574 | $ 4,359 |
| **Less: Net Income Attributable to Noncontrolling Interest** | **$ (342)** | $ (294) | $ (304) | $ (275) | $ (240) |
| **Net Income Attributable to AT&T** | **$ 13,345** | $ 6,442 | $ 18,418 | $ 7,299 | $ 4,119 |
| **Earnings Per Common Share:** | | | | | |
| **Net Income Attributable to AT&T** | **$ 2.37** | $ 1.24 | $ 3.42 | $ 1.26 | $ 0.69 |
| **Earnings Per Common Share - Assuming Dilution:** | | | | | |
| **Net Income Attributable to AT&T** | **$ 2.37** | $ 1.24 | $ 3.42 | $ 1.26 | $ 0.69 |
| Total assets | **$ 402,672** | $ 296,834 | $ 281,423 | $ 275,834 | $ 273,467 |
| Long-term debt | **$ 118,515** | $ 75,778 | $ 69,091 | $ 66,152 | $ 61,091 |
| Total debt | **$ 126,151** | $ 81,834 | $ 74,589 | $ 69,638 | $ 64,544 |
| Construction and capital expenditures | **$ 20,015** | $ 21,433 | $ 21,228 | $ 19,728 | $ 20,272 |
| Dividends declared per common share | **$ 1.89** | $ 1.85 | $ 1.81 | $ 1.77 | $ 1.73 |
| Book value per common share | **$ 20.12** | $ 17.40 | $ 18.10 | $ 17.14 | $ 18.34 |
| Ratio of earnings to fixed charges | **4.01** | 2.91 | 6.03 | 2.97 | 2.29 |
| Debt ratio | **50.5%** | 47.5% | 44.1% | 42.1% | 37.3% |
| Weighted-average common shares outstanding (000,000) | **5,628** | 5,205 | 5,368 | 5,801 | 5,928 |
| Weighted-average common shares outstanding with dilution (000,000) | **5,646** | 5,221 | 5,385 | 5,821 | 5,950 |
| End of period common shares outstanding (000,000) | **6,145** | 5,187 | 5,226 | 5,581 | 5,927 |
| **Operating Data** | | | | | |
| Total wireless customers (000) | **137,324** | 120,554 | 110,376 | 106,957 | 103,247 |
| Video connections (000) | **37,934** | 5,943 | 5,460 | 4,536 | 3,791 |
| In-region network access lines in service (000) | **16,670** | 19,896 | 24,639 | 29,279 | 34,054 |
| Broadband connections (000) | **15,778** | 16,028 | 16,425 | 16,390 | 16,427 |
| Number of employees | **281,450** | 243,620 | 243,360 | 241,810 | 256,420 |

[1] Financial data for 2011-2014 has been adjusted to reflect our change in accounting for customer fulfillment costs and the early adoption of ASU 2015-03 and ASU 2015-17. See Note 1 to our consolidated financial statements.

*Equipment* revenues increased $1,114, or 8.0%, in 2015 and $4,510, or 47.5%, in 2014. The increases in 2015 and 2014 were due to the continuing trend by our postpaid wireless subscribers to purchase devices on installment payment agreements rather than the device subsidy model, which resulted in increased equipment revenue recognized for device sales.

**Operating expenses** increased $1,781, or 1.5%, in 2015 and $22,235, or 22.7%, in 2014.

*Equipment* expenses increased $322, or 1.7%, in 2015 and $2,302, or 13.8%, in 2014. Expense increases in 2015 and 2014 are primarily due to the continuing trend of customers choosing higher-priced wireless devices. The expense increase in 2014 also reflects higher upgrade equipment sales.

*Broadcast, programming and operations* expenses increased $7,921 in 2015 and $767, or 23.2%, in 2014. Broadcast costs increased in 2015 due to our acquisition of DIRECTV. Also contributing to the increases in 2015 and 2014 were higher content costs for our U-verse subscribers.

*Other cost of services* expenses decreased $1,342, or 3.6%, in 2015 and increased $5,885, or 18.8%, in 2014. The expense decrease in 2015 was primarily due to a $3,078 change in our annual pension and postemployment benefit actuarial adjustment, which was a gain in 2015 and a loss in 2014. Also contributing to the 2015 decrease were higher High Cost Fund and Connect America Fund receipts from the Universal Service Fund and the fourth quarter 2014 sale of our Connecticut wireline operations, offset by the addition of DIRECTV, increased network rationalization charges related to Leap, merger and integration charges and wireless handset insurance costs.

The expense increase in 2014 included a $4,406 change resulting from the annual remeasurement of our benefit plans, which was an actuarial loss in 2014 and a gain in 2013. The increase also reflected higher wireless network costs, U-verse content costs and subscriber growth, and employee-related charges.

*Selling, general and administrative* expenses decreased $6,743, or 17.0%, in 2015 and increased $11,283, or 39.7%, in 2014. 2015 expenses decreased $6,943 as a result of recording an actuarial gain in 2015 and an actuarial loss in 2014. The 2015 decrease was also due to lower employee-related charges resulting from workforce reductions, lower wireless commissions and the fourth-quarter 2014 sale of our Connecticut wireline operations, offset by costs resulting from the acquisition of DIRECTV.

The expense increase in 2014 included an $11,047 change resulting from the annual remeasurement of our benefit plans, which was an actuarial loss in 2014 and a gain in 2013. Expense increases in 2014 also reflect higher selling and administrative expenses in our wireless business and gains on spectrum transactions in 2013. These increases were partially offset by lower employee-related costs and wireless commissions expenses.

*Abandonment of network assets* In 2014, we recorded a noncash charge of $2,120 for the abandonment in place of certain network assets (see Note 6). During the fourth quarter of 2014, we completed a study of our network assets and determined that specific copper assets would not be necessary to support future network activity, due to declining customer demand for our legacy voice and data products and the transition of our networks to next generation IP-based technology.

*Depreciation and amortization* expense increased $3,743, or 20.5%, in 2015 and decreased $122, or 0.7%, in 2014. The 2015 amortization expense increased $2,198 due to the amortization of intangibles from recent acquisitions. The 2014 amortization expense decreased $145 due to lower amortization of intangibles for customer lists.

Depreciation expense increased $1,545, or 8.7%, in 2015. The increase was primarily due to the acquisitions of DIRECTV and our wireless properties in Mexico and ongoing capital spending for network upgrades. The increases were partially offset by the abandonment of certain wireline network assets, which occurred in 2014, and certain network assets becoming fully depreciated. The 2014 depreciation expense increased $23 due to ongoing capital spending for network upgrades and expansion and additional expense associated with the assets acquired from Leap. These increases were largely offset by extending the estimated useful life of software and certain network assets becoming fully depreciated assets.

**Segment Results**

Our segments are strategic business units that offer different products and services over various technology platforms and/or in different geographies that are managed accordingly. Our operating segment results presented in Note 4 and discussed below for each segment follow our internal management reporting. We analyze our operating segments based on segment contribution, which consists of operating income, excluding acquisition-related costs and other significant items, and equity in net income of affiliates for investments managed within each operating segment. Each segment's percentage calculation of total segment operating revenue and income is derived from our segment results table in Note 4, and may total more than 100 percent due to losses in one or more segments. We have four reportable segments: (1) Business Solutions, (2) Entertainment Group, (3) Consumer Mobility and (4) International.

We also evaluate segment performance based on segment operating income before depreciation and amortization, which we refer to as EBITDA and/or EBITDA margin. We believe EBITDA to be a relevant and useful measurement to our investors as it is part of our internal management reporting and planning processes and it is an important metric that management uses to evaluate operating performance. EBITDA does not give effect to cash used for debt service requirements and thus does not reflect available funds for distributions, reinvestment or other discretionary uses. EBITDA margin is operating income before depreciation and amortization, divided by total revenues.

The ***Business Solutions segment*** accounted for approximately 49% of our 2015 total segment operating revenues as compared to 54% in 2014 and 59% of our 2015 total segment contribution as compared to 66% in 2014. This segment provides services to business, governmental and wholesale customers, and individual subscribers who purchase wireless services through employer-sponsored plans. We provide advanced IP-based services including Virtual Private Networks (VPN), Ethernet-related products and broadband, collectively referred to as strategic business services, as well as traditional data and voice products. We utilize our wireless and wired network and are marketed to provide a complete communications solution to our business customers.

The ***Entertainment Group segment*** accounted for approximately 24% of our 2015 total segment operating revenues as compared to 17% in 2014 and 7% of our 2015 total segment contribution as compared to a loss in 2014. This segment provides video, Internet and voice communication services to residential customers located in the U.S. or in U.S. territories. We utilize our copper and IP-based (referred to as "wired" or "wireline") wired network and/or our satellite technology.

The ***Consumer Mobility segment*** accounted for approximately 24% of our 2015 total segment operating revenues as compared to 28% in 2014 and 35% of our 2015 total segment contribution as compared to 39% in 2014. This segment provides nationwide wireless service to consumers, and wireless wholesale and resale subscribers located in the U.S. or in U.S. territories. We utilize our U.S. wireless network to provide voice and data services, including high-speed Internet, video entertainment and home monitoring services.

The ***International segment*** accounted for approximately 3% of our 2015 total segment operating revenues. This segment provides entertainment services in Latin America and wireless services in Mexico. Video entertainment services are provided to primarily residential customers using satellite technology. We utilize our regional and national networks in Mexico to provide consumer and business customers with wireless data and voice communication services. Our international subsidiaries conduct business in their local currency and operating results are converted to U.S. dollars using official exchange rates. Our International segment is subject to foreign currency fluctuations.

Our operating assets are utilized by multiple segments and consist of our wireless and wired networks as well as an international satellite fleet. We manage our assets to provide for the most efficient, effective and integrated service to our customers, not by operating segment, and therefore asset information and capital expenditures by operating segment are not presented. Depreciation is allocated based on network usage or asset utilization by segment.

We discuss capital expenditures in "Liquidity and Capital Resources."

*Wireless service* revenues increased $505, or 1.7%, in 2015 and $486, or 1.6%, in 2014. The revenue increases reflect smartphone and tablet gains as well as customer migrations from our Consumer Mobility segment.

Business wireless subscribers increased 13.1%, to 73.7 million subscribers at December 31, 2015 compared to 14.0%, to 65.1 million subscribers at December 31, 2014. Postpaid subscribers increased 6.9% in 2015 compared to 10.7% in 2014 reflecting the addition of new customers as well as migrations from our Consumer Mobility segment, partially offset by continuing competitive pressures in the industry. Connected devices, which have lower average revenue per average subscriber (ARPU) and lower churn, increased 26.8% in 2015 compared to 22.2% in 2014 reflecting growth in business customers using tracking, monitoring and other sensor-embedded devices on their equipment.

The effective management of subscriber churn is critical to our ability to maximize revenue growth and to maintain and improve margins. Business wireless postpaid churn increased to 0.99% in 2015 from 0.90% in 2014 and 0.89% in 2013.

*Fixed strategic services* revenues increased $1,244, or 12.9%, in 2015 and $1,222, or 14.5%, in 2014. Our revenues, which were negatively impacted by foreign exchange rates, increased in 2015 and 2014 due to: Ethernet increases of $389 and $340, U-verse services increases of $247 and $170, Ethernet access to Managed Internet Services increases of $190 and $163 and VPN increases of $116 and $359.

*Legacy wired voice and data service* revenues decreased $1,838, or 9.3%, in 2015 and $1,812, or 8.4%, in 2014. Traditional data revenues in 2015 and 2014 decreased $1,040 and $1,318 and long-distance and local voice revenues decreased $797 and $475. The decreases were primarily due to lower demand as customers continue to shift to our more advanced IP-based offerings or our competitors.

*Other service* revenues decreased $302, or 7.8%, in 2015 and $18, or 0.5%, in 2014. Other service revenues include project-based revenue, which is nonrecurring in nature, as well as revenues from other managed services, outsourcing, government professional service and customer premises equipment. The declines in 2015 and 2014 are primarily due to lower project-based and equipment revenues, as well as impacts from foreign exchange rates.

*Wireless equipment* revenues increased $912, or 13.0%, in 2015 and $3,081, or 77.8%, in 2014. The increase was primarily due to the increase in handsets sold under our AT&T Next$^{SM}$ (AT&T Next) program and the increase in sales of higher-priced smartphones.

**Operations and support** expenses decreased $880, or 1.9%, in 2015 and increased $2,384, or 5.5%, in 2014. Operations and support expenses consist of costs incurred to provide our products and services, including costs of operating and maintaining our networks and personnel costs, such as compensation and benefits.

Expense decreases in 2015 were primarily due to:

- Lower commission costs of $995 primarily due to lower average commission rates and fewer upgrade transactions.
- Lower employee-related charges of $508 resulting from workforce reductions and other cost initiatives.
- Reductions of $269 in access costs, primarily due to lower interconnect, roaming and traffic compensation costs.
- Lower customer service costs of $146 primarily resulting from our simplified offerings and increased efforts to resolve customer inquiries on their first call.

Partially offsetting the decreases in 2015 were:

- Higher wireless handset insurance cost of $370 resulting from higher claim rates and costs per claim.
- Increased equipment expense of $304 due to the continuing trend of customers choosing higher-cost devices.
- Higher bad debt expense of $173 resulting from a higher AT&T Next subscriber base.

Expense increases in 2014 were primarily due to:

- Increased equipment expense of $1,779 due to increased sales and the continuing trend of customers choosing higher-cost devices.
- Network system costs increased $315 due to increased lease fees, higher maintenance and energy costs resulting from the increase in the number of cell sites and expenses related to our network enhancement efforts.
- Higher wireless handset insurance cost of $159 resulting from higher claim rates and costs per claim.

The following table highlights other key measures of performance for the Entertainment Group segment:

| (in 000s) | 2015 | 2014 | 2013 | Percent Change 2015 vs. 2014 | Percent Change 2014 vs. 2013 |
|---|---|---|---|---|---|
| Video Connections | | | | | |
| Satellite | **19,784** | - | - | - | - |
| U-verse | **5,614** | 5,920 | 5,257 | **(5.2)** | 12.6 |
| **Total Video Connections** | **25,398** | 5,920 | 5,257 | - | 12.6 |
| | | | | | |
| Video Net Additions [1] | | | | | |
| Satellite | **240** | - | - | - | - |
| U-verse | **(306)** | 663 | 889 | - | (25.4) |
| **Net Video Additions** | **(66)** | 663 | 889 | - | (25.4) |
| | | | | | |
| Broadband Connections | | | | | |
| IP | **12,356** | 11,383 | 9,484 | **8.5** | 20.0 |
| DSL | **1,930** | 3,061 | 4,829 | **(36.9)** | (36.6) |
| **Total Broadband Connections** | **14,286** | 14,444 | 14,313 | **(1.1)** | 0.9 |
| | | | | | |
| Broadband Net Additions | | | | | |
| IP | **973** | 1,899 | 2,266 | **(48.8)** | (16.2) |
| DSL | **(1,130)** | (1,768) | (2,103) | **36.1** | 15.9 |
| **Net Broadband Additions** | **(157)** | 131 | 163 | - | (19.6) |
| | | | | | |
| Retail Consumer Switched Access Lines | **7,286** | 9,243 | 12,013 | **(21.2)** | (23.1) |
| U-verse Consumer VoIP Connections | **5,212** | 4,759 | 3,701 | **9.5** | 28.6 |
| **Total Retail Consumer Voice Connections** | **12,498** | 14,002 | 15,714 | **(10.7)%** | (10.9)% |

[1] Excludes acquisition-related additions during the period.

**Operating revenues** increased $13,061, or 58.7%, in 2015 and $691, or 3.2%, in 2014. Our July 2015 acquisition of DIRECTV was largely responsible for higher revenues beginning in the third quarter of 2015. Also contributing to the increases was continued strong growth in consumer IP broadband and U-verse video, which more than offset lower revenues from legacy voice and data products.

*Video entertainment* revenues increased $13,445 in 2015 and $1,016, or 17.5%, in 2014. The 2015 increase was primarily related to our acquisition of DIRECTV. With our acquisition of DIRECTV, we are now focusing our sales efforts on satellite service as there are lower content costs for satellite subscribers. U-verse video revenue increased $932 in 2015. The 2014 increase was primarily due to a 12.6% increase in U-verse video connections, when compared to 2013.

*High-speed Internet* revenues increased $1,079, or 19.5%, in 2015 and $1,303, or 30.9%, in 2014. When compared to 2014, IP broadband connections increased 8.5%, to 12.4 million connections at December 31, 2015; however, 2015 net additions were lower due to fewer U-verse sales promotions in the year and churn of video customers, some of whom also purchased broadband service. When compared to 2013, IP broadband connections increased 20.0%, to 11.4 million connections at December 31, 2014.

*Legacy voice and data service* revenues decreased $1,678, or 22.1%, in 2015 and $2,075, or 21.5%, in 2014. The revenue decreases were due to a $1,083 and $1,367 decrease in long-distance and local voice revenues, respectively, and a $593 and $710 decrease in traditional data revenues, which include circuit-based services.

*Other service and equipment* revenues increased $215, or 9.4%, in 2015 and $447, or 24.2%, in 2014.

The following table highlights other key measures of performance for the Consumer Mobility segment:

| (in 000s) | 2015 | 2014 | 2013 | Percent Change 2015 vs. 2014 | Percent Change 2014 vs. 2013 |
|---|---|---|---|---|---|
| Consumer Mobility Subscribers | | | | | |
| Postpaid | **28,814** | 30,610 | 31,827 | **(5.9)%** | (3.8)% |
| Prepaid | **11,548** | 9,965 | 5,817 | **15.9** | 71.3 |
| Reseller | **13,690** | 13,844 | 14,028 | **(1.1)** | (1.3) |
| Connected devices [1] | **929** | 1,021 | 1,567 | **(9.0)** | (34.8) |
| **Total Consumer Mobility Subscribers** | **54,981** | 55,440 | 53,239 | **(0.8)** | 4.1 |
| Consumer Mobility Net Additions [2] | | | | | |
| Postpaid | **463** | 1,226 | 395 | **(62.2)** | - |
| Prepaid | **1,364** | (311) | 377 | - | - |
| Reseller | **(168)** | (351) | (1,074) | **52.1** | 67.3 |
| Connected devices [1] | **(131)** | (465) | (390) | **71.8** | (19.2) |
| **Consumer Mobility Net Subscriber Additions** | **1,528** | 99 | (692) | - | - |
| Consumer Mobility Postpaid Churn [2, 3] | **1.25%** | 1.22% | 1.26% | **3 BP** | (4) BP |
| Total Consumer Mobility Churn [2, 3] | **1.94%** | 2.06% | 1.84% | **(12) BP** | 22 BP |

[1] Includes data-centric devices such as session-based tablets, monitoring devices and automobile systems. Excludes postpaid tablets.
[2] Excludes migrations between AT&T segments and/or subscriber categories and acquisition-related additions during the period.
[3] Calculated by dividing the aggregate number of wireless subscribers who canceled service during a period divided by the total number of wireless subscribers at the beginning of that period. The churn rate for the period is equal to the average of the churn rate for each month of that period.

**Operating revenues** decreased $1,703, or 4.6%, in 2015 and increased $526, or 1.5%, in 2014. Decreased revenues in 2015 reflect declines in postpaid service revenues due to customers choosing Mobile Share plans and migrating to our Business Solutions segment, partially offset by higher prepaid service revenues. Our business wireless offerings allow for individual subscribers to purchase wireless services through employer-sponsored plans for a reduced price. The migration of these subscribers to the Business Solutions segment negatively impacted our consumer postpaid subscriber total and service revenue growth.

Increased revenues in 2014 are primarily due to an increase in prepaid services attributable to our acquisition of Leap and increased equipment revenues. These increases were partially offset by customers choosing Mobile Share plans and migrating to our Business Solutions segment.

*Postpaid wireless* revenues decreased $2,252, or 9.3%, in 2015 and $2,858, or 10.5%, in 2014. These decreases were largely due to customers continuing to shift to no-device-subsidy plans, which allow for discounted monthly service charges under our Mobile Share plans and the migration of subscribers to Business Solutions. Without the migration of customers to Business Solutions, postpaid wireless revenues would have decreased approximately 4.0% in 2015 and 5.4% for 2014.

*Prepaid wireless* revenues increased $457, or 10.9%, in 2015 and $1,888, or 81.5%, in 2014. Our prepaid services, which include services sold under the Cricket brand, are monthly prepaid services. Prepaid wireless revenues increased in 2015 primarily due to growth in the subscriber base. The increase in 2014 was primarily due to our March 2014 acquisition of Leap.

*Other service revenue* increased $95, or 4.0%, in 2015 and decreased $36, or 1.5%, in 2014.

**International**
**Segment Results**

| | 2015 | 2014 | 2013 | Percent Change 2015 vs. 2014 | Percent Change 2014 vs. 2013 |
|---|---|---|---|---|---|
| Segment operating revenues | | | | | |
| Video entertainment | $ 2,150 | $ - | $ - | - | - |
| Wireless | 1,647 | - | - | - | - |
| Equipment | 305 | - | - | - | - |
| Total Segment Operating Revenues | 4,102 | - | - | - | - |
| Segment operating expenses | | | | | |
| Operations and support | 3,930 | - | - | - | - |
| Depreciation and amortization | 655 | - | - | - | - |
| Total Segment Operating Expenses | 4,585 | - | - | - | - |
| Segment Operating Income (Loss) | (483) | - | - | - | - |
| Equity in Net Income (Loss) of Affiliates | (5) | 153 | 532 | - | (71.2) |
| Segment Contribution | $ (488) | $ 153 | $ 532 | - | (71.2)% |

**Operating Results**
Our International segment consists of the Latin America operations acquired in our July 2015 acquisition of DIRECTV as well as the Mexican wireless operations acquired earlier in 2015 (see Note 7). For 2015, our International segment operating income margin was (11.8)% and our International EBITDA margin was 4.2%.

Our 2015 operating revenues were $4,102, with $1,952 attributable to wireless revenues in Mexico and $2,150 in video services in Latin America. Operations and support expenses consist of costs incurred to provide our products and services, including costs of operating and maintaining our networks, providing video content and personnel costs, such as compensation and benefits. Our 2015 operating expenses were $3,930 and operating loss was $483.

**Connections Summary**
At December 31, 2015, we had approximately 8.7 million wireless subscribers in Mexico and 12.5 million video connections in Latin America, including 5.4 million in Brazil. Since acquisition, our Mexico wireless business had a net loss of 96,000 subscribers, mainly prepaid customers, and our Latin America operations had a net loss of 147,000 video connections.

The following table highlights other key measures of performance for AT&T Mobility:

| (in 000s) | 2015 | 2014 | 2013 | Percent Change 2015 vs. 2014 | Percent Change 2014 vs. 2013 |
|---|---|---|---|---|---|
| Wireless Subscribers [1] | | | | | |
| Postpaid smartphones | **58,073** | 56,644 | 51,874 | **2.5%** | 9.2% |
| Postpaid feature phones and data-centric devices | **19,032** | 19,126 | 20,764 | **(0.5)** | (7.9) |
| Postpaid | **77,105** | 75,770 | 72,638 | **1.8** | 4.3 |
| Prepaid [5] | **11,548** | 9,965 | 5,817 | **15.9** | 71.3 |
| Reseller | **13,774** | 13,855 | 14,028 | **(0.6)** | (1.2) |
| Connected devices [2] | **26,213** | 20,964 | 17,893 | **25.0** | 17.2 |
| **Total Wireless Subscribers** | **128,640** | 120,554 | 110,376 | **6.7** | 9.2 |
| Net Additions [3] | | | | | |
| Postpaid | **1,666** | 3,290 | 1,776 | **(49.4)** | 85.2 |
| Prepaid [5] | **1,364** | (311) | 377 | **-** | - |
| Branded Net Adds | **3,030** | 2,979 | 2,153 | **1.7** | 38.4 |
| Reseller | **(155)** | (346) | (1,074) | **55.2** | 67.8 |
| Connected devices [2] | **5,184** | 2,975 | 1,642 | **74.3** | 81.2 |
| **Net Subscriber Additions** | **8,059** | 5,608 | 2,721 | **43.7** | - |
| Branded smartphones | **67,200** | 62,443 | 54,262 | **7.6** | 15.1 |
| Mobile Share connections | **61,275** | 52,370 | 21,143 | **17.0** | - |
| Smartphones under our installment program at end of period | **26,670** | 15,308 | 1,488 | **74.2** | - |
| Smartphones sold under our installment program during period | **17,320** | 15,268 | 1,540 | **13.4%** | - |
| Total Churn [4] | **1.39%** | 1.45% | 1.37% | **(6) BP** | 8 BP |
| Postpaid Churn [4] | **1.09%** | 1.04% | 1.06% | **5 BP** | (2) BP |

[1] Represents 100% of AT&T Mobility wireless subscribers.
[2] Includes data-centric devices such as session-based tablets, monitoring devices and automobile systems. Excludes postpaid tablets.
[3] Excludes acquisition-related additions during the period.
[4] Calculated by dividing the aggregate number of wireless subscribers who canceled service during a period divided by the total number of wireless subscribers at the beginning of that period. The churn rate for the period is equal to the average of the churn rate for each month of that period.
[5] In 2015, session-based tablets were reclassified to connected devices. Prior period amounts reflect the current period presentation.

**Operating income** increased $1,903, or 10.6%, in 2015 and decreased $242, or 1.3%, in 2014. The operating income margin of AT&T Mobility was 26.9% in 2015, compared to 24.2% in 2014 and 26.0% in 2013. AT&T Mobility's EBITDA margin was 37.9% in 2015, compared to 34.7% in 2014 and 36.3% in 2013. AT&T Mobility's EBITDA service margin was 46.7% in 2015, compared to 42.0% in 2014 and 41.3% in 2013. (EBITDA service margin is operating income before depreciation and amortization, divided by total service revenues.)

**Subscriber Relationships**
As the wireless industry continues to mature, we believe that future wireless growth will increasingly depend on our ability to offer innovative services, plans and devices and a wireless network that has sufficient spectrum and capacity to support these innovations on as broad a geographic basis as possible. To attract and retain subscribers in a maturing market, we have launched a wide variety of plans, including Mobile Share and AT&T Next.

**2016 Expense Trends** We expect stable consolidated operating income margins in 2016 as growth in AT&T Next is reducing subsidized handset costs over time and we lower our marginal cost of providing video services and operating our network. We expect to continue our focus on cost reductions, driving savings through automation, supply chain, benefits, digitizing transactions and optimizing network costs. In addition, the transition of our network to a more efficient software-based technology is expected to contribute to favorable expense trends over the next several years. Expenses related to growth areas of our business, including wireless data, and integration of DIRECTV's operations, will apply offsetting pressure to our operating income margin.

**Market Conditions** During 2015, the ongoing slow recovery in the general economy continued to negatively affect our customers. Certain industries, such as energy and export-driven businesses are being especially cautious while residential customers continue to be price sensitive in selecting offerings, especially in the wireless area, and continue to focus on offerings that give them efficient access to video and broadcast services. We expect continued pressure on pricing during 2016 as we respond to this intense competition, especially in the wireless business.

Included on our consolidated balance sheets are assets held by benefit plans for the payment of future benefits. Our pension plans are subject to funding requirements of the Employee Retirement Income Security Act of 1974, as amended (ERISA). In September 2013, we made a voluntary contribution of a preferred equity interest in AT&T Mobility II LLC to the trust used to pay pension benefits. The trust is entitled to receive cumulative annual cash distributions of $560, which will result in a $560 contribution during 2016. In addition, we will contribute $175 no later than the due date for our federal income tax return for 2015. We do not have significant additional contribution requirements to our pension plans for 2016. However, a weakness in the equity, fixed income and real asset markets could require us in future years to make contributions to the pension plans in order to maintain minimum funding requirements as established by ERISA. Investment returns on these assets depend largely on trends in the U.S. securities markets and the U.S. economy. In addition, our policy of recognizing actuarial gains and losses related to our pension and other postretirement plans in the period in which they arise subjects us to earnings volatility caused by changes in market conditions. Changes in our discount rate, which are tied to changes in the bond market, and changes in the performance of equity markets, may have significant impacts on the valuation of our pension and other postretirement obligations at the end of 2016 (see "Accounting Policies and Estimates").

## OPERATING ENVIRONMENT OVERVIEW

AT&T subsidiaries operating within the United States are subject to federal and state regulatory authorities. AT&T subsidiaries operating outside the United States are subject to the jurisdiction of national and supranational regulatory authorities in the markets where service is provided.

In the Telecommunications Act of 1996 (Telecom Act), Congress established a national policy framework intended to bring the benefits of competition and investment in advanced telecommunications facilities and services to all Americans by opening all telecommunications markets to competition and reducing or eliminating regulatory burdens that harm consumer welfare. However, since the Telecom Act was passed, the Federal Communications Commission (FCC) and some state regulatory commissions have maintained or expanded certain regulatory requirements that were imposed decades ago on our traditional wireline subsidiaries when they operated as legal monopolies. We are pursuing, at both the state and federal levels, additional legislative and regulatory measures to reduce regulatory burdens that are no longer appropriate in a competitive telecommunications market and that inhibit our ability to compete more effectively and offer services wanted and needed by our customers, including initiatives to transition services from traditional networks to all IP-based networks. At the same time, we also seek to ensure that legacy regulations are not further extended to broadband or wireless services, which are subject to vigorous competition.

**Wireless** We expect to deliver continued revenue growth in the coming years. We are in a period of rapid growth in wireless data usage and believe that there are substantial opportunities available for next-generation converged services that combine technologies and services. For example, we entered into agreements with many automobile manufacturers and began providing vehicle-embedded security and entertainment services.

In the United States, we now cover all major metropolitan areas and more than 310 million people with our LTE technology. We also provide 4G coverage using another technology (HSPA+), and when combined with our upgraded backhaul network, we are able to enhance our network capabilities and provide superior mobile broadband speeds for data and video services. Our wireless network also relies on other GSM digital transmission technologies for 3G and 2G data communications. As of December 31, 2015, we served more than 128 million U.S. subscribers.

As the wireless industry continues to mature, we believe that future wireless growth will increasingly depend on our ability to offer innovative video and data services and a wireless network that has sufficient spectrum and capacity to support these innovations. We continue to face spectrum and capacity constraints on our wireless network in certain markets. We expect such constraints to increase and expand to additional markets in the coming years. While we are continuing to invest significant capital in expanding our network capacity, our capacity constraints could affect the quality of existing voice and data services and our ability to launch new, advanced wireless broadband services, unless we are able to obtain more spectrum. Any long-term spectrum solution will require that the FCC make additional spectrum available to the wireless industry to meet the expanding needs of our subscribers. We will continue to attempt to address spectrum and capacity constraints on a market-by-market basis.

In 2015, we acquired two Mexican wireless providers. These two acquisitions give us a GSM network covering both the U.S. and Mexico and enable our customers to use wireless services without roaming on other companies' networks. We believe this seamless access will prove attractive to customers and provide a significant growth opportunity. We also announced in 2015 our plan to invest $3,000 to upgrade the network in Mexico to provide LTE coverage to 100 million people and businesses by year-end 2018. As of year-end 2015, this LTE network covered approximately 44 million people and businesses in Mexico.

## REGULATORY DEVELOPMENTS

Set forth below is a summary of the most significant regulatory proceedings that directly affected our operations during 2015. Industry-wide regulatory developments are discussed above in Operating Environment Overview. While these issues may apply only to certain subsidiaries, the words "we," "AT&T" and "our" are used to simplify the discussion. The following discussions are intended as a condensed summary of the issues rather than as a comprehensive legal analysis and description of all of these specific issues.

***International Regulation*** Our subsidiaries operating outside the United States are subject to the jurisdiction of regulatory authorities in the market where service is provided. Our licensing, compliance and advocacy initiatives in foreign countries primarily enable the provision of enterprise (i.e., large business) services. AT&T is engaged in multiple efforts with foreign regulators to open markets to competition, reduce network costs, foster conditions favorable to investment, and increase our scope of fully authorized network services and products.

***Federal Regulation*** In February 2015, the FCC released an order in response to the D.C. Circuit's January 2014 decision adopting new rules, and reclassifying both fixed and mobile consumer broadband Internet access services as telecommunications services, subject to comprehensive regulation under the Telecom Act. The FCC's decision significantly expands the FCC's existing authority to regulate the provision of fixed and mobile broadband Internet access services. The FCC also asserted jurisdiction over Internet interconnection arrangements, which until now have been unregulated. These actions could have an adverse impact on our fixed and mobile broadband services and operating results. AT&T and several other parties, including US Telecom and CTIA trade groups, have appealed the FCC's order. Briefing and oral argument on the appeal have been completed. The D.C. Circuit is expected to rule on the appeal in the first half of 2016.

## ACCOUNTING POLICIES AND STANDARDS

**Critical Accounting Policies and Estimates** Because of the size of the financial statement line items they relate to or the extent of judgment required by our management, some of our accounting policies and estimates have a more significant impact on our consolidated financial statements than others. The following policies are presented in the order in which the topics appear in our consolidated statements of income.

**Allowance for Doubtful Accounts** We record expense to maintain an allowance for doubtful accounts for estimated losses that result from the failure or inability of our customers to make required payments. When determining the allowance, we consider the probability of recoverability based on past experience, taking into account current collection trends as well as general economic factors, including bankruptcy rates. Credit risks are assessed based on historical write-offs, net of recoveries, as well as an analysis of the aged accounts and installment receivable balances with reserves generally increasing as the receivable ages. Accounts receivable may be fully reserved for when specific collection issues are known to exist, such as pending bankruptcy or catastrophes. The analysis of receivables is performed monthly, and the allowances for doubtful accounts are adjusted through expense accordingly. A 10% change in the amounts estimated to be uncollectible would result in a change in the provision for uncollectible accounts of approximately $142.

**Pension and Postretirement Benefits** Our actuarial estimates of retiree benefit expense and the associated significant weighted-average assumptions are discussed in Note 12. Our assumed discount rate for pension and postretirement benefits of 4.60% and 4.50%, respectively, at December 31, 2015, reflects the hypothetical rate at which the projected benefit obligations could be effectively settled or paid out to participants. We determined our discount rate based on a range of factors, including a yield curve composed of the rates of return on several hundred high-quality, fixed income corporate bonds available at the measurement date and the related expected duration for the obligations. These bonds were all rated at least Aa3 or AA- by one of the nationally recognized statistical rating organizations, denominated in U.S. dollars, and neither callable, convertible nor index linked. For the year ended December 31, 2015, we increased our pension discount rate by 0.30%, resulting in a decrease in our pension plan benefit obligation of $1,977 and increased our postretirement discount rate by 0.30%, resulting in a decrease in our postretirement benefit obligation of $854. For the year ended December 31, 2014, we decreased our pension discount rate by 0.70%, resulting in an increase in our pension plan benefit obligation of $4,854 and decreased our postretirement discount rate 0.80%, resulting in an increase in our postretirement benefit obligation of $2,786.

Our expected long-term rate of return on pension plan assets is 7.75% for 2016 and 2015. Our expected long-term rate of return on postretirement plan assets is 5.75% for 2016 and 2015. Our expected return on plan assets is calculated using the actual fair value of plan assets. If all other factors were to remain unchanged, we expect that a 0.50% decrease in the expected long-term rate of return would cause 2016 combined pension and postretirement cost to increase $232, which under our accounting policy would be adjusted to actual returns in the current year as part of our fourth-quarter remeasurement of our retiree benefit plans. In 2015, the actual return on our combined pension and postretirement plan assets was 1.3%, resulting in an actuarial loss of $3,070.

Wireless licenses (spectrum) in the U.S. are tested for impairment on an aggregate basis, consistent with use of the licenses to support the Business Solutions and Consumer Mobility segments on a national scope. As in prior years, we performed our test of the fair values of licenses using a discounted cash flow model (the Greenfield Approach). We also corroborated the value of wireless licenses with a market approach as the AWS-3 auction provided market price information for national wireless licenses. The Greenfield Approach assumes a company initially owns only the wireless licenses, and then makes investments required to build an operation comparable to the one that currently utilizes the licenses. We utilized a 17-year discrete period to isolate cash flows attributable to the licenses, including modeling the hypothetical build-out. The projected cash flows are based on certain financial factors, including revenue growth rates, EBITDA margins and churn rates. For impairment testing purposes, we assumed wireless revenue growth to trend up from our 2015 decline of 0.4% to a long-term growth rate that reflects expected long-term inflation trends. We assumed our churn rates will increase in 2016 from our rate of 1.39% in 2015, in line with expected trends in the U.S. industry but at a rate comparable with industry-leading churn. EBITDA margins were assumed to trend toward 40% annually, and EBITDA service margins were assumed to continue to trend to at least 40% annually.

This model then incorporates cash flow assumptions regarding investment in the network, development of distribution channels and the subscriber base, and other inputs for making the business operational. We based the assumptions on a combination of average marketplace participant data and our historical results, trends and business plans. We also used operating metrics such as capital investment per subscriber, acquisition costs per subscriber, minutes of use per subscriber, etc., to develop the projected cash flows. Since we included the cash flows associated with these other inputs in the annual cash flow projections, the present value of the unlevered free cash flows of the segment, after investment in the network, subscribers, etc., is attributable to the wireless licenses. The terminal value of the segment, which incorporates an assumed sustainable growth rate, is also discounted and is likewise attributed to the licenses. We used a discount rate of 8.25%, based on the optimal long-term capital structure of a market participant and its associated cost of debt and equity, to calculate the present value of the projected cash flows. This discount rate is also consistent with rates we use to calculate the present value of the projected cash flows of licenses acquired from third parties.

If either the projected rate of long-term growth of cash flows or revenues declined by 0.5%, or if the discount rate increased by 0.5%, the fair values of the wireless licenses, while less than currently projected, would still be higher than the book value of the licenses. The fair value of the licenses exceeded the book value by more than 10%.

We review customer relationships and other long-lived assets for impairment whenever events or circumstances indicate that the carrying amount may not be recoverable over the remaining life of the asset or asset group. To determine that the asset is recoverable, we verify that the expected undiscounted future cash flows directly related to that asset exceed its book value.

We evaluate our investments to determine whether market declines are temporary and accordingly reflected in accumulated other comprehensive income, or other-than-temporary and recorded as an expense in "Other income (expense) – net" in the consolidated statements of income. This evaluation is based on the length of time and the severity of decline in the investment's value. In 2014, we identified an immaterial other-than-temporary decline in the value of equity method investments and various cost investments.

**Income Taxes** Our estimates of income taxes and the significant items giving rise to the deferred assets and liabilities are shown in Note 11 and reflect our assessment of actual future taxes to be paid on items reflected in the financial statements, giving consideration to both timing and probability of these estimates. Actual income taxes could vary from these estimates due to future changes in income tax law or the final review of our tax returns by federal, state or foreign tax authorities.

We use our judgment to determine whether it is more likely than not that we will sustain positions that we have taken on tax returns and, if so, the amount of benefit to initially recognize within our financial statements. We regularly review our uncertain tax positions and adjust our unrecognized tax benefits (UTBs) in light of changes in facts and circumstances, such as changes in tax law, interactions with taxing authorities and developments in case law. These adjustments to our UTBs may affect our income tax expense. Settlement of uncertain tax positions may require use of our cash.

**Federal Trade Commission Litigation Involving DIRECTV** In March 2015, the Federal Trade Commission (FTC) filed a civil suit in the U.S. District Court for the Northern District of California against DIRECTV seeking injunctive relief and unspecified money damages under Section 5 of the Federal Trade Commission Act and Section 4 of the Restore Online Shoppers' Confidence Act. The FTC's allegations concern DIRECTV's advertising, marketing and sale of programming packages. The FTC alleges that DIRECTV did not adequately disclose all relevant terms. We are disputing these allegations vigorously.

**Unlimited Data Plan Claims** In October 2014, the FTC filed a civil suit in the U.S. District Court for the Northern District of California against AT&T Mobility, LLC seeking injunctive relief and unspecified money damages under Section 5 of the Federal Trade Commission Act. The FTC's allegations concern AT&T's Maximum Bit Rate (MBR) program, which temporarily reduces the download speeds of a small portion of our legacy Unlimited Data Plan customers each month. MBR is an industry-standard practice that is designed to affect only the most data-intensive applications (such as video streaming). Texts, emails, tweets, social media posts, Internet browsing and many other applications are typically unaffected. Contrary to the FTC's allegations, which we vigorously dispute, our MBR program is permitted by our customer contracts, was fully disclosed in advance to our Unlimited Data Plan customers, and was implemented to protect the network for the benefit of all customers. In March 2015, our motion to dismiss the litigation on the grounds that the FTC lacked jurisdiction to file suit was denied. In May 2015, the Court granted our motion to certify its decision for immediate appeal. The United States Court of Appeals for the Ninth Circuit subsequently granted our petition to accept the appeal, and the appeal is now pending before that Court while limited discovery proceeds in the District Court. In addition to the FTC case, several class actions have been filed also challenging our MBR program. We vigorously dispute the allegations the complaints have asserted.

On June 17, 2015, the FCC issued a Notice of Apparent Liability and Order (NAL) to AT&T Mobility, LLC concerning our MBR policy that applies to Unlimited Data Plan customers. The NAL alleges that we violated the FCC's Open Internet Transparency Rule by using the term "unlimited" in connection with the offerings subject to the MBR policy and by failing adequately to disclose the speed reductions that apply once a customer reaches a specified data threshold. The NAL proposes a forfeiture penalty of $100, and further proposes to order us to correct any misleading and inaccurate statements about our unlimited plans, inform customers of the alleged violation, revise our disclosures to address the alleged violation and inform these customers that they may cancel their plans without penalty after reviewing the revised disclosures. On July 17, 2015, we filed our response to the NAL. We believe that the NAL is unlawful and should be withdrawn, because we have fully complied with the Open Internet Transparency Rule and the FCC has no authority to impose the proposed remedies. The matter is currently pending before the FCC.

## LIQUIDITY AND CAPITAL RESOURCES

We had $5,121 in cash and cash equivalents available at December 31, 2015. Approximately $807 of our cash and cash equivalents resided in foreign jurisdictions, some of which are subject to restrictions on repatriation. Cash and cash equivalents decreased $3,482 since December 31, 2014. We also had $401 in short-term investments, which we included in "Other current assets" on our consolidated balance sheets. In 2015, cash inflows were primarily provided by cash receipts from operations, including cash from our sale and transfer of certain equipment installment receivables to third parties and long-term debt issuances. These inflows were offset by cash used to meet the needs of the business, including, but not limited to, payment of operating expenses; acquisitions of wireless spectrum, DIRECTV, GSF Telecom Holdings, S.A.P.I. de C.V. (GSF Telecom) and Nextel Mexico; funding capital expenditures; debt repayments; dividends to stockholders; and collateral posting (see Note 9). We discuss many of these factors in detail below.

### Cash Provided by or Used in Operating Activities

During 2015, cash provided by operating activities was $35,880, compared to $31,338 in 2014. Higher operating cash flows in 2015 were primarily due to improved operating results, our acquisition of DIRECTV and working capital improvements.

During 2014, cash provided by operating activities was $31,338 compared to $34,796 in 2013. Lower operating cash flows in 2014 were primarily due to wireless device financing related to AT&T Next, which results in cash collection over the installment period instead of at the time of sale, increased inventory levels and retirement benefit funding. Proceeds from the sale of equipment installment receivables and the timing of working capital payments partially offset the decline in operating cash flows.

During 2015, we redeemed $10,042 in debt, primarily consisting of the following repayments:

- Redemption of $902 of various senior notes in connection with the January 2015 GSF Telecom acquisition and April 2015 Nextel Mexico acquisition.
- April 2015 redemption of €1,250 (approximately $1,975 at maturity) of AT&T 6.125% notes due 2015.
- August 2015 redemption of $1,500 of AT&T 2.500% notes due August 2015.
- September 2015 redemption of $1,000 of 0.800% notes due December 2015; $1,000 of 0.900% AT&T notes due February 2016; $750 of 3.125% DIRECTV Holdings LLC and DIRECTV Financing Co., Inc. notes due February 2016; and $1,500 of 3.500% of DIRECTV senior notes due March 2016.
- September 2015 prepayment of $1,000 of the outstanding advances under the $2,000 18-month credit agreement (the "18-Month Credit Agreement") by and between AT&T and Mizuho. (See the "Credit Facilities" discussion below.)

In 2015, we continued to take advantage of lower market interest rates and undertook several activities related to our long-term debt which caused our weighted average interest rate of our entire long-term debt portfolio, including the impact of derivatives, to decrease from 4.2% at December 31, 2014 to 4.0% at December 31, 2015. We had $124,847 of total notes and debentures outstanding (see Note 9) at December 31, 2015, which included Euro, British pound sterling, Swiss franc, Brazilian real and Canadian dollar denominated debt of approximately $26,221.

On February 9, 2016, we issued $6,000 of long-term debt which included:

- $1,250 of 2.800% global notes due 2021.
- $1,500 of 3.600% global notes due 2023.
- $1,750 of 4.125% global notes due 2026.
- $1,500 of 5.650% global notes due 2047.

At December 31, 2015, we had $7,636 of debt maturing within one year, substantially all of which was related to long-term debt issuances. Debt maturing within one year includes the following notes that may be put back to us by the holders:

- $1,000 of annual put reset securities issued by BellSouth Corporation that may be put back to us each April until maturity in 2021.
- An accreting zero-coupon note that may be redeemed each May until maturity in 2022. If the zero-coupon note (issued for principal of $500 in 2007) is held to maturity, the redemption amount will be $1,030.

Our Board of Directors has approved repurchase authorizations of 300 million shares each in 2013 and 2014 (see Note 14). For the year ended December 31, 2014, we had repurchased approximately 48 million shares totaling $1,617 under these authorizations and for the year ended December 31, 2015, we had repurchased approximately 8 million shares totaling $269 under these authorizations. At December 31, 2015 we had approximately 407 million shares remaining from the 2013 and 2014 authorizations.

The emphasis of our 2016 financing activities will be the issuance of debt, the payment of dividends, which is subject to approval by our Board of Directors, and the repayment of debt. We plan to fund our financing uses of cash through a combination of cash from operations, debt issuances and asset sales. The timing and mix of debt issuance will be guided by credit market conditions and interest rate trends.

**Credit Facilities**

On December 11, 2015, we entered into a five-year, $12,000 credit agreement (the "Revolving Credit Agreement") with Citibank, N.A. (Citibank), as administrative agent, replacing our $5,000 credit agreement that would have expired in December 2018. At the same time, AT&T and the lenders terminated their obligations under the existing revolving $3,000 credit agreement with Citibank that would have expired in December 2017.

In January 2015, we entered into a $9,155 credit agreement (the "Syndicated Credit Agreement") containing (i) a $6,286 term loan facility (the "Tranche A Facility") and (ii) a $2,869 term loan facility (the "Tranche B Facility"), with certain investment and commercial banks and Mizuho Bank, Ltd. ("Mizuho"), as administrative agent. We also entered into a $2,000 18-month credit agreement (the "18-Month Credit Agreement") with Mizuho as initial lender and agent. On December 11, 2015, AT&T amended the Syndicated Credit Agreement and the 18-Month Credit Agreement to, among other things, revise the financial covenant to match the financial covenant in the Revolving Credit Agreement.

*The 18-Month Credit Agreement*
In March 2015, AT&T borrowed all amounts available under the 18-Month Credit Agreement. Amounts borrowed under the 18-Month Credit Agreement will be due and payable on September 2, 2016. In September 2015, we partially repaid the amount borrowed.

Advances bear interest at a rate equal to: (i) the LIBOR for deposits in dollars (adjusted upwards to reflect any bank reserve costs) for a period of one, two, three or six months, as applicable, plus (ii) the Applicable Margin (each such Advance, a Eurodollar Rate Advance). The Applicable Margin will equal 0.800%, 0.900% or 1.000% per annum, depending on AT&T's credit rating. In the event that AT&T's unsecured senior long-term debt ratings are split by S&P, Moody's and Fitch, then the Applicable Margin will be determined by the highest rating, unless the lowest of such ratings is more than one level below the highest of such ratings, in which case the pricing will be the rating that is one level above the lowest of such ratings.

The 18-Month Credit Agreement contains affirmative and negative covenants and events of default equivalent to those contained in the Syndicated Credit Agreement.

**Collateral Arrangements**
During 2015, we posted $2,288 of additional cash collateral, on a net basis, to banks and other participants in our derivative arrangements. Cash postings under these arrangements vary with changes in credit ratings and netting agreements. (See Note 10)

**Other**
Our total capital consists of debt (long-term debt and debt maturing within one year) and stockholders' equity. Our capital structure does not include debt issued by our equity method investments. At December 31, 2015, our debt ratio was 50.5%, compared to 47.5% at December 31, 2014, and 44.1% at December 31, 2013. The debt ratio is affected by the same factors that affect total capital, and reflects the debt issued and acquired in 2015 and our issuance of treasury shares of AT&T common stock, and debt redemptions during 2015. Total capital increased $77,687 in 2015 compared to an increase of $2,905 in 2014. The 2015 capital increase was primarily due to use of treasury stock to acquire DIRECTV and an increase in debt balances, partially offset by a decrease in accumulated other comprehensive income due to foreign currency translation adjustments.

A significant amount of our cash outflows are related to tax items and benefits paid for current and former employees. Total taxes incurred, collected and remitted by AT&T during 2015, 2014, and 2013 were $21,501, $20,870 and $21,004. These taxes include income, franchise, property, sales, excise, payroll, gross receipts and various other taxes and fees. Total health and welfare benefits provided to certain active and retired employees and their dependents totaled $4,625 in 2015, with $1,239 paid from plan assets. Of those benefits, $3,749 related to medical and prescription drug benefits. During 2015, we paid $4,681 of pension benefits out of plan assets.

During 2015, we also received approximately $4,534 from monetization of various assets, primarily from our sales of certain equipment installment receivables and real estate holdings. We plan to continue to explore monetization opportunities in 2016.

In September 2013, we made a voluntary contribution of a preferred equity interest in AT&T Mobility II LLC (Mobility), the holding company for our wireless business, to the trust used to pay pension benefits under our qualified pension plans. In September 2013, the U.S. Department of Labor (DOL) published a proposed exemption that authorized retroactive approval of this voluntary contribution. In July 2014, the DOL published in the Federal Register their final retroactive approval of our voluntary contribution.

The preferred equity interest had a fair value of $8,714 at December 31, 2015 and $9,104 on the contribution date and has a liquidation value of $8,000. The trust is entitled to receive cumulative cash distributions of $560 per annum, which are distributed quarterly in equal amounts and accounted for as contributions. We distributed $560 to the trust during 2015. So long as we make the distributions, we will have no limitations on our ability to declare a dividend or repurchase shares. This preferred equity interest is a plan asset under ERISA and is recognized as such in the plan's separate financial statements. However, because the preferred equity interest is not unconditionally transferable to an unrelated party, it is not reflected in plan assets in our consolidated financial statements and instead has been eliminated in consolidation. We also agreed to make a cash contribution to the trust of $175 no later than the due date of our federal income tax return for 2014, 2015 and 2016. The 2014 contribution of $175 was made to the trust during the second quarter of 2015. We are required to contribute another $175 in 2016 and $175 in 2017.

| | Payments Due By Period | | | | |
|---|---|---|---|---|---|
| **Contractual Obligations** | Total | Less than 1 Year | 1-3 Years | 3-5 Years | More than 5 Years |
| Long-term debt obligations[1] | $ 129,443 | $ 7,383 | $ 20,847 | $ 17,322 | $ 83,891 |
| Interest payments on long-term debt | 80,171 | 5,235 | 10,046 | 8,761 | 56,129 |
| Finance obligations[2] | 3,575 | 234 | 482 | 502 | 2,357 |
| Operating lease obligations | 28,845 | 3,775 | 6,808 | 5,774 | 12,488 |
| Unrecognized tax benefits[3] | 4,918 | 867 | - | - | 4,051 |
| Purchase obligations[4] | 48,699 | 22,929 | 9,437 | 6,159 | 10,174 |
| Total Contractual Obligations | $ 295,651 | $ 40,423 | $ 47,620 | $ 38,518 | $ 169,090 |

[1] Represents principal or payoff amounts of notes and debentures at maturity or, for putable debt, the next put opportunity.

[2] Represents future minimum payments under the Crown Castle and other arrangements (see Note 16).

[3] The noncurrent portion of the UTBs is included in the "More than 5 Years" column, as we cannot reasonably estimate the timing or amounts of additional cash payments, if any, at this time. See Note 11 for additional information.

[4] We calculated the minimum obligation for certain agreements to purchase goods or services based on termination fees that can be paid to exit the contract. If we elect to exit these contracts, termination fees for all such contracts in the year of termination could be approximately $690 in 2016, $925 in the aggregate for 2017 and 2018, $431 in the aggregate for 2019 and 2020, and $241 in the aggregate thereafter. Certain termination fees are excluded from the above table, as the fees would not be paid every year and the timing of such payments, if any, is uncertain.

## MARKET RISK

We are exposed to market risks primarily from changes in interest rates and foreign currency exchange rates. These risks, along with other business risks, impact our cost of capital. It is our policy to manage our debt structure and foreign exchange exposure in order to manage capital costs, control financial risks and maintain financial flexibility over the long term. In managing market risks, we employ derivatives according to documented policies and procedures, including interest rate swaps, interest rate locks, foreign currency exchange contracts and combined interest rate foreign currency contracts (cross-currency swaps). We do not use derivatives for trading or speculative purposes. We do not foresee significant changes in the strategies we use to manage market risk in the near future.

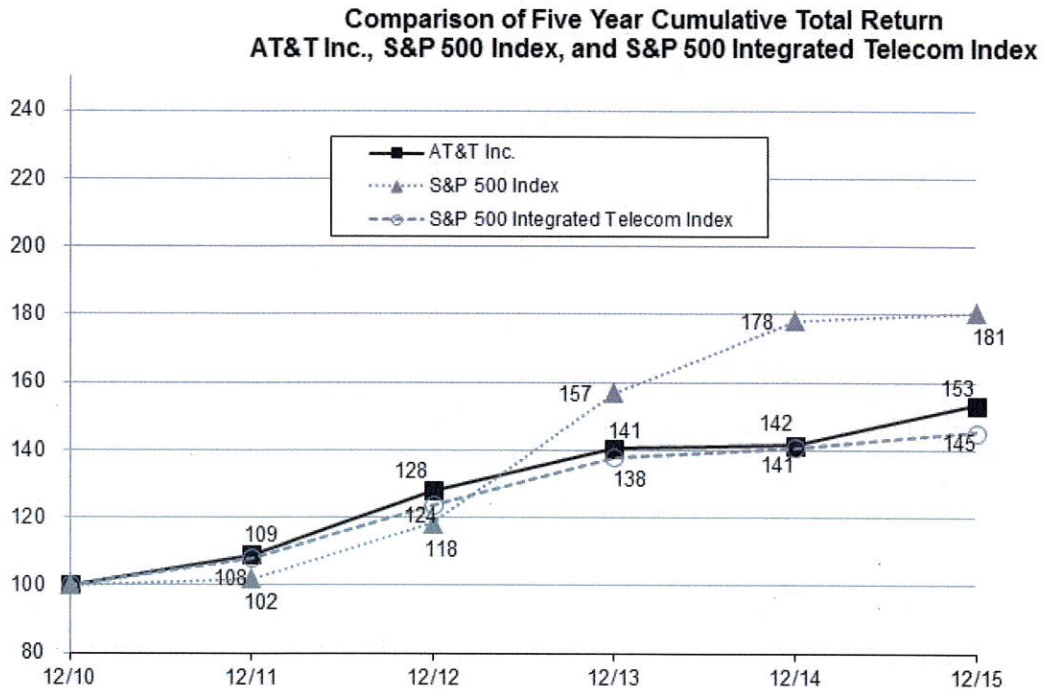
### Interest Rate Risk

The majority of our financial instruments are medium- and long-term fixed-rate notes and debentures. Changes in interest rates can lead to significant fluctuations in the fair value of these instruments. The principal amounts by expected maturity, average interest rate and fair value of our liabilities that are exposed to interest rate risk are described in Notes 9 and 10. In managing interest expense, we control our mix of fixed and floating rate debt, principally through the use of interest rate swaps. We have established interest rate risk limits that we closely monitor by measuring interest rate sensitivities in our debt and interest rate derivatives portfolios.

Most of our foreign-denominated long-term debt has been swapped from fixed-rate or floating-rate foreign currencies to fixed-rate U.S. dollars at issuance through cross-currency swaps, removing interest rate risk and foreign currency exchange risk associated with the underlying interest and principal payments. Likewise, periodically we enter into interest rate locks to partially hedge the risk of increases in the benchmark interest rate during the period leading up to the probable issuance of fixed-rate debt. We expect gains or losses in our cross-currency swaps and interest rate locks to offset the losses and gains in the financial instruments they hedge.

Following are our interest rate derivatives subject to material interest rate risk as of December 31, 2015. The interest rates illustrated below refer to the average rates we expect to pay based on current and implied forward rates and the average rates we expect to receive based on derivative contracts. The notional amount is the principal amount of the debt subject to the interest rate swap contracts. The fair value asset (liability) represents the amount we would receive (pay) if we had exited the contracts as of December 31, 2015.

**STOCK PERFORMANCE GRAPH**




The comparison above assumes $100 invested on December 31, 2010, in AT&T common stock, Standard & Poor's 500 Index (S&P 500), and Standard & Poor's 500 Integrated Telecom Index (S&P 500 Integrated Telecom). Total return equals stock price appreciation plus reinvestment of dividends.

**Changes in available technology could increase competition and our capital costs.**

The communications and digital entertainment industry has experienced rapid changes in the past several years. The development of wireless, cable and IP technologies has significantly increased the commercial viability of alternatives to traditional wired service and enhanced the capabilities of wireless networks. In addition, our customers continue to increase demand for services that can be accessed on mobile devices, especially video services. While our customers can use their traditional video subscription to access mobile programming, an increasing number of customers are also using mobile devices as the sole means of viewing video and an increasing number of non-traditional video providers are developing content and technologies to satisfy that demand. In order to remain competitive, we continue to deploy the sophisticated wired and wireless networks, including satellites, as well as research other new technologies. If the new technologies we have adopted or on which we have focused our research efforts fail to be cost-effective and accepted by customers, our ability to remain competitive could be materially adversely affected.

**Changes to federal, state and foreign government regulations and decisions in regulatory proceedings could further increase our operating costs and/or alter customer perceptions of our operations, which could materially adversely affect us.**

Our subsidiaries providing wired services are subject to significant federal and state regulation while many of our competitors are not. In addition, our subsidiaries and affiliates operating outside the United States are also subject to the jurisdiction of national and supranational regulatory authorities in the market where service is provided. Our wireless and satellite video subsidiaries are regulated to varying degrees by the FCC and some state and local agencies. Adverse regulations and rulings by the FCC relating to broadband and satellite video issues could impede our ability to manage our networks and recover costs and lessen incentives to invest in our networks. The development of new technologies, such as IP-based services, also has created or potentially could create conflicting regulation between the FCC and various state and local authorities, which may involve lengthy litigation to resolve and may result in outcomes unfavorable to us. In addition, increased public focus on a variety of issues related to our operations, such as privacy issues, government requests or orders for customer data, and potential global climate changes, have led to proposals at state, federal and foreign government levels to change or increase regulation on our operations. Should customers decide that our competitors operate in a more customer-friendly environment, we could be materially adversely affected.

**Continuing growth in our wireless services will depend on continuing access to adequate spectrum, deployment of new technology and offering attractive services to customers.**

The wireless industry is undergoing rapid and significant technological changes and a dramatic increase in usage, in particular demand for and usage of data, video and other non-voice services. We must continually invest in our wireless network in order to continually improve our wireless service to meet this increasing demand and remain competitive. Improvements in our service depend on many factors, including continued access to and deployment of adequate spectrum. We must maintain and expand our network capacity and coverage as well as the associated wireline network needed to transport voice and data between cell sites. To this end, we have participated in spectrum auctions, at increasing financial cost, and continue to deploy technology advancements in order to further improve network quality and the efficient use of our spectrum.

Network service enhancements and product launches may not occur as scheduled or at the cost expected due to many factors, including delays in determining equipment and handset operating standards, supplier delays, increases in network equipment and handset component costs, regulatory permitting delays for tower sites or enhancements or labor-related delays. Deployment of new technology also may adversely affect the performance of the network for existing services. If the FCC does not fairly allocate sufficient spectrum to allow the wireless industry in general, and the Company in particular, to increase its capacity or if we cannot acquire needed spectrum or deploy the services customers desire on a timely basis without burdensome conditions or at adequate cost while maintaining network quality levels, then our ability to attract and retain customers, and therefore maintain and improve our operating margins, could be materially adversely affected.

**Increasing competition for wireless customers could materially adversely affect our operating results.**

We have multiple wireless competitors in each of our service areas and compete for customers based principally on service/device offerings, price, call quality, coverage area and customer service. In addition, we are facing growing competition from providers offering services using alternative wireless technologies and IP-based networks as well as traditional wireline networks. We expect market saturation to continue to cause the wireless industry's customer growth rate to moderate in comparison with historical growth rates, leading to increased competition for customers. We also expect that our customers' growing demand for data services will place constraints on our network capacity. This competition and our capacity issues will continue to put pressure on pricing and margins as companies compete for potential customers. Our ability to respond will depend, among other things, on continued improvement in network quality and customer service and effective marketing of attractive products and services, and cost management. These efforts will involve significant expenses and require strategic management decisions on, and timely implementation of, equipment choices, network deployment and management, and service offerings.

**Our failure to successfully integrate our July 2015 acquisition of DIRECTV, including our failure to achieve the cost savings and any other synergies from the acquisition either on schedule or in the amounts expected; the potential adverse effects on our dividend amount due to the issuance of additional shares and the addition of acquisition-related debt to our balance sheet; disruption from the acquisition making it more difficult to maintain relationships with customers, employees or suppliers; and competition and its effect on pricing, spending, third-party relationships and revenues, all may materially adversely affect our operating results.**

We completed our acquisition of DIRECTV in July 2015. We believe that the acquisition will give us the scale, resources and ability to deploy video services to more customers than otherwise possible and to provide an integrated bundle of broadband, video and wireless services enabling us to compete more effectively against cable operators as well as other technology, media and communications companies. In addition, we believe the acquisition will result in cost savings, especially in the area of video content costs, and other potential synergies, enabling us to expand and enhance our broadband deployment and provide more video options across multiple fixed and mobile devices. We must comply with various regulatory conditions and integrate a large number of video network and other operational systems and administrative systems. The integration process may also result in significant expenses and charges against earnings, both cash and noncash. While we have successfully merged large companies into our operations in the past, delays in the process could have a material adverse effect on our revenues, expenses, operating results and financial condition. This acquisition has increased the amount of debt on our balance sheet (both from DIRECTV's debt and the indebtedness needed to pay a portion of the purchase price) leading to additional interest expense and, due to additional shares being issued, will result in additional cash being required for any dividends declared. Both of these factors could put pressure on our financial flexibility to continue capital investments, develop new services and declare future dividends. In addition, events outside of our control, including changes in regulation and laws as well as economic trends, could adversely affect our ability to realize the expected benefits from this acquisition.

**The acquisitions of DIRECTV, GSF Telecom and Nextel Mexico will increase our exposure to both changes in the international economy and to the level of regulation on our business and these risks could offset our expected growth opportunities from these acquisitions.**

These three acquisitions will increase the magnitude of our international operations, particularly in Mexico and the rest of Latin America. We will need to comply with a wide variety of new and complex local laws, regulations and treaties and government involvement in private business activity. We will also be exposed to restrictions on cash repatriation, foreign exchange controls, fluctuations in currency values, trade restrictions and other regulations that may affect materially our earnings. While the countries involved represent significant opportunities to sell our advanced services, a number of these same countries have experienced unstable growth patterns and at times have experienced high inflation, currency devaluation, foreign exchange controls, instability in the banking sector and high unemployment. Should these conditions persist, customers in these countries may be unable to purchase the services we offer or pay for services already provided.

In addition, operating in foreign countries also typically involves participating with local businesses, either to comply with local laws or, for example, to enhance product marketing. Involvement with foreign firms exposes us to the risk of being unable to control the actions of those firms and therefore exposes us to violating the Foreign Corrupt Practices Act (FCPA). Violations of the FCPA could have a material adverse effect on our operating results.

**Increases in our debt levels to fund acquisitions, additional spectrum purchases, or other strategic decisions could adversely affect our ability to finance future debt at attractive rates and reduce our ability to respond to competition and adverse economic trends.**

We have increased the amount of our debt during 2014 and 2015 to fund acquisitions, including spectrum purchases needed to compete in our business. While we believe such decisions were prudent and necessary to take advantage of both growth opportunities and respond to industry developments, we experienced a credit-rating downgrade. Banks and potential purchasers of our publicly-traded debt may decide that these strategic decisions and similar actions we may take in the future, as well as expected trends in the industry, will continue to increase the risk of investing in our debt and may demand a higher rate of interest, impose restrictive covenants or otherwise limit the amount of potential borrowing.

**AT&T Inc.**
**Consolidated Statements of Income**
Dollars in millions except per share amounts

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| | | As Adjusted | |
| ***Operating Revenues*** | | | |
| Service | $ 131,677 | $ 118,437 | $ 119,252 |
| Equipment | 15,124 | 14,010 | 9,500 |
| Total operating revenues | 146,801 | 132,447 | 128,752 |
| | | | |
| ***Operating Expenses*** | | | |
| Cost of services and sales | | | |
| Equipment | 19,268 | 18,946 | 16,644 |
| Broadcast, programming and operations | 11,996 | 4,075 | 3,308 |
| Other cost of services (exclusive of depreciation and amortization shown separately below) | 35,782 | 37,124 | 31,239 |
| Selling, general and administrative | 32,954 | 39,697 | 28,414 |
| Abandonment of network assets | - | 2,120 | - |
| Depreciation and amortization | 22,016 | 18,273 | 18,395 |
| Total operating expenses | 122,016 | 120,235 | 98,000 |
| **Operating Income** | 24,785 | 12,212 | 30,752 |
| | | | |
| ***Other Income (Expense)*** | | | |
| Interest expense | (4,120) | (3,613) | (3,940) |
| Equity in net income of affiliates | 79 | 175 | 642 |
| Other income (expense) – net | (52) | 1,581 | 596 |
| Total other income (expense) | (4,093) | (1,857) | (2,702) |
| **Income Before Income Taxes** | 20,692 | 10,355 | 28,050 |
| Income tax expense | 7,005 | 3,619 | 9,328 |
| **Net Income** | 13,687 | 6,736 | 18,722 |
| **Less: Net Income Attributable to Noncontrolling Interest** | (342) | (294) | (304) |
| **Net Income Attributable to AT&T** | $ 13,345 | $ 6,442 | $ 18,418 |
| | | | |
| **Basic Earnings Per Share Attributable to AT&T** | $ 2.37 | $ 1.24 | $ 3.42 |
| **Diluted Earnings Per Share Attributable to AT&T** | $ 2.37 | $ 1.24 | $ 3.42 |

The accompanying notes are an integral part of the consolidated financial statements.

**AT&T Inc.**
**Consolidated Balance Sheets**
Dollars in millions except per share amounts

| | December 31, | |
|---|---|---|
| | **2015** | 2014 |
| ***Assets*** | | As Adjusted |
| **Current Assets** | | |
| Cash and cash equivalents | **$ 5,121** | $ 8,603 |
| Accounts receivable - net of allowances for doubtful accounts of $704 and $454 | **16,532** | 14,527 |
| Prepaid expenses | **1,072** | 831 |
| Other current assets | **13,267** | 9,645 |
| Total current assets | **35,992** | 33,606 |
| **Property, Plant and Equipment – Net** | **124,450** | 112,898 |
| **Goodwill** | **104,568** | 69,692 |
| **Licenses** | **93,093** | 60,824 |
| **Customer Lists and Relationships - Net** | **18,208** | 812 |
| **Other Intangible Assets – Net** | **9,409** | 5,327 |
| **Investments in Equity Affiliates** | **1,606** | 250 |
| **Other Assets** | **15,346** | 13,425 |
| **Total Assets** | **$ 402,672** | $ 296,834 |
| | | |
| ***Liabilities and Stockholders' Equity*** | | |
| **Current Liabilities** | | |
| Debt maturing within one year | **$ 7,636** | $ 6,056 |
| Accounts payable and accrued liabilities | **30,372** | 23,592 |
| Advanced billings and customer deposits | **4,682** | 4,105 |
| Accrued taxes | **2,176** | 1,091 |
| Dividends payable | **2,950** | 2,438 |
| Total current liabilities | **47,816** | 37,282 |
| **Long-Term Debt** | **118,515** | 75,778 |
| **Deferred Credits and Other Noncurrent Liabilities** | | |
| Deferred income taxes | **56,181** | 38,436 |
| Postemployment benefit obligation | **34,262** | 37,079 |
| Other noncurrent liabilities | **22,258** | 17,989 |
| Total deferred credits and other noncurrent liabilities | **112,701** | 93,504 |
| ***Stockholders' Equity*** | | |
| Common stock ($1 par value, 14,000,000,000 authorized at December 31, 2015 and 2014: issued 6,495,231,088 at December 31, 2015 and 2014) | **6,495** | 6,495 |
| Additional paid-in capital | **89,763** | 91,108 |
| Retained earnings | **33,671** | 31,081 |
| Treasury stock (350,291,239 at December 31, 2015 and 1,308,318,131 at December 31, 2014, at cost) | **(12,592)** | (47,029) |
| Accumulated other comprehensive income | **5,334** | 8,061 |
| Noncontrolling interest | **969** | 554 |
| Total stockholders' equity | **123,640** | 90,270 |
| **Total Liabilities and Stockholders' Equity** | **$ 402,672** | $ 296,834 |

The accompanying notes are an integral part of the consolidated financial statements.

**AT&T Inc.**
**Consolidated Statements of Changes in Stockholders' Equity**
Dollars and shares in millions except per share amounts

| | 2015 | | 2014 | | 2013 | |
|---|---|---|---|---|---|---|
| | **Shares** | **Amount** | Shares | Amount | Shares | Amount |
| | | | As Adjusted | | | |
| ***Common Stock*** | | | | | | |
| Balance at beginning of year | **6,495** | **$ 6,495** | 6,495 | $ 6,495 | 6,495 | $ 6,495 |
| Issuance of stock | **-** | **-** | - | - | - | - |
| Balance at end of year | **6,495** | **$ 6,495** | 6,495 | $ 6,495 | 6,495 | $ 6,495 |
| ***Additional Paid-In Capital*** | | | | | | |
| Balance at beginning of year | | **$ 91,108** | | $ 91,091 | | $ 91,038 |
| Issuance of treasury stock | | **(1,597)** | | 4 | | (8) |
| Share-based payments | | **252** | | 47 | | 62 |
| Change related to acquisition of interests held by noncontrolling owners | | **-** | | (34) | | (1) |
| Balance at end of year | | **$ 89,763** | | $ 91,108 | | $ 91,091 |
| ***Retained Earnings*** | | | | | | |
| Balance at beginning of year | | **$ 31,081** | | $ 34,269 | | $ 25,440 |
| Net income attributable to AT&T ($2.37, $1.24 and $3.42 per diluted share) | | **13,345** | | 6,442 | | 18,418 |
| Dividends to stockholders ($1.89, $1.85 and $1.81 per share) | | **(10,755)** | | (9,630) | | (9,589) |
| Balance at end of year | | **$ 33,671** | | $ 31,081 | | $ 34,269 |
| ***Treasury Stock*** | | | | | | |
| Balance at beginning of year | **(1,308)** | **$ (47,029)** | (1,269) | $ (45,619) | (914) | $ (32,888) |
| Repurchase of common stock | **(8)** | **(278)** | (48) | (1,617) | (366) | (13,028) |
| Issuance of treasury stock | **966** | **34,715** | 9 | 207 | 11 | 297 |
| Balance at end of year | **(350)** | **$ (12,592)** | (1,308) | $ (47,029) | (1,269) | $ (45,619) |

The accompanying notes are an integral part of the consolidated financial statements.

## NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

**Basis of Presentation** Throughout this document, AT&T Inc. is referred to as "AT&T," "we" or the "Company." The consolidated financial statements include the accounts of the Company and our majority-owned subsidiaries and affiliates, including the results of DIRECTV and wireless properties in Mexico for the period from acquisition through December 31, 2015. Our subsidiaries and affiliates operate in the communications and digital entertainment services industry, providing services and equipment that deliver voice, video and broadband services domestically and internationally.

All significant intercompany transactions are eliminated in the consolidation process. Investments in less than majority-owned subsidiaries and partnerships where we have significant influence are accounted for under the equity method. Earnings from certain investments accounted for using the equity method are included for periods ended within up to one quarter of our period end. We also recorded our proportionate share of our equity method investees' other comprehensive income (OCI) items, including actuarial gains and losses on pension and other postretirement benefit obligations and cumulative translation adjustments.

The preparation of financial statements in conformity with U.S. generally accepted accounting principles (GAAP) requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes, including estimates of probable losses and expenses. Actual results could differ from those estimates. Certain amounts have been reclassified to conform to the current period's presentation, including our presentation of "Equipment" and "Broadcast, programming and operations" costs separately from other cost of services in the consolidated statements of income.

**Customer Fulfillment Costs** In August 2015, with our acquisition of DIRECTV, we announced a change in accounting for customer set-up and installation costs. Historically we have followed an accounting policy of deferring customer set-up and installation costs only to the extent of deferred revenues recorded for upfront fees (e.g., activation charges), and to expense any costs that exceed deferred revenues. After discussing this change with the Securities and Exchange Commission, we changed our accounting to a preferable method of capitalizing these costs and amortizing them over the expected economic life of the customer relationship of approximately four years, subject to an assessment of the recoverability of such costs. This change in accounting principle impacts video, broadband Internet and wireline voice services and is considered preferable in that it provides an accurate reflection of assets (i.e., the contractual customer relationship obtained through the set-up and installation) generated by those specific business activities. Our new accounting method is more comparable with the accounting method used in the cable entertainment industry. With our acquisition of DIRECTV, changing to this accounting method enhances comparability to other companies in the industry. This change in accounting did not have an impact on our wireless activities, due to the absence of these types of expenses in those business activities.

The cumulative effect of the change on Retained Earnings as of January 1, 2013, was an increase of approximately $2,959 on our consolidated balance sheet. This change did not have an impact on cash provided by or used in operations for any period presented.

**New Accounting Standards**

***Long-Term Debt and Debt Issuance Costs*** In April 2015, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2015-03, "Interest – Imputation of Interest: Simplifying the Presentation of Debt Issuance Costs" (ASU 2015-03), which resulted in the reclassification of debt issuance costs from "Other Assets" to inclusion as a reduction of our reportable "Long-Term Debt" balance on our consolidated balance sheets. Since ASU 2015-03 does not address deferred issuance costs for line-of-credit arrangements, the FASB issued ASU No. 2015-15, "Interest – Imputation of Interest: Presentation and Subsequent Measurement of Debt Issuance Costs Associated with Line-of-Credit Arrangements" (ASU 2015-15), in August 2015. ASU 2015-15 allows a company to defer debt issuance costs associated with line-of-credit arrangements, including arrangements with no outstanding borrowings, classify them as an asset, and amortize them over the term of the arrangements. We elected to adopt ASU 2015-03 early, with full retrospective application as required by the guidance, and ASU 2015-15, which was effective immediately. These standards did not have a material impact on our consolidated balance sheets and had no impact on our cash flows provided by or used in operations for any period presented.

| | Historical Accounting Method | Effect of Voluntary Change | Effect of Adoption of New ASUs | As Adjusted |
|---|---|---|---|---|
| *At December 31, 2014 or for the year ended* | | | | |
| Other cost of services | $ 37,590 | $ (466) | $ - | $ 37,124 |
| Other income (expense) - net | 1,652 | (71) | - | 1,581 |
| Income tax expense | 3,442 | 177 | - | 3,619 |
| Net Income | 6,518 | 218 | - | 6,736 |
| Net Income Attributable to AT&T | 6,224 | 218 | - | 6,442 |
| Basic Earnings per Share Attributable to AT&T | $ 1.19 | $ 0.05 | $ - | $ 1.24 |
| Diluted Earnings per Share Attributable to AT&T | 1.19 | 0.05 | - | 1.24 |
| Other current assets | $ 8,067 | $ 1,735 | $ (157)[2] | $ 9,645 |
| Other Assets | 10,998 | 2,661 | (234)[1] | 13,425 |
| Long-term debt | 76,011 | - | (233)[1] | 75,778 |
| Deferred income taxes | 37,544 | 1,005 | (113)[2] | 38,436 |
| Total Assets | 292,829 | 4,396 | (391)[1,2] | 296,834 |
| Total Liabilities | 205,905 | 1,050 | (391)[1,2] | 206,564 |
| Retained earnings | $ 27,736 | $ 3,345 | $ - | $ 31,081 |

[1] Impact of ASU 2015-03.
[2] Impact of ASU 2015-17.

| | Historical Accounting Method | Effect of Voluntary Change | Effect of Adoption of New ASUs | As Adjusted |
|---|---|---|---|---|
| *At December 31, 2013 or for the year ended* | | | | |
| Other cost of services | $ 31,512 | $ (273) | $ - | $ 31,239 |
| Income tax expense | 9,224 | 104 | - | 9,328 |
| Net Income | 18,553 | 169 | - | 18,722 |
| Net Income Attributable to AT&T | 18,249 | 169 | - | 18,418 |
| Basic Earnings per Share Attributable to AT&T | $ 3.39 | $ 0.03 | $ - | $ 3.42 |
| Diluted Earnings per Share Attributable to AT&T | 3.39 | 0.03 | - | 3.42 |
| Other current assets | $ 5,979 | $ 1,725 | $ (159)[2] | $ 7,545 |
| Other Assets | 8,278 | 2,269 | (199)[1] | 10,348 |
| Long-term debt | 69,290 | - | (199)[1] | 69,091 |
| Deferred income taxes | 36,308 | 859 | (152)[2] | 37,015 |
| Total Assets | 277,787 | 3,994 | (358)[1,2] | 281,423 |
| Total Liabilities | 186,305 | 866 | (358)[1,2] | 186,813 |
| Retained earnings | $ 31,141 | $ 3,128 | $ - | $ 34,269 |

[1] Impact of ASU 2015-03.
[2] Impact of ASU 2015-17.

***Revenue Recognition*** In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)" (ASU 2014-09) and has since modified the standard with ASU 2015-14, "Deferral of the Effective Date." These standards replace existing revenue recognition rules with a comprehensive revenue measurement and recognition standard and expanded disclosure requirements. ASU 2014-09 becomes effective for annual reporting periods beginning after December 15, 2017, at which point we plan to adopt the standard. Upon initial evaluation, we believe the key changes in the standard that impact our revenue recognition relate to the allocation of contract revenues between various services and equipment, and the timing in which those revenues are recognized. We are still in the process of determining the impact on the timing of revenue recognition and the allocation of revenue to products and segments.

We offer to our customers the option to purchase certain wireless devices in installments over a period of up to 30 months, with the right to trade in the original equipment for a new device, after having paid a specified number of installments, and have the remaining unpaid balance satisfied. For customers that elect these installment payment programs, we recognize revenue for the entire amount of the customer receivable, net of the fair value of the trade-in right guarantee and imputed interest. See Note 15 for additional information, including the sales of our equipment installment receivables.

**Allowance for Doubtful Accounts** We record expense to maintain an allowance for doubtful accounts for estimated losses that result from the failure or inability of our customers to make required payments deemed collectable from the customer when the service was provided or product was delivered. When determining the allowance, we consider the probability of recoverability of accounts receivable based on past experience, taking into account current collection trends as well as general economic factors, including bankruptcy rates. Credit risks are assessed based on historical write-offs, net of recoveries, as well as an analysis of the aged accounts receivable balances with allowances generally increasing as the receivable ages. Accounts receivable may be fully reserved for when specific collection issues are known to exist, such as pending bankruptcy or catastrophes.

**Inventory** Inventories, which are included in "Other current assets" on our consolidated balance sheets, were $4,033 at December 31, 2015, and $1,933 at December 31, 2014. Wireless devices and accessories, which are valued at the lower of cost or market (determined using current replacement cost), were $3,733 at December 31, 2015, and $1,858 at December 31, 2014.

**Property, Plant and Equipment** Property, plant and equipment is stated at cost, except for assets acquired using acquisition accounting, which are initially recorded at fair value (see Note 6). The cost of additions and substantial improvements to property, plant and equipment is capitalized, and includes internal compensation costs for these projects; however, noncash actuarial gains or losses included in compensation costs are excluded from amounts reported as "capital expenditures." The cost of maintenance and repairs of property, plant and equipment is charged to operating expenses. Property, plant and equipment costs are depreciated using straight-line methods over their estimated economic lives. Certain subsidiaries follow composite group depreciation methodology. Accordingly, when a portion of their depreciable property, plant and equipment is retired in the ordinary course of business, the gross book value is reclassified to accumulated depreciation, and no gain or loss is recognized on the disposition of these assets.

Property, plant and equipment is reviewed for recoverability whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We recognize an impairment loss when the carrying amount of a long-lived asset is not recoverable. The carrying amount of a long-lived asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset.

The liability for the fair value of an asset retirement obligation is recorded in the period in which it is incurred if a reasonable estimate of fair value can be made. In periods subsequent to initial measurement, we recognize period-to-period changes in the liability resulting from the passage of time and revisions to either the timing or the amount of the original estimate. The increase in the carrying value of the associated long-lived asset is depreciated over the corresponding estimated economic life.

**Software Costs** We capitalize certain costs incurred in connection with developing or obtaining internal-use software. Capitalized software costs are included in "Property, Plant and Equipment" on our consolidated balance sheets. In addition, there is certain network software that allows the equipment to provide the features and functions unique to the AT&T network, which we include in the cost of the equipment categories for financial reporting purposes.

We amortize our capitalized software costs over a three-year to five-year period, reflecting the estimated period during which these assets will remain in service, which also aligns with the estimated useful lives used in the industry.

**Goodwill and Other Intangible Assets** AT&T has five major classes of intangible assets: goodwill, licenses, which include Federal Communications Commission (FCC), other wireless licenses and orbital slots, other indefinite-lived intangible assets, primarily made up of the AT&T and DIRECTV International trade names including SKY, customer lists and various other finite-lived intangible assets (see Note 7).

**Pension and Other Postretirement Benefits** See Note 12 for a comprehensive discussion of our pension and postretirement benefit expense, including a discussion of the actuarial assumptions, our policy for recognizing the associated gains and losses and our method used to estimate service and interest cost components.

## NOTE 2. EARNINGS PER SHARE

A reconciliation of the numerators and denominators of basic earnings per share and diluted earnings per share is shown in the table below:

| Year Ended December 31, | 2015 | 2014 | 2013 |
|---|---|---|---|
| **Numerators** | | | |
| Numerator for basic earnings per share: | | | |
| Net income | **$ 13,687** | $ 6,736 | $ 18,722 |
| Less: Net income attributable to noncontrolling interest | **(342)** | (294) | (304) |
| Net income attributable to AT&T | **13,345** | 6,442 | 18,418 |
| Dilutive potential common shares: | | | |
| Share-based payment | **13** | 13 | 13 |
| Numerator for diluted earnings per share | **$ 13,358** | $ 6,455 | $ 18,431 |
| **Denominators (000,000)** | | | |
| Denominator for basic earnings per share: | | | |
| Weighted-average number of common shares outstanding | **5,628** | 5,205 | 5,368 |
| Dilutive potential common shares: | | | |
| Share-based payment (in shares) | **18** | 16 | 17 |
| Denominator for diluted earnings per share | **5,646** | 5,221 | 5,385 |
| **Basic earnings per share attributable to AT&T** | **$ 2.37** | $ 1.24 | $ 3.42 |
| **Diluted earnings per share attributable to AT&T** | **$ 2.37** | $ 1.24 | $ 3.42 |

## NOTE 4. SEGMENT INFORMATION

Our segments are strategic business units that offer products and services to different customer segments over various technology platforms and/or in different geographies that are managed accordingly. Due to recent organizational changes and our July 24, 2015 acquisition of DIRECTV, effective for the quarter ended September 30, 2015, we revised our operating segments to align with our new management structure and organizational responsibilities. We analyze our operating segments based on segment contribution, which consists of operating income, excluding acquisition-related costs and other significant items (as discussed below), and equity in net income of affiliates for investments managed within each operating segment. We have four reportable segments: (1) Business Solutions, (2) Entertainment Group, (3) Consumer Mobility and (4) International.

We also evaluate segment performance based on segment operating income before depreciation and amortization, which we refer to as EBITDA and/or EBITDA margin. We believe EBITDA to be a relevant and useful measurement to our investors as it is part of our internal management reporting and planning processes and it is an important metric that management uses to evaluate segment operating performance. EBITDA does not give effect to cash used for debt service requirements and thus does not reflect available funds for distributions, reinvestment or other discretionary uses.

The *Business Solutions segment* provides services to business, governmental and wholesale customers and individual subscribers who purchase wireless services through employer-sponsored plans. We provide advanced IP-based services including Virtual Private Networks (VPN), Ethernet-related products and broadband, collectively referred to as strategic business services, as well as traditional data and voice products. We utilize our wireless and wired network and are marketed to provide a complete communications solution to our business customers.

The *Entertainment Group segment* provides video, Internet and voice communication services to residential customers located in the U.S. or in U.S. territories. We utilize our copper and IP-based (referred to as "wired" or "wireline") wired network and/or our satellite technology.

The *Consumer Mobility segment* provides nationwide wireless service to consumers, and wireless wholesale and resale subscribers located in the U.S. or in U.S. territories. We utilize our U.S. wireless network to provide voice and data services, including high-speed Internet, video entertainment and home monitoring services.

The *International segment* provides entertainment services in Latin America and wireless services in Mexico. Video entertainment services are provided to primarily residential customers using satellite technology. We utilize our regional and national networks in Mexico to provide consumer and business customers with wireless data and voice communication services. Our international subsidiaries conduct business in their local currency and operating results are converted to U.S. dollars using official exchange rates.

In reconciling items to consolidated operating income and income before income taxes, *Corporate and Other* includes: (1) operations that are not considered reportable segments and that are no longer integral to our operations or which we no longer actively market, and (2) impacts of corporate-wide decisions for which the individual operating segments are not being evaluated, including interest costs and expected return on plan assets for our pension and postretirement benefit plans.

Certain operating items are not allocated to our business segments:

- *Acquisition-related items* include (1) operations and support items associated with the merger and integration of newly acquired businesses, and (2) the noncash amortization of intangible assets acquired in acquisitions.
- *Certain significant items* include (1) noncash actuarial gains and losses from pension and other postretirement benefits, (2) employee separation charges associated with voluntary and/or strategic offers, (3) losses resulting from abandonment or impairment of assets and (4) other items for which the segments are not being evaluated.

Interest expense and other income (expense) – net, are managed only on a total company basis and are, accordingly, reflected only in consolidated results. Therefore, these items are also not included in each segment's reportable results.

Our operating assets are utilized by multiple segments and consist of our wireless and wired networks as well as an international satellite fleet. We manage our assets to provide for the most efficient, effective and integrated service to our customers, not by operating segment, and therefore asset information and capital expenditures by segment are not presented. Depreciation is allocated based on network usage or asset utilization by segment.

**Notes to Consolidated Financial Statements (continued)**
Dollars in millions except per share amounts

For the year ended December 31, 2013

| | Revenue | Operations and Support Expenses | EBITDA | Depreciation and Amortization | Operating Income (Loss) | Equity in Net Income (Loss) of Affiliates | Segment Contribution |
|---|---|---|---|---|---|---|---|
| Business Solutions | $ 67,647 | $ 43,442 | $ 24,205 | $ 8,965 | $ 15,240 | $ - | $ 15,240 |
| Entertainment Group | 21,542 | 17,943 | 3,599 | 4,815 | (1,216) | - | (1,216) |
| Consumer Mobility | 36,243 | 22,545 | 13,698 | 3,683 | 10,015 | - | 10,015 |
| International | - | - | - | - | - | 532 | 532 |
| Segment Total | 125,432 | 83,930 | 41,502 | 17,463 | 24,039 | $ 532 | $ 24,571 |
| Corporate and Other | 3,320 | 2,987 | 333 | 274 | 59 | | |
| Acquisition-related items | - | - | - | 658 | (658) | | |
| Certain significant items | - | (7,312) | 7,312 | - | 7,312 | | |
| AT&T Inc. | $ 128,752 | $ 79,605 | $ 49,147 | $ 18,395 | $ 30,752 | | |

## NOTE 5. ACQUISITIONS, DISPOSITIONS AND OTHER ADJUSTMENTS

### Acquisitions

**DIRECTV** On July 24, 2015, we completed our acquisition of DIRECTV, a leading provider of digital television entertainment services in both the United States and Latin America. The acquisition represents an opportunity for us to integrate a unique and complementary set of assets and achieve substantial cost synergies over time, as well as generate revenue from pay television in Latin America. Our distribution scale will enable us to offer consumers bundles including video, high-speed broadband and mobile services, using all the sales channels of both companies. We believe the combined company will be a content distribution leader across mobile, video and broadband platforms.

Under the merger agreement, each share of DIRECTV stock was exchanged for $28.50 cash plus 1.892 shares of our common stock. After adjustment for shares issued to trusts consolidated by AT&T, share-based payment arrangements and fractional shares, which were settled in cash, AT&T issued 954,407,524 shares to DIRECTV shareholders, giving them an approximate 16% stake in the combined company, based on common shares outstanding. Based on our $34.29 per share closing stock price on July 24, 2015, the aggregate value of consideration paid to DIRECTV shareholders was $47,409, including $32,727 of AT&T stock and $14,378 in cash, $299 for share-based payment arrangements and $5 for DIRECTV shares previously purchased on the open market by trusts consolidated by AT&T.

Our 2015 operating results include the results from DIRECTV following the acquisition date. The fair values of the assets acquired and liabilities assumed were preliminarily determined using the income, cost and market approaches. The fair value measurements were primarily based on significant inputs that are not observable in the market and are considered Level 3 under the Fair Value Measurement and Disclosure framework, other than long-term debt assumed in the acquisition (see Note 10). The income approach was primarily used to value the intangible assets, consisting primarily of acquired customer relationships, orbital slots and trade names. The income approach estimates fair value for an asset based on the present value of cash flows projected to be generated by the asset. Projected cash flows are discounted at a required rate of return that reflects the relative risk of achieving the cash flows and the time value of money. The cost approach, which estimates value by determining the current cost of replacing an asset with another of equivalent economic utility, was used primarily for plant, property and equipment. The cost to replace a given asset reflects the estimated reproduction or replacement cost for the property, less an allowance for loss in value due to depreciation. Our December 31, 2015 consolidated balance sheet includes the assets and liabilities of DIRECTV, which have been measured at fair value.

The following table summarizes the preliminary estimated fair values of the DIRECTV assets acquired and liabilities assumed and related deferred income taxes as of the acquisition date.

Nonrecurring adjustments included in the pro forma results above consist of the following: At June 30, 2015, due to the continued economic uncertainty and lack of liquidity in all three of the official currency exchange mechanisms in Venezuela, DIRECTV changed the exchange rate used to measure its Venezuelan subsidiary's monetary assets and liabilities into U.S. dollars from Sistema Complementario de Administración de Divisas (SICAD) to Sistema Marginal de Divisas (SIMADI). The significant change in exchange rates also required the reevaluation of the recoverability of fixed and intangible assets and inventory, which resulted in an impairment charge of $1,060 recorded in DIRECTV's consolidated statement of operations for the six-month period ended June 30, 2015. Prior to DIRECTV's June 30, 2015 change to the SIMADI exchange rate, operating results for the six months ended June 30, 2015 were measured using the SICAD exchange rate which resulted in revenues in Venezuela of approximately $500 and operating profit before depreciation and amortization of approximately $180. Pro forma data may not be indicative of the results that would have been obtained had these events occurred at the beginning of the periods presented, nor is it intended to be a projection of future results.

**Nextel Mexico** On April 30, 2015, we completed our acquisition of the subsidiaries of NII Holdings Inc., operating its wireless business in Mexico, for $1,875, including approximately $427 of net debt and other adjustments. The subsidiaries offered service under the name Nextel Mexico.

The preliminary values of assets acquired were: $383 in licenses, $1,293 in property, plant and equipment, $111 in customer lists and $112 of goodwill. The goodwill was allocated to our International segment.

**GSF Telecom** On January 16, 2015, we acquired Mexican wireless company GSF Telecom Holdings, S.A.P.I. de C.V. (GSF Telecom) for $2,500, including net debt of approximately $700. GSF Telecom offered service under both the Iusacell and Unefon brand names in Mexico.

The preliminary values of assets acquired were: $673 in licenses, $715 in property, plant and equipment, $374 in customer lists, $26 in trade names and $972 of goodwill. The goodwill was allocated to our International segment.

**AWS-3 Auction** In January 2015, we submitted winning bids for 251 Advanced Wireless Service (AWS) spectrum licenses in the AWS-3 Auction (FCC Auction 97) for $18,189. We provided the Federal Communications Commission (FCC) an initial down payment of $921 in October 2014 and paid the remaining $17,268 in the first quarter of 2015.

**Spectrum Acquisitions** During 2015, we acquired $489 of wireless spectrum, not including the AWS auction. During 2014, we acquired $1,263 of wireless spectrum, not including Leap Wireless International, Inc. (Leap) discussed below.

**Leap** In March 2014, we acquired Leap, a provider of prepaid wireless service, for $15.00 per outstanding share of Leap's common stock, or $1,248 (excluding Leap's cash on hand), plus one nontransferable contingent value right (CVR) per share. The CVR will entitle each Leap stockholder to a pro rata share of the net proceeds of the future sale of the Chicago 700 MHz A-band FCC license held by Leap.

The values of assets acquired under the terms of the agreement were: $3,000 in licenses, $510 in property, plant and equipment, $520 of customer lists, $340 for trade names and $248 of goodwill. The goodwill was allocated to our Consumer Mobility segment. The estimated fair value of debt associated with the acquisition of Leap was $3,889, all of which was redeemed or matured by July 31, 2014.

**Dispositions**

**Connecticut Wireline** On October 24, 2014, we sold our incumbent local exchange operations in Connecticut for $2,018 and recorded a pre-tax gain of $76, which is included in "Other income (expense) – net," on our consolidated statements of income. In conjunction with the sale, we allocated $743 of goodwill from our former Wireline reporting unit. Because the book value of the goodwill did not have a corresponding tax basis, the resulting net income impact of the sale was a loss of $360.

**América Móvil** In 2014, we sold our remaining stake in América Móvil for approximately $5,885 and recorded a pre-tax gain of $1,330, which is included in "Other income (expense) – net," on our consolidated statements of income. In 2013, we sold a portion of our shares in América Móvil for approximately $1,179. América Móvil was accounted for as an equity method investment.

## NOTE 7. GOODWILL AND OTHER INTANGIBLE ASSETS

As part of our organizational realignment discussed in Note 4, the goodwill from the previous Wireless segment was allocated to the Business Solutions and Consumer Mobility segments and the goodwill from the previous Wireline segment was allocated to the Business Solutions and Entertainment Group segments. The allocations were based on the relative fair value of the portions of the previous Wireless and Wireline segments which were moved into the new Business Solutions, Entertainment Group and Consumer Mobility segments.

The following table sets forth the changes in the carrying amounts of goodwill by segment, which is the same as reporting unit for Business Solutions, Entertainment Group and Consumer Mobility. The International segment has three reporting units: Mexico Wireless, Brazil and PanAmericana.

| | Wireless | Wireline | Business Solutions | Entertainment Group | Consumer Mobility | International | Total |
|---|---|---|---|---|---|---|---|
| Balance as of December 31, 2013 | $ 36,106 | $ 33,167 | $ - | $ - | $ - | $ - | $ 69,273 |
| Goodwill acquired | 367 | - | - | - | - | - | 367 |
| Other | (4) | 56 | - | - | - | - | 52 |
| Balance as of December 31, 2014 | 36,469 | 33,223 | - | - | - | - | 69,692 |
| Goodwill acquired | 6 | - | - | 30,839 | - | 4,672 | 35,517 |
| Foreign currency translation adjustments | - | - | - | - | - | (638) | (638) |
| Allocation of goodwill | (36,471) | (33,226) | 45,351 | 7,834 | 16,512 | - | - |
| Other | (4) | 3 | - | - | - | (2) | (3) |
| **Balance as of December 31, 2015** | **$ -** | **$ -** | **$ 45,351** | **$ 38,673** | **$ 16,512** | **$ 4,032** | **$ 104,568** |

The majority of our goodwill acquired during 2015 related to our acquisitions of DIRECTV, Nextel Mexico and GSF Telecom. The allocation of goodwill represents goodwill previously assigned to our Wireless and Wireline segments. Other changes to our goodwill in 2015 include foreign currency translation adjustments and the final valuation of Leap. The majority of our goodwill acquired during 2014 related to our acquisition of Leap. Other changes to our goodwill during 2014 include adjustments to the amount of goodwill moved to held for sale in 2013 related to the sale of our Connecticut wireline operations. (See Note 5)

In 2015, we wrote off approximately $1,483 of fully amortized intangible assets (primarily customer lists). In 2014, we wrote off approximately $2,850 of fully amortized intangible assets (primarily customer lists). We review other amortizing intangible assets for impairment whenever events or circumstances indicate that the carrying amount may not be recoverable over the remaining life of the asset or asset group.

## NOTE 8. EQUITY METHOD INVESTMENTS

Investments in partnerships, joint ventures and less than majority-owned subsidiaries in which we have significant influence are accounted for under the equity method.

In the third quarter of 2015, we acquired DIRECTV (see Note 5), which included various equity method investments. The earnings from these investments, subsequent to the acquisition date, are included in the 2015 activity in the table below, as well as our consolidated statement of income for 2015.

Our investments in equity affiliates at December 31, 2015 primarily include our interests in SKY Mexico, Game Show Network, Otter Media Holdings, YP Holdings LLC (YP Holdings), MLB Network and NW Sports Net.

**SKY Mexico** We hold a 41.0% interest in SKY Mexico, which was acquired as part of DIRECTV. SKY Mexico is a leading pay-TV provider in Mexico.

**Game Show Network (GSN)** We hold a 42.0% interest in GSN, which was also a part of the acquisition of DIRECTV. GSN is a television network dedicated to game-related programming and Internet interactive game playing.

**Otter Media Holdings** We hold a 43.4% interest in Otter Media Holdings, a venture between The Chernin Group and AT&T that is focused on acquiring, investing in and launching over-the-top subscription video services.

**YP Holdings** We hold a 47.0% interest in YP Holdings, an online advertising company and directory publisher.

**MLB Network** We hold a 16.7% interest in MLB Network, which offers broadcasts dedicated to Major League Baseball and was acquired with DIRECTV.

**NW Sports Net** We hold a 29.0% interest in NW Sports Net, a regional sports network acquired as part of DIRECTV.

The following table is a reconciliation of our investments in equity affiliates as presented on our consolidated balance sheets:

| | **2015** | 2014 |
|---|---|---|
| Beginning of year | **$ 250** | $ 3,860 |
| Additional investments | **77** | 226 |
| DIRECTV investments acquired | **1,232** | - |
| Equity in net income of affiliates | **79** | 175 |
| Dividends and distributions received | **(30)** | (148) |
| Sale of América Móvil shares | **-** | (3,817) |
| Other adjustments | **(2)** | (46) |
| End of year | **$ 1,606** | $ 250 |

Undistributed earnings from equity affiliates were $162 and $88 at December 31, 2015 and 2014.

Debt maturing within one year consisted of the following at December 31:

| | 2015 | 2014 |
|---|---|---|
| Current maturities of long-term debt | $ 7,632 | $ 6,051 |
| Bank borrowings[1] | 4 | 5 |
| Total | $ 7,636 | $ 6,056 |

[1] Outstanding balance of short-term credit facility of a foreign subsidiary.

**Financing Activities**
During 2015, we issued $33,969 in long-term debt in various markets, with an average weighted maturity of approximately 12 years and a weighted average coupon of 2.7%. We redeemed $10,042 in borrowings of various notes with stated rates of 0.80% to 9.10%.

During 2015 we completed the following long-term debt issuances:

- February 2015 issuance of $2,619 of 4.600% global notes due 2045.
- March 2015 borrowings under a variable rate term loan facility due 2018, variable rate term loan facility due 2020 and variable rate 18-month credit agreement due 2016, together totaling $11,155.
- March 2015 issuance of €1,250 of 1.300% global notes due 2023 and €1,250 of 2.450% global notes due 2035 (together, equivalent to $2,844, when issued).
- May 2015 issuance of $3,000 of 2.450% global notes due 2020; $2,750 of 3.000% global notes due 2022; $5,000 of 3.400% global notes due 2025; $2,500 of 4.500% global notes due 2035; $3,500 of 4.750% global notes due 2046; and $750 floating rate global notes due 2020. The floating rate for the note is based upon the three-month London Interbank Offered Rate (LIBOR), reset quarterly, plus 93 basis points.

On February 9, 2016, we completed the following long-term debt issuances:

- $1,250 of 2.800% global notes due 2021.
- $1,500 of 3.600% global notes due 2023.
- $1,750 of 4.125% global notes due 2026.
- $1,500 of 5.650% global notes due 2047.

As of December 31, 2015 and 2014, we were in compliance with all covenants and conditions of instruments governing our debt. Substantially all of our outstanding long-term debt is unsecured. Maturities of outstanding long-term notes and debentures, as of December 31, 2015, and the corresponding weighted-average interest rate scheduled for repayment are as follows:

| | 2016 | 2017 | 2018 | 2019 | 2020 | Thereafter |
|---|---|---|---|---|---|---|
| Debt repayments[1] | $ 7,383 | $ 7,789 | $ 13,058 | $ 7,863 | $ 9,459 | $ 83,891 |
| Weighted-average interest rate | 2.8 % | 2.3 % | 3.5 % | 3.9 % | 3.2 % | 4.8 % |

[1] Debt repayments assume putable debt is redeemed by the holders at the next opportunity.

**Credit Facilities**
On December 11, 2015, we entered into a five-year, $12,000 credit agreement (the "Revolving Credit Agreement") with Citibank, N.A. (Citibank), as administrative agent, replacing our $5,000 credit agreement that would have expired in December 2018. At the same time, AT&T and the lenders terminated their obligations under the existing revolving $3,000 credit agreement with Citibank that would have expired in December 2017.

In January 2015, we entered into a $9,155 credit agreement (the "Syndicated Credit Agreement") containing (i) a $6,286 term loan facility (the "Tranche A Facility") and (ii) a $2,869 term loan facility (the "Tranche B Facility"), with certain investment and commercial banks and Mizuho Bank, Ltd. ("Mizuho"), as administrative agent. We also entered into a $2,000 18-month credit agreement (the "18-Month Credit Agreement") with Mizuho as initial lender and agent. On December 11, 2015, AT&T amended the Syndicated Credit Agreement and the 18-Month Credit Agreement to, among other things, revise the financial covenant to match the financial covenant in the Revolving Credit Agreement.

*The 18-Month Credit Agreement*
In March 2015, AT&T borrowed all amounts available under the 18-Month Credit Agreement. Amounts borrowed under the 18-Month Credit Agreement will be due and payable on September 2, 2016. In September 2015, we partially repaid the amount borrowed.

Advances bear interest at a rate equal to: (i) the LIBOR for deposits in dollars (adjusted upwards to reflect any bank reserve costs) for a period of one, two, three or six months, as applicable, plus (ii) the Applicable Margin (each such Advance, a Eurodollar Rate Advance). The Applicable Margin will equal 0.800%, 0.900% or 1.000% per annum, depending on AT&T's credit rating. In the event that AT&T's unsecured senior long-term debt ratings are split by S&P, Moody's and Fitch, then the Applicable Margin will be determined by the highest rating, unless the lowest of such ratings is more than one level below the highest of such ratings, in which case the pricing will be the rating that is one level above the lowest of such ratings.

The 18-Month Credit Agreement contains affirmative and negative covenants and events of default equivalent to those contained in the Syndicated Credit Agreement.

## NOTE 10. FAIR VALUE MEASUREMENTS AND DISCLOSURE

The Fair Value Measurement and Disclosure framework provides a three-tiered fair value hierarchy that gives highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

Level 1 Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that we have the ability to access.

Level 2 Inputs to the valuation methodology include:
- Quoted prices for similar assets and liabilities in active markets.
- Quoted prices for identical or similar assets or liabilities in inactive markets.
- Inputs other than quoted market prices that are observable for the asset or liability.
- Inputs that are derived principally from or corroborated by observable market data by correlation or other means.

Level 3 Inputs to the valuation methodology are unobservable and significant to the fair value measurement.
- Fair value is often based on developed models in which there are few, if any, external observations.

The fair value measurements level of an asset or liability within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used should maximize the use of observable inputs and minimize the use of unobservable inputs.

The valuation methodologies described above may produce a fair value calculation that may not be indicative of future net realizable value or reflective of future fair values. We believe our valuation methods are appropriate and consistent with other market participants. The use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date. There have been no changes in the methodologies used since December 31, 2014.

Our cash equivalents (money market securities), short-term investments (certificate and time deposits) and customer deposits are recorded at amortized cost, and the respective carrying amounts approximate fair values. Short-term investments and customer deposits are recorded in "Other current assets" and our investment securities are recorded in "Other assets" on the consolidated balance sheets.

**Derivative Financial Instruments**
We employ derivatives to manage certain market risks, primarily interest rate risk and foreign currency exchange risk. This includes the use of interest rate swaps, interest rate locks, foreign exchange forward contracts and combined interest rate foreign exchange contracts (cross-currency swaps). We do not use derivatives for trading or speculative purposes. We record derivatives on our consolidated balance sheets at fair value that is derived from observable market data, including yield curves and foreign exchange rates (all of our derivatives are Level 2). Cash flows associated with derivative instruments are presented in the same category on the consolidated statements of cash flows as the item being hedged.

The majority of our derivatives are designated either as a hedge of the fair value of a recognized asset or liability or of an unrecognized firm commitment (fair value hedge), or as a hedge of a forecasted transaction or of the variability of cash flows to be received or paid related to a recognized asset or liability (cash flow hedge).

*Fair Value Hedging* We designate our fixed-to-floating interest rate swaps as fair value hedges. The purpose of these swaps is to manage interest rate risk by managing our mix of fixed-rate and floating-rate debt. These swaps involve the receipt of fixed-rate amounts for floating interest rate payments over the life of the swaps without exchange of the underlying principal amount. Accrued and realized gains or losses from interest rate swaps impact interest expense in the consolidated statements of income. Unrealized gains on interest rate swaps are recorded at fair market value as assets, and unrealized losses on interest rate swaps are recorded at fair market value as liabilities. Changes in the fair values of the interest rate swaps are exactly offset by changes in the fair value of the underlying debt. Gains or losses realized upon early termination of our fair value hedges are recognized in interest expense. In the years ended December 31, 2015, and December 31, 2014, no ineffectiveness was measured on interest rate swaps designated as fair value hedges.

*Cash Flow Hedging* We designate our cross-currency swaps as cash flow hedges. We have entered into multiple cross-currency swaps to hedge our exposure to variability in expected future cash flows that are attributable to foreign currency risk generated from the issuance of our Euro, British pound sterling, Canadian dollar and Swiss Franc denominated debt. These agreements include initial and final exchanges of principal from fixed foreign denominations to fixed U.S. denominated amounts, to be exchanged at a specified rate, usually determined by the market spot rate upon issuance. They also include an interest rate swap of a fixed or floating foreign-denominated rate to a fixed U.S. denominated interest rate.

Unrealized gains on derivatives designated as cash flow hedges are recorded at fair value as assets, and unrealized losses on derivatives designated as cash flow hedges are recorded at fair value as liabilities, both for the period they are outstanding. For derivative instruments designated as cash flow hedges, the effective portion is reported as a component of accumulated OCI until reclassified into interest expense in the same period the hedged transaction affects earnings. The gain or loss on the ineffective portion is recognized as "Other income (expense) – net" in the consolidated statements of income in each period. We evaluate the effectiveness of our cross-currency swaps each quarter. In the years ended December 31, 2015, and December 31, 2014, no ineffectiveness was measured on cross-currency swaps designated as cash flow hedges.

Periodically, we enter into and designate interest rate locks to partially hedge the risk of changes in interest payments attributable to increases in the benchmark interest rate during the period leading up to the probable issuance of fixed-rate debt. We designate our interest rate locks as cash flow hedges. Gains and losses when we settle our interest rate locks are amortized into income over the life of the related debt, except where a material amount is deemed to be ineffective, which would be immediately reclassified to "Other income (expense) – net" in the consolidated statements of income. In the years ended December 31, 2015, and December 31, 2014, no ineffectiveness was measured on interest rate locks. Over the next 12 months, we expect to reclassify $59 from accumulated OCI to interest expense due to the amortization of net losses on historical interest rate locks.

## NOTE 11. INCOME TAXES

Significant components of our deferred tax liabilities (assets) are as follows at December 31:

| | 2015 | 2014 |
|---|---|---|
| Depreciation and amortization | $ 59,879 | $ 47,082 |
| Intangibles (nonamortizable) | 6,920 | 1,874 |
| Employee benefits | (10,517) | (11,679) |
| Deferred fulfillment costs | 2,172 | 2,035 |
| Net operating loss and other carryforwards | (4,029) | (2,126) |
| Other – net | (1,478) | 68 |
| Subtotal | 52,947 | 37,254 |
| Deferred tax assets valuation allowance | 2,141 | 1,182 |
| Net deferred tax liabilities | $ 55,088 | $ 38,436 |
| | | |
| Noncurrent deferred tax liabilities | $ 56,181 | $ 38,436 |
| Less: Noncurrent deferred tax assets | (1,093) | - |
| Net deferred tax liabilities | $ 55,088 | $ 38,436 |

At December 31, 2015, we had combined net operating loss carryforwards (tax effected) for federal income tax purposes of $106, state of $851 and foreign of $1,676, expiring through 2031. Additionally, we had federal credit carryforwards of $134 and state credit carryforwards of $1,262, expiring primarily through 2035. The increase in our net operating loss carryforwards was primarily due to our acquisitions of GSF Telecom, Nextel Mexico and DIRECTV.

We recognize a valuation allowance if, based on the weight of available evidence, it is more likely than not that some portion, or all, of a deferred tax asset will not be realized. Our valuation allowances at December 31, 2015 and 2014 related primarily to state and foreign net operating losses and state credit carryforwards. The increase in our valuation allowance was primarily due to our 2015 acquisitions.

The components of income tax (benefit) expense are as follows:

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| Federal: | | | |
| Current | $ 2,496 | $ 1,610 | $ 3,044 |
| Deferred | 3,828 | 2,060 | 5,783 |
| | 6,324 | 3,670 | 8,827 |
| State and local: | | | |
| Current | 72 | (102) | (132) |
| Deferred | 671 | (73) | 596 |
| | 743 | (175) | 464 |
| Foreign: | | | |
| Current | 320 | 163 | 71 |
| Deferred | (382) | (39) | (34) |
| | (62) | 124 | 37 |
| Total | $ 7,005 | $ 3,619 | $ 9,328 |

"Income Before Income Taxes" in the Consolidated Statements of Income included the following components for the years ended December 31:

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| U.S. income before income taxes | $ 21,519 | $ 10,244 | $ 27,903 |
| Foreign income (loss) before income taxes | (827) | 111 | 147 |
| Total | $ 20,692 | $ 10,355 | $ 28,050 |

A reconciliation of income tax expense (benefit) and the amount computed by applying the statutory federal income tax rate (35%) to income from continuing operations before income taxes is as follows:

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| Taxes computed at federal statutory rate | $ 7,242 | $ 3,624 | $ 9,818 |
| Increases (decreases) in income taxes resulting from: | | | |
| State and local income taxes – net of federal income tax benefit | 483 | (113) | 302 |
| Connecticut wireline sale | - | 350 | - |
| Loss of foreign tax credits in connection with América Móvil sale | - | 386 | - |
| Other – net | (720) | (628) | (792) |
| Total | $ 7,005 | $ 3,619 | $ 9,328 |
| Effective Tax Rate | 33.9% | 34.9% | 33.3% |

## NOTE 12. PENSION AND POSTRETIREMENT BENEFITS

**Pension Benefits and Postretirement Benefits**

Substantially all of our U.S. employees are covered by one of our noncontributory pension plans. The majority of our newly hired employees, longer-service management and some nonmanagement employees participate in cash balance pension programs that include annual or monthly credits based on salary as well as an interest credit. Other longer-service management employees participate in pension programs that have a traditional pension formula (i.e., a stated percentage of employees' adjusted career income). Other longer-service nonmanagement employees' pension benefits are generally calculated using one of two formulas: a flat dollar amount applied to years of service according to job classification or a cash balance plan with negotiated annual pension band credits as well as interest credits. Most nonmanagement employees can elect to receive their pension benefits in either a lump sum payment or an annuity. Effective January 1, 2015, the pension plan was amended so that new management hires are no longer eligible for the plan.

The following table presents this reconciliation and shows the change in the projected benefit obligation for the years ended December 31:

| | Pension Benefits | | Postretirement Benefits | |
|---|---|---|---|---|
| | **2015** | 2014 | **2015** | 2014 |
| Benefit obligation at beginning of year | **$ 59,543** | $ 56,560 | **$ 30,709** | $ 30,285 |
| Service cost - benefits earned during the period | **1,212** | 1,134 | **222** | 233 |
| Interest cost on projected benefit obligation | **1,902** | 2,470 | **967** | 1,458 |
| Amendments | **(8)** | (73) | **(74)** | (617) |
| Actuarial (gain) loss | **(3,079)** | 6,269 | **(1,988)** | 1,822 |
| Special termination benefits | **149** | 17 | **-** | - |
| Benefits paid | **(4,681)** | (6,543) | **(1,958)** | (2,298) |
| DIRECTV acquisition | **470** | - | **20** | - |
| Transfer for sale of Connecticut wireline operations | **(42)** | (293) | **-** | (174) |
| Plan transfers | **(2)** | 2 | **-** | - |
| Benefit obligation at end of year | **$ 55,464** | $ 59,543 | **$ 27,898** | $ 30,709 |

The following table presents the change in the value of plan assets for the years ended December 31 and the plans' funded status at December 31:

| | Pension Benefits | | Postretirement Benefits | |
|---|---|---|---|---|
| | **2015** | 2014 | **2015** | 2014 |
| Fair value of plan assets at beginning of year | **$ 45,163** | $ 47,238 | **$ 7,846** | $ 8,960 |
| Actual return on plan assets | **604** | 4,213 | **64** | 384 |
| Benefits paid[1] | **(4,681)** | (6,543) | **(1,239)** | (1,498) |
| Contributions | **735** | 562 | **-** | - |
| DIRECTV acquisition | **418** | - | **-** | - |
| Transfer for sale of Connecticut wireline operations | **(42)** | (308) | **-** | - |
| Plan transfers and other | **(2)** | 1 | **-** | - |
| Fair value of plan assets at end of year[3] | **42,195** | 45,163 | **6,671** | 7,846 |
| Unfunded status at end of year[2] | **$ (13,269)** | $ (14,380) | **$ (21,227)** | $ (22,863) |

[1] At our discretion, certain postretirement benefits may be paid from AT&T cash accounts, which does not reduce Voluntary Employee Benefit Association (VEBA) assets. Future benefit payments may be made from VEBA trusts and thus reduce those asset balances.
[2] Funded status is not indicative of our ability to pay ongoing pension benefits or of our obligation to fund retirement trusts. Required pension funding is determined in accordance with the Employee Retirement Income Security Act of 1974, as amended (ERISA) regulations.
[3] Net assets available for benefits were $50,909 at December 31, 2015 and $54,184 at December 31, 2014 and include the preferred equity interest in AT&T Mobility II LLC discussed below, which was valued at $8,714 and $9,021, respectively.

In July 2014, the U.S. Department of Labor published in the Federal Register their final retroactive approval of our September 9, 2013 voluntary contribution of a preferred equity interest in AT&T Mobility II LLC, the primary holding company for our wireless business, to the trust used to pay pension benefits under our qualified pension plans. The preferred equity interest had a value of $9,104 on the contribution date and was valued at $8,714 at December 31, 2015. The trust is entitled to receive cumulative cash distributions of $560 per annum, which will be distributed quarterly in equal amounts and will be accounted for as contributions. We distributed $560 to the trust during 2015. So long as we make the distributions, we will have no limitations on our ability to declare a dividend, or repurchase shares. This preferred equity interest is a plan asset under ERISA and is recognized as such in the plan's separate financial statements. However, because the preferred equity interest is not unconditionally transferable to an unrelated party (see Note 14), it is not reflected in plan assets in our consolidated financial statements and instead has been eliminated in consolidation. At the time of the contribution of the preferred equity interest, we made an additional cash contribution of $175 and have agreed to annual cash contributions of $175 no later than the due date for our federal income tax return for each of 2014, 2015 and 2016. We made such a contribution of $175 in 2015. These contributions combined with our existing pension assets are in excess of 90% of the pension obligation at December 31, 2015.

*Other Changes in Benefit Obligations Recognized in Other Comprehensive Income*
The following table presents the after-tax changes in benefit obligations recognized in OCI and the after-tax prior service credits that were amortized from OCI into net periodic benefit costs:

| | Pension Benefits | | | Postretirement Benefits | | |
|---|---|---|---|---|---|---|
| | **2015** | 2014 | 2013 | **2015** | 2014 | 2013 |
| Balance at beginning of year | **$ 575** | $ 583 | $ 641 | **$ 6,257** | $ 6,812 | $ 4,766 |
| Prior service (cost) credit | **1** | 45 | - | **45** | 383 | 2,765 |
| Amortization of prior service credit | **(64)** | (58) | (58) | **(792)** | (898) | (719) |
| Reclassification to income of prior service credit | **-** | 5 | - | **-** | (40) | - |
| Total recognized in other comprehensive (income) loss | **(63)** | (8) | (58) | **(747)** | (555) | 2,046 |
| Balance at end of year | **$ 512** | $ 575 | $ 583 | **$ 5,510** | $ 6,257 | $ 6,812 |

The estimated prior service credits that will be amortized from accumulated OCI into net periodic benefit cost over the next fiscal year are $103 ($64 net of tax) for pension and $1,277 ($792 net of tax) for postretirement benefits.

**Assumptions**
In determining the projected benefit obligation and the net pension and postretirement benefit cost, we used the following significant weighted-average assumptions:

| | Pension Benefits | | | Postretirement Benefits | | |
|---|---|---|---|---|---|---|
| | **2015** | 2014 | 2013 | **2015** | 2014 | 2013 |
| Weighted-average discount rate for determining projected benefit obligation at December 31 | **4.60%** | 4.30% | 5.00% | **4.50%** | 4.20% | 5.00% |
| Discount rate in effect for determining service cost | **4.60%** | 5.00% | 4.30% | **4.60%** | 5.00% | 4.30% |
| Discount rate in effect for determining interest cost[1] | **3.30%** | 4.60% | 4.30% | **3.30%** | 5.00% | 4.30% |
| Long-term rate of return on plan assets | **7.75%** | 7.75% | 7.75% | **5.75%** | 7.75% | 7.75% |
| Composite rate of compensation increase for determining projected benefit obligation | **3.10%** | 3.00% | 3.00% | **3.10%** | 3.00% | 3.00% |
| Composite rate of compensation increase for determining net pension cost (benefit) | **3.00%** | 3.00% | 3.00% | **3.00%** | 3.00% | 3.00% |

[1] Weighted-average discount rate of 5.00% in effect for pension costs from January 1, 2014 through September 30, 2014. Discount rates in effect of 4.90% for service cost and 3.50% for interest cost from October 1, 2014 through December 31, 2014. A discount rate of 5.00% was used for postretirement costs for the year ended December 31, 2014.

We recognize gains and losses on pension and postretirement plan assets and obligations immediately in our operating results. These gains and losses are measured annually as of December 31 and accordingly will be recorded during the fourth quarter, unless earlier remeasurements are required.

*Discount Rate* Our assumed weighted-average discount rate for pension and postretirement benefits of 4.60% and 4.50% respectively, at December 31, 2015, reflects the hypothetical rate at which the projected benefit obligation could be effectively settled or paid out to participants. We determined our discount rate based on a range of factors, including a yield curve composed of the rates of return on several hundred high-quality, fixed income corporate bonds available at the measurement date and corresponding to the related expected durations of future cash outflows. These bonds were all rated at least Aa3 or AA- by one of the nationally recognized statistical rating organizations, denominated in U.S. dollars, and neither callable, convertible nor index linked. For the year ended December 31, 2015, when compared to the year ended December 31, 2014, we increased our pension discount rate by 0.30%, resulting in a decrease in our pension plan benefit obligation of $1,977 and increased our postretirement discount rate 0.30%, resulting in a decrease in our postretirement benefit obligation of $854. For the year ended December 31, 2014, we decreased our pension discount rate by 0.70%, resulting in an increase in our pension plan benefit obligation of $4,854 and decreased our postretirement discount rates by 0.80%, resulting in an increase in our postretirement benefit obligation of $2,786.

A one percentage-point change in the assumed combined medical and dental cost trend rate would have the following effects:

| | One Percentage-Point Increase | One Percentage-Point Decrease |
|---|---|---|
| Increase (decrease) in total of service and interest cost components | $ 58 | $ (51) |
| Increase (decrease) in accumulated postretirement benefit obligation | 660 | (590) |

**Plan Assets**

Plan assets consist primarily of private and public equity, government and corporate bonds, and real assets (real estate and natural resources). The asset allocations of the pension plans are maintained to meet ERISA requirements. Any plan contributions, as determined by ERISA regulations, are made to a pension trust for the benefit of plan participants. As part of our voluntary contribution of the Mobility preferred equity interest, we will contribute $735 of cash distributions during 2016. We do not have additional significant required contributions to our pension plans for 2016.

We maintain VEBA trusts to partially fund postretirement benefits; however, there are no ERISA or regulatory requirements that these postretirement benefit plans be funded annually.

The principal investment objectives are to ensure the availability of funds to pay pension and postretirement benefits as they become due under a broad range of future economic scenarios, to maximize long-term investment return with an acceptable level of risk based on our pension and postretirement obligations, and to be broadly diversified across and within the capital markets to insulate asset values against adverse experience in any one market. Each asset class has broadly diversified characteristics. Substantial biases toward any particular investing style or type of security are sought to be avoided by managing the aggregation of all accounts with portfolio benchmarks. Asset and benefit obligation forecasting studies are conducted periodically, generally every two to three years, or when significant changes have occurred in market conditions, benefits, participant demographics or funded status. Decisions regarding investment policy are made with an understanding of the effect of asset allocation on funded status, future contributions and projected expenses. The current asset allocation policy and risk level for the pension plan and VEBA assets is based on studies completed and approved during 2013 and 2015, respectively, and is reflected in the table below.

The plans' weighted-average asset targets and actual allocations as a percentage of plan assets, including the notional exposure of future contracts by asset categories at December 31, are as follows:

| | Pension Assets | | | Postretirement (VEBA) Assets | | |
|---|---|---|---|---|---|---|
| | Target | **2015** | 2014 | Target | **2015** | 2014 |
| Equity securities: | | | | | | |
| Domestic | 20% - 30% | **22 %** | 23 % | 21% - 31% | **26 %** | 29 % |
| International | 10% - 20% | **15** | 14 | 9% - 19% | **14** | 20 |
| Fixed income securities | 35% - 45% | **40** | 38 | 29% - 39% | **34** | 29 |
| Real assets | 6% - 16% | **10** | 11 | 0% - 6% | **1** | 1 |
| Private equity | 4% - 14% | **12** | 12 | 0% - 7% | **2** | 3 |
| Other | 0% - 5% | **1** | 2 | 17% - 27% | **23** | 18 |
| Total | | **100 %** | 100 % | | **100 %** | 100 % |

At December 31, 2015, AT&T securities represented less than 0.5% of assets held by our pension plans and 6% of assets (primarily common stock) held by our VEBA trusts included in these financial statements.

*Investment Valuation*

Investments are stated at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. See "Fair Value Measurements" for further discussion.

Investments in securities traded on a national securities exchange are valued at the last reported sales price on the last business day of the year. If no sale was reported on that date, they are valued at the last reported bid price. Investments in securities not traded on a national securities exchange are valued using pricing models, quoted prices of securities with similar characteristics or discounted cash flows. Shares of registered investment companies are valued based on quoted market prices, which represent the net asset value of shares held at year-end. Over-the-counter (OTC) securities are valued at the bid price or the average of the bid and asked price on the last business day of the year from published sources where available and, if not available, from other sources considered reliable. Depending on the types and contractual terms of OTC derivatives, fair value is measured using valuation techniques, such as the Black-Scholes option pricing model, simulation models or a combination of various models.

The following tables set forth by level, within the fair value hierarchy, the pension and postretirement assets and liabilities at fair value as of December 31, 2015:

**Pension Assets and Liabilities at Fair Value as of December 31, 2015**

| | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Non-interest bearing cash | $ 160 | $ - | $ - | $ 160 |
| Interest bearing cash | - | 25 | - | 25 |
| Foreign currency contracts | - | 25 | - | 25 |
| Equity securities: | | | | |
| Domestic equities | 8,315 | 4 | - | 8,319 |
| International equities | 4,287 | - | - | 4,287 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 403 | 1 | 404 |
| Mortgage-backed securities | - | 792 | - | 792 |
| Collateralized mortgage-backed securities | - | 278 | - | 278 |
| Collateralized mortgage obligations/REMICS | - | 345 | - | 345 |
| Corporate and other fixed income instruments and funds | 65 | 8,274 | 373 | 8,712 |
| Government and municipal bonds | 75 | 4,495 | - | 4,570 |
| Private equity funds | - | - | 4,926 | 4,926 |
| Real estate and real assets | - | - | 4,357 | 4,357 |
| Commingled funds | - | 5,522 | 2 | 5,524 |
| Securities lending collateral | 512 | 3,538 | - | 4,050 |
| Receivable for variation margin | 13 | - | - | 13 |
| Assets at fair value | 13,427 | 23,701 | 9,659 | 46,787 |
| Investments sold short and other liabilities at fair value | (824) | (12) | - | (836) |
| Total plan net assets at fair value | $ 12,603 | $ 23,689 | $ 9,659 | $ 45,951 |
| Other assets (liabilities)[1] | | | | (3,756) |
| **Total Plan Net Assets** | | | | **$ 42,195** |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

The following tables set forth by level, within the fair value hierarchy, the pension and postretirement assets and liabilities at fair value as of December 31, 2014:

| Pension Assets and Liabilities at Fair Value as of December 31, 2014 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Non-interest bearing cash | $ 45 | $ - | $ - | $ 45 |
| Interest bearing cash | - | 127 | - | 127 |
| Foreign currency contracts | - | 25 | - | 25 |
| Equity securities: | | | | |
| Domestic equities | 8,613 | 74 | - | 8,687 |
| International equities | 4,805 | 171 | - | 4,976 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 610 | 1 | 611 |
| Mortgage-backed securities | - | 1,741 | - | 1,741 |
| Collateralized mortgage-backed securities | - | 418 | - | 418 |
| Collateralized mortgage obligations/REMICS | - | 531 | - | 531 |
| Corporate and other fixed income instruments and funds | 97 | 7,210 | 441 | 7,748 |
| Government and municipal bonds | 145 | 4,876 | - | 5,021 |
| Private equity funds | - | - | 5,399 | 5,399 |
| Real estate and real assets | - | - | 4,845 | 4,845 |
| Commingled funds | - | 5,823 | 2 | 5,825 |
| Securities lending collateral | 310 | 3,140 | - | 3,450 |
| Receivable for variation margin | 6 | - | - | 6 |
| Purchased options | 1 | - | - | 1 |
| Assets at fair value | 14,022 | 24,746 | 10,688 | 49,456 |
| Investments sold short and other liabilities at fair value | (650) | (260) | - | (910) |
| Total plan net assets at fair value | $ 13,372 | $ 24,486 | $ 10,688 | $ 48,546 |
| Other assets (liabilities)[1] | | | | (3,383) |
| Total Plan Net Assets | | | | $ 45,163 |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

| Postretirement Assets and Liabilities at Fair Value as of December 31, 2014 | Level 1 | Level 2 | Level 3 | Total |
|---|---|---|---|---|
| Interest bearing cash | $ 278 | $ 1,198 | $ - | $ 1,476 |
| Equity securities: | | | | |
| Domestic equities | 1,606 | - | - | 1,606 |
| International equities | 1,405 | - | - | 1,405 |
| Fixed income securities: | | | | |
| Asset-backed securities | - | 46 | - | 46 |
| Collateralized mortgage-backed securities | - | 113 | - | 113 |
| Collateralized mortgage obligations | - | 50 | 1 | 51 |
| Corporate and other fixed income instruments and funds | - | 397 | - | 397 |
| Government and municipal bonds | - | 614 | 1 | 615 |
| Commingled funds | - | 1,960 | 1 | 1,961 |
| Private equity assets | - | - | 218 | 218 |
| Real assets | - | - | 96 | 96 |
| Securities lending collateral | - | 173 | - | 173 |
| Total plan net assets at fair value | $ 3,289 | $ 4,551 | $ 317 | $ 8,157 |
| Other assets (liabilities)[1] | | | | (311) |
| Total Plan Net Assets | | | | $ 7,846 |

[1] Other assets (liabilities) include amounts receivable, accounts payable and net adjustment for securities lending payable.

The following table provides information for our supplemental retirement plans with accumulated benefit obligations in excess of plan assets at December 31:

| | 2015 | 2014 |
|---|---|---|
| Projected benefit obligation | $ (2,444) | $ (2,458) |
| Accumulated benefit obligation | (2,372) | (2,410) |
| Fair value of plan assets | - | - |

The following tables present the components of net periodic benefit cost and other changes in plan assets and benefit obligations recognized in OCI:

| **Net Periodic Benefit Cost** | 2015 | 2014 | 2013 |
|---|---|---|---|
| Service cost – benefits earned during the period | $ 9 | $ 7 | $ 9 |
| Interest cost on projected benefit obligation | 77 | 109 | 101 |
| Amortization of prior service cost (credit) | 1 | (1) | - |
| Actuarial (gain) loss | (36) | 243 | (106) |
| Net supplemental retirement pension cost | $ 51 | $ 358 | $ 4 |

| **Other Changes Recognized in Other Comprehensive Income** | 2015 | 2014 | 2013 |
|---|---|---|---|
| Prior service (cost) credit | $ (1) | $ (11) | $ (1) |
| Amortization of prior service cost (credit) | 1 | (1) | - |
| Total recognized in other comprehensive (income) loss (net of tax) | $ - | $ (12) | $ (1) |

The estimated prior service credit for our supplemental retirement plan benefits that will be amortized from accumulated OCI into net periodic benefit cost over the next fiscal year is $1.

Deferred compensation expense was $122 in 2015, $121 in 2014 and $122 in 2013. Our deferred compensation liability, included in "Other noncurrent liabilities," was $1,221 at December 31, 2015, and $1,156 at December 31, 2014.

**Contributory Savings Plans**
We maintain contributory savings plans that cover substantially all employees. Under the savings plans, we match in cash or company stock a stated percentage of eligible employee contributions, subject to a specified ceiling. There are no debt-financed shares held by the Employee Stock Ownership Plans, allocated or unallocated.

Our match of employee contributions to the savings plans is fulfilled with purchases of our stock on the open market or company cash. Benefit cost is based on the cost of shares or units allocated to participating employees' accounts and was $653, $654 and $654 for the years ended December 31, 2015, 2014 and 2013.

## NOTE 13. SHARE-BASED PAYMENTS

Under our various plans, senior and other management employees and nonemployee directors have received nonvested stock and stock units. In conjunction with the acquisition of DIRECTV, restricted stock units issued under DIRECTV plans were converted to AT&T shares. The shares will vest over a period of one to four years in accordance with the terms of those plans. We do not intend to issue any additional grants under the DIRECTV plans. Any future grants will be made under the AT&T plans.

We grant performance stock units, which are nonvested stock units, based upon our stock price at the date of grant and award them in the form of AT&T common stock and cash at the end of a three-year period, subject to the achievement of certain performance goals. We treat the cash portion of these awards as a liability. We grant forfeitable restricted stock and stock units, which are valued at the market price of our common stock at the date of grant and vest typically over a two- to ten-year period. We also grant other nonvested stock units and award them in cash at the end of a three-year period, subject to the achievement of certain market based conditions. As of December 31, 2015, we were authorized to issue up to approximately 109 million shares of common stock (in addition to shares that may be issued upon exercise of outstanding options or upon vesting of performance stock units or other nonvested stock units) to officers, employees and directors pursuant to these various plans.

**Authorized Shares** There are 14 billion authorized common shares of AT&T stock and 10 million authorized preferred shares of AT&T stock. As of December 31, 2015 and 2014, no preferred shares were outstanding.

**Dividend Declarations** In December 2015, the Company declared an increase in its quarterly dividend to $0.48 per share of common stock. In December 2014, the Company declared an increase in its quarterly dividend to $0.47 per share of common stock.

**Treasury Stock** As part of the acquisition of DIRECTV, we issued 954,407,524 shares to DIRECTV shareholders, which reduced our treasury stock balance by $34,328.

**Preferred Equity Interest** The preferred equity interest discussed in Note 12 is not transferable by the trust except through its put and call features, and therefore has been eliminated in consolidation. After a period of five years from the contribution or, if earlier, the date upon which the pension plan trust is fully funded as determined under GAAP, AT&T has a right to purchase from the pension plan trust some or all of the preferred equity interest at the greater of their fair market value or minimum liquidation value plus any unpaid cumulative dividends. In addition, AT&T will have the right to purchase the preferred equity interest in the event AT&T's ownership of Mobility is less than 50% or there is a transaction that results in the transfer of 50% or more of the pension plan trust's assets to an entity not under common control with AT&T (collectively, a change of control). The pension plan trust has the right to require AT&T to purchase the preferred equity interest at the greater of their fair market value or minimum liquidation value plus any unpaid cumulative dividends, and in installments, as specified in the contribution agreement upon the occurrence of any of the following: (1) at any time if the ratio of debt to total capitalization of Mobility exceeds that of AT&T, (2) the date on which AT&T Inc. is rated below investment grade for two consecutive calendar quarters, (3) upon a change of control if AT&T does not exercise its purchase option, or (4) at any time after a seven-year period from the contribution date. In the event AT&T elects or is required to purchase the preferred equity interest, AT&T may elect to settle the purchase price in cash or shares of AT&T common stock or a combination thereof. Because the preferred equity interest was not considered outstanding for accounting purposes at year-end, it did not affect the calculation of earnings per share.

## NOTE 15. SALES OF EQUIPMENT INSTALLMENT RECEIVABLES

We offer our customers the option to purchase certain wireless devices in installments over a period of up to 30 months, with the right to trade in the original equipment for a new device within a set period and have the remaining unpaid balance satisfied. As of December 31, 2015 and December 31, 2014, gross equipment installment receivables of $5,719 and $4,265 were included on our consolidated balance sheets, of which $3,239 and $2,514 are notes receivable that are included in "Accounts receivable - net."

In 2014, we entered into the first of a series of uncommitted agreements pertaining to the sale of equipment installment receivables and related security with Citibank and various other relationship banks as purchasers (collectively, the Purchasers). Under these agreements, we transferred the receivables to the Purchasers for cash and additional consideration upon settlement of the receivables, referred to as the deferred purchase price. Under the terms of the arrangements, we continue to bill and collect on behalf of our customers for the receivables sold. To date, we have collected and remitted approximately $4,520 (net of fees), of which $580 was returned as deferred purchase price.

The following table sets forth a summary of equipment installment receivables sold during 2015 and 2014:

| | **2015** | 2014 |
|---|---|---|
| Gross receivables sold | **$ 7,436** | $ 4,707 |
| Net receivables sold[1] | **6,704** | 4,126 |
| Cash proceeds received | **4,439** | 2,528 |
| Deferred purchase price recorded | **2,266** | 1,629 |

[1] Receivables net of allowance, imputed interest and trade-in right guarantees.

The deferred purchase price was initially recorded at estimated fair value, which was based on remaining installment payments expected to be collected, adjusted by the expected timing and value of device trade-ins, and is subsequently carried at the lower of cost or net realizable value. The estimated value of the device trade-ins considers prices offered to us by independent third parties that contemplate changes in value after the launch of a device model. The fair value measurements used are considered Level 3 under the Fair Value Measurement and Disclosure framework (see Note 10).

## NOTE 18. ADDITIONAL FINANCIAL INFORMATION

| | December 31, | |
|---|---|---|
| **Consolidated Balance Sheets** | **2015** | 2014 |
| Customer fulfillment costs (included in Other current assets) | **$ 2,923** | $ 2,720 |
| Accounts payable and accrued liabilities: | | |
| Accounts payable | **$ 21,047** | $ 14,984 |
| Accrued payroll and commissions | **2,629** | 1,967 |
| Current portion of employee benefit obligation | **1,766** | 1,842 |
| Accrued interest | **1,974** | 1,597 |
| Other | **2,956** | 3,202 |
| Total accounts payable and accrued liabilities | **$ 30,372** | $ 23,592 |

| **Consolidated Statements of Income** | **2015** | 2014 | 2013 |
|---|---|---|---|
| Advertising expense | **$ 3,632** | $ 3,272 | $ 3,268 |
| Interest expense incurred | **$ 4,917** | $ 3,847 | $ 4,224 |
| Capitalized interest | **(797)** | (234) | (284) |
| Total interest expense | **$ 4,120** | $ 3,613 | $ 3,940 |

| **Consolidated Statements of Cash Flows** | **2015** | 2014 | 2013 |
|---|---|---|---|
| Cash paid during the year for: | | | |
| Interest | **$ 4,822** | $ 4,099 | $ 4,302 |
| Income taxes, net of refunds | **1,851** | 1,532 | 1,985 |

No customer accounted for more than 10% of consolidated revenues in 2015, 2014 or 2013.

**Labor Contracts** As of January 31, 2016, we employed approximately 281,000 persons. Approximately 45 percent of our employees are represented by the Communications Workers of America, the International Brotherhood of Electrical Workers or other unions. Four-year contracts covering approximately 24,000 traditional wireline employees in our Southeast region were ratified on December 4, 2015. Contracts covering approximately 9,000 mobility employees in the Southwest region and nearly 16,000 traditional wireline employees in our West region will expire in 2016. After expiration of the current agreements, work stoppages or labor disruptions may occur in the absence of new contracts or other agreements being reached. A separate contract covering only benefits with approximately 40,000 employees in our mobility business expires in 2016, though there is a no strike/no lock-out clause. Contracts covering wages and other non-benefit working terms for these mobility employees are structured on a regional basis.

## Report of Management

The consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles. The integrity and objectivity of the data in these financial statements, including estimates and judgments relating to matters not concluded by year end, are the responsibility of management, as is all other information included in the Annual Report, unless otherwise indicated.

The financial statements of AT&T Inc. (AT&T) have been audited by Ernst & Young LLP, Independent Registered Public Accounting Firm. Management has made available to Ernst & Young LLP all of AT&T's financial records and related data, as well as the minutes of stockholders' and directors' meetings. Furthermore, management believes that all representations made to Ernst & Young LLP during its audit were valid and appropriate.

Management maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed by AT&T is recorded, processed, summarized, accumulated and communicated to its management, including its principal executive and principal financial officers, to allow timely decisions regarding required disclosure, and reported within the time periods specified by the Securities and Exchange Commission's rules and forms.

Management also seeks to ensure the objectivity and integrity of its financial data by the careful selection of its managers, by organizational arrangements that provide an appropriate division of responsibility and by communication programs aimed at ensuring that its policies, standards and managerial authorities are understood throughout the organization.

The Audit Committee of the Board of Directors meets periodically with management, the internal auditors and the independent auditors to review the manner in which they are performing their respective responsibilities and to discuss auditing, internal accounting controls and financial reporting matters. Both the internal auditors and the independent auditors periodically meet alone with the Audit Committee and have access to the Audit Committee at any time.

**Assessment of Internal Control**

The management of AT&T is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) or 15d-15(f) under the Securities Exchange Act of 1934. AT&T's internal control system was designed to provide reasonable assurance to the company's management and Board of Directors regarding the preparation and fair presentation of published financial statements.

AT&T management assessed the effectiveness of the company's internal control over financial reporting as of December 31, 2015. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework* (2013 framework). We have excluded from the scope of our assessment of internal control over financial reporting the operations and related assets of DIRECTV and Mexico wireless operations (Mexico), which we acquired in 2015. At December 31, 2015 and for the period from acquisition through December 31, 2015, total assets and operating revenues subject to DIRECTV's internal control over financial reporting represented 20.3% and 9.9% of AT&T's consolidated total assets and total revenues as of and for the year ended December 31, 2015. At December 31, 2015 and for the period from acquisition through December 31, 2015, total assets and operating revenues subject to Mexico's internal control over financial reporting represented 1.6% and 1.3% of AT&T's consolidated total assets and total revenues as of and for the year ended December 31, 2015. Based on its assessment, AT&T management believes that, as of December 31, 2015, the company's internal control over financial reporting is effective based on those criteria.

Ernst & Young LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report, has issued an attestation report on the company's internal control over financial reporting.

/s/ Randall Stephenson
J. Stephens
Randall Stephenson
J. Stephens
Chairman of the Board,
Executive Vice President and Chief Executive Officer and President

/s/ John John
Senior Chief Financial Officer

**Report of Independent Registered Public Accounting Firm**

**The Board of Directors and Stockholders of AT&T Inc.**

We have audited AT&T Inc.'s (the Company) internal control over financial reporting as of December 31, 2015, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). The Company's management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

As indicated in the accompanying Report of Management, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of its DIRECTV and Mexico wireless businesses, which are included in the December 31, 2015 consolidated financial statements of the Company. DIRECTV constituted 20.3% of total assets and 9.9% of total revenues for the year then ended. The Mexico wireless businesses constituted 1.6% of total assets and 1.3% of total revenues for the year then ended. Our audit of internal control over financial reporting of the Company did not include an evaluation of the internal control over financial reporting of DIRECTV or the Mexico wireless businesses.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2015, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of the Company as of December 31, 2015 and 2014, and the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2015 and our report dated February 18, 2016 expressed an unqualified opinion thereon.

/s/ Ernst and Young LLP
Dallas, Texas
February 18, 2016

| | | |
|---|---|---|
| AT&T Mobility II LLC | Delaware | AT&T Mobility |
| New Cingular Wireless Services, Inc. | Delaware | AT&T Mobility |
| Cricket Wireless LLC | Delaware | same |
| AT&T Mobility Group B.V. | The Netherlands | same |
| DIRECTV, LLC | California | same |
| DIRECTV Enterprises, LLC | Delaware | same |
| DIRECTV Latin America, LLC | Delaware | same |
| SKY Brasil Serviços Ltda. | Brazil | same |
| DIRECTV Colombia Ltda. | Colombia | same |
| DIRECTV Argentina S.A. | Argentina | same |

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Jonathan P. Klug, David R. McAtee II, John J. Stephens, Paul W. Stephens, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

January 24, 2016
Date

/s/ Randall L. Stephenson
Randall L. Stephenson
Chairman of the Board, Chief Executive Officer and President

Exhibit 24

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NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Randall L. Stephenson, Jonathan P. Klug, David R. McAtee II, John J. Stephens, Paul W. Stephens, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

January 29, 2016
Date

/s/ Richard W. Fisher
Richard W. Fisher
Director

Exhibit 24

**POWER OF ATTORNEY**

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NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Randall L. Stephenson, Jonathan P. Klug, David R. McAtee II, John J. Stephens, Paul W. Stephens, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

January 29, 2016
Date

/s/ Glenn H. Hutchins
Glenn H. Hutchins
Director

Exhibit 24

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KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Randall L. Stephenson, Jonathan P. Klug, David R. McAtee II, John J. Stephens, Paul W. Stephens, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| January 29, 2016<br>Date | /s/ Jon C. Madonna<br>Jon C. Madonna<br>Director |

Exhibit 24

**POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

THAT, AT&T INC., a Delaware corporation, hereinafter referred to as the "Corporation," proposes to file with the Securities and Exchange Commission at Washington, D.C., under the provisions of the Securities Exchange Act of 1934, as amended, an annual report on Form 10-K; and

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

| | |
|---|---|
| January 29, 2016<br>Date | /s/ John B. McCoy<br>John B. McCoy<br>Director |

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IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

January 29, 2016
Date

/s/ Joyce M. Roché
Joyce M. Roché
Director

Exhibit 24

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NOW, THEREFORE, each of the undersigned hereby constitutes and appoints Randall L. Stephenson, Jonathan P. Klug, David R. McAtee II, John J. Stephens, Paul W. Stephens, or any one of them, all of the City of Dallas and State of Texas, the attorneys for the undersigned and in the undersigned's name, place and stead, and in the undersigned's office and capacity in the Corporation, to execute and file such annual report, and thereafter to execute and file any amendment or amendments thereto, hereby giving and granting to said attorneys full power and authority to do and perform each and every act and thing whatsoever requisite and necessary to be done in and concerning the premises, as fully to all intents and purposes as the undersigned might or could do if personally present at the doing thereof, hereby ratifying and confirming all that said attorneys may or shall lawfully do, or cause to be done, by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand the date set forth opposite their name.

January 29, 2016
Date

/s/ Cynthia B. Taylor
Cynthia B. Taylor
Director

Exhibit 31.1

**CERTIFICATION**

I, Randall Stephenson, certify that:

1. I have reviewed this report on Form 10-K of AT&T Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 18, 2016

/s/ Randall Stephenson
Randall Stephenson
Chairman of the Board,
Chief Executive Officer and President

**Certification of Periodic Financial Reports**

Pursuant to 18 U.S.C. Section 1350, each of the undersigned officers of AT&T Inc. (the "Company") hereby certifies that the Company's Annual Report on Form 10-K for the year ended December 31, 2015 (the "Report") fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

February 18, 2016

By: /s/ Randall Stephenson
Randall Stephenson
Chairman of the Board, Chief Executive Officer
and President

February 18, 2016

By: /s/ John J. Stephens
John J. Stephens
Senior Executive Vice President
and Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document. This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 ("Exchange Act") or otherwise subject to liability under that section. This certification shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Exchange Act except to the extent this Exhibit 32 is expressly and specifically incorporated by reference in any such filing.

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to AT&T Inc. and will be retained by AT&T Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, DC 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| Protecting and Promoting the Open Internet | ) | GN Docket No. 14-28 |
| Framework for Broadband Internet Services | ) | GN Docket No. 10-127 |

# COMMENTS OF AT&T SERVICES, INC.


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July 15, 2014

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## INTRODUCTION AND EXECUTIVE SUMMARY

For more than a decade, investment and innovation flourished throughout the Internet ecosystem despite the absence of any net neutrality rules. During that time, broadband Internet access providers poured more than a trillion dollars into next-generation networks capable of providing advanced services. That network investment paved the way for an explosion in content, applications, and services delivered over advanced networks. This remarkable growth in investment and innovation continued even after the Commission adopted net neutrality rules in 2010, in part because those rules successfully balanced concerns about Internet openness with the need to maintain incentives for Internet service providers to continue investing in advanced networks. The Commission should do nothing in this proceeding to upset that balance. Instead, the Commission should adopt targeted and flexible rules based largely on the 2010 model and thus promote continued investment and innovation by broadband and edge providers alike.

Although the D.C. Circuit invalidated the Commission's "no-blocking" and nondiscrimination rules in *Verizon*,[1] nothing in the court's decision requires a wholesale rethinking of the Commission's approach to the open Internet. To the contrary, *Verizon* makes clear that the Commission has ample statutory authority under section 706 to adopt new rules that replicate the balance struck in 2010. Specifically, as the *NPRM* correctly recognizes, the Commission has legal authority to adopt new no-blocking and nondiscrimination rules that are precisely tailored to prohibit any practices that could pose a threat to the "virtuous circle" of investment and innovation that has enabled the Internet to thrive.[2]

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[1] *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (reviewing Order, *Preserving the Open Internet et al.*, 25 FCC Rcd 17905 (2010) ("*Open Internet Order*")).

[2] Notice of Proposed Rulemaking, *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, FCC 14-61 ¶¶ 2, 23 (May 15, 2014) ("*NPRM*").

concerns that such paid prioritization will lead to a bifurcated Internet, with "fast lanes" for some content and inadequately "slow lanes" for other content.[3]

AT&T has no intention of creating fast lanes and slow lanes or of using prioritization arrangements for discriminatory or anti-competitive ends, as some net neutrality proponents fear. And AT&T does not oppose reasonable rules designed to protect against such conduct. Indeed, in Part II, AT&T explains how the Commission could address paid prioritization directly under section 706. The Commission could, for example, (i) ban paid prioritization outright or (ii) adopt additional safeguards to address the perceived threats of such prioritization—that is, enhanced transparency, no-blocking, and nondiscrimination rules—that would apply to those fixed broadband Internet access providers that do not voluntarily agree not to engage in paid prioritization. By adopting either approach, the Commission could eliminate any potential threat from paid prioritization in a legally defensible way without undermining the investment and innovation-friendly climate that has driven growth in the Internet ecosystem for the last two decades.

In Part III, AT&T explains that whatever the Commission concludes with respect to paid prioritization, it cannot and should not reclassify broadband Internet access service as a Title II service in an attempt to regulate it. To begin with, there is no valid legal rationale for reclassifying broadband Internet access providers as "telecommunications carriers." Instead, the

---

[3] As these advocates' filings with the Commission make clear, they are not concerned with *all* commercial prioritization arrangements; rather, their chief concern is paid prioritization arrangements with edge providers that are invisible to, and not directed by, the end users over whose Internet connection packets are being prioritized. *See* Section II.A, *infra*. Consistent with that concern, AT&T uses the term "paid prioritization" throughout these comments to mean commercial arrangements in which an edge provider pays an Internet service provider to prioritize the edge provider's traffic as it is delivered over a consumer's fixed broadband Internet access service, where such prioritization is not at the direction of the consumer. "Paid prioritization" is thus distinct from user-driven prioritization.

content-delivery networks ("CDNs") and many edge providers—thereby compounding the suppressive effects on investment and innovation throughout the ecosystem. That outcome simply could not be squared with the Commission's obligations under section 706. At the very least, reclassification would call into question the regulatory status of countless information services, leading to more uncertainty and more litigation.

Finally, despite the claims of some net neutrality advocates, many of these severe consequences of Title II regulation could not be mitigated through forbearance. Advocates exaggerate both the ease with which forbearance could be effected and the extent to which it would reduce investment-deterring uncertainty throughout the Internet ecosystem. In short, reclassification of broadband Internet access service would be directly contrary to the Commission's charge under section 706 to promote broadband deployment. There is no need for the Commission to go down that path. It should, instead, continue to protect Internet openness under section 706.

In Part IV, AT&T addresses other proposals in the *NPRM* regarding no-blocking, nondiscrimination, and transparency, and, once again, urges the Commission to continue its balanced approach to preserving the open Internet. Many of these proposals seem to be grounded in concerns that the Commission lacks legal authority to prevent paid prioritization after *Verizon*. But if the Commission takes steps to address the purported harms of paid prioritization directly, there would be no conceivable need for these additional regulations, which go well beyond the rules adopted in 2010. Instead, the Commission should retain its existing transparency rule and re-adopt its no-blocking rules for fixed and mobile mass-market broadband Internet access services under an alternative rationale. In addition, the Commission should bar "commercially unreasonable" differentiation in the transmission of fixed broadband Internet

purposeful balance between advancing the goals of an open Internet and ensuring continued investment in broadband infrastructure.[8]

Given the unqualified success of this approach, the Commission's focus in the wake of the D.C. Circuit's invalidation of two of the 2010 rules[9] should be on restoring the balance struck by those rules. Particularly given the continued absence of any evidence of an "open Internet" problem that the 2010 framework would not address, there is no justification for adopting the new and intrusive net neutrality rules proposed by some advocates—rules that would drain investment, stifle innovation, and roll back the impressive gains that the Commission's measured approach to Internet regulation has helped to secure.

### A. The Internet Has Been and Remains "Open."

The Internet has been and remains "open" today despite the continued absence of overly intrusive net neutrality regulations. For at least a decade, net neutrality advocates have raised concerns about the incentives and abilities of broadband Internet access providers to stifle the "open Internet."[10] These predictions have not borne out. Today's Internet is free and thriving, as the *NPRM* recognizes. Indeed, the "fundamental question" guiding the *NPRM* is "[w]hat is the right public policy to ensure that the Internet ***remains*** open?"[11] That framing rightly acknowledges that the goal here should be preserving the status quo.

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8 *See Open Internet Order*, 25 FCC Rcd 17905.

9 *See Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (reviewing the *Open Internet Order*).

10 *See, e.g.*, Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* 176 (2001); Remarks of Michael J. Copps, Commissioner, FCC, *The Beginning of the End of the Internet? Discrimination, Closed Networks, and the Future of Cyberspace*, New America Foundation (Oct. 9, 2003).

11 *NPRM* ¶ 2 (emphasis added).

least 25 Mbps, compared to just under 50 percent in 2010.[19] Indeed, a recent study has found that the United States far exceeds Europe in high-speed broadband deployment and investment.[20] It determined that, among other things, "[a] far greater percentage of U.S. households had access to Next Generation Networks . . . (25 Mbps) than in Europe"; the U.S. has better fiber and LTE deployment coverage; and network investment in the United States greatly outpaces Europe with $562 of broadband investment per household in the United States compared with $244 per household in Europe."[21] And U.S. investment in broadband networks shows no signs of slowing: USTelecom reports that broadband capital expenditures rose from $64 billion in 2009 to $68 billion in 2012.[22] AT&T has been in the vanguard, devoting more than $20 billion annually to capital investment.[23] Indeed, in the last six years, AT&T has invested more capital into the U.S. economy than any other public company.[24]

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19 *See* NTIA, "Nationwide Availability of Broadband Download Speed by Technology Type," in *Broadband Statistics Report*, Feb. 2014, *available at* http://www.broadbandmap.gov/download/Technology%20by%20Speed.pdf; NTIA, "All Broadband Availability by Speed: June 2010, June 2011, and June 2012," Figure 1 in U.S. Broadband Availability: June 2010 – June 2012, http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf.

20 *See* Christopher S. Yoo, *U.S. v. European Broadband Deployment: What Do The Data Say?* (June 2014) ("Yoo European Study"), *available at* https://www.law.upenn.edu/live/files/3352-us-vs-european-broadband-deployment.

21 *Id.* (Executive Summary).

22 *See* USTelecom, *Historical Broadband Provider Capex*, http://www.ustelecom.org/broadband-industry-stats/investment/historical-broadband-provider-capex (last visited June 20, 2014); Patrick Brogan, *Updated Capital Spending Data Showing Rising Broadband Investment in Nation's Information Infrastructure* 1, USTelecom (Nov. 4, 2013), *available at* http://www.ustelecom.org/sites/default/files/documents/103113-capex-research-brief-v2.pdf.

23 AT&T, *2013 Annual Report* at 4 (Feb. 10, 2014), *available at* http://www.att.com/Investor/ATT_Annual/2013/downloads/ar2013_annual_report.pdf (documenting $25 billion investment in capital and spectrum in 2013); AT&T, Press Release, *AT&T to Invest $14 Billion to Significantly Expand Wireless and Wireline Broadband Networks, Support Future IP Data Growth and New Services* (Nov. 7, 2012),

million photos per day in October 2012; today, they share over 700 million.[30] As these and many other examples demonstrate, edge providers have thrived under the 2010 rules.

Importantly, the Internet has remained open—and the "virtuous circle" of investment and innovation throughout the Internet ecosystem has flourished—without the overly intrusive, top-down rules that many net neutrality advocates claim are essential. Indeed, for most of the Internet's existence, openness has been achieved without *any* regulatory intervention at all. In 2005, the Commission adopted an *Internet Policy Statement*, but that statement was non-binding and only committed the Commission to incorporate the principles "into its ongoing policymaking activities."[31] Five years later, in 2010, the Commission adopted its first set of net neutrality rules—but those rules reflected a balanced approach designed to accommodate incentives to invest in broadband networks and the goal of preserving Internet openness.[32] It bears emphasis, however, that investment and innovation were exceptionally robust even *prior* to adoption of the 2010 rules.[33]

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[30] *See* Alyson Shontell, *5 Months After Turning Down Billions, Snapchat's Growth is Still Exploding*, Business Insider (May 2, 2014), http://www.inc.com/alyson-shontell/snapchats-growth-still-exploding-after-turning-down-billions.html; Billy Gallagher, *Snapchat Now Sees 350M Photos Shared Daily, Up From 200M in June*, TechCrunch (Sept. 9, 2013), http://techcrunch.com/2013/09/09/snapchat-now-sees-350m-photos-shared-daily-up-from-200m-in-june/.

[31] *See* Policy Statement, *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, 20 FCC Rcd 14986, ¶ 5 n.15 (2005) ("*Internet Policy Statement*") (noting that the Commission was "not adopting rules in this policy statement"); *see also Comcast Corp. v. FCC*, 600 F.3d 642 (D.C. Cir. 2010) (explaining that the policy statement was unenforceable).

[32] *See, e.g.*, *Open Internet Order*, 25 FCC Rcd at 17951 ¶ 80 ("Since at least 2005, when the Commission adopted the *Internet Policy Statement*, we have recognized that a flourishing and open Internet requires robust, well-functioning broadband networks, and accordingly that open Internet protections require broadband providers to be able to reasonably manage their networks.").

[33] *See* Comments of AT&T, *Preserving the Open Internet*, GN Docket No 09-191, at 5 (Jan. 14, 2010) ("AT&T 2010 Net Neutrality Opening Comments") (stating that, from 2005 to 2010,

The D.C. Circuit's remand in *Verizon* provides no occasion for the Commission to change course and upset the balance struck by the 2010 rules. To be sure, that decision leaves the Commission with the task of promulgating legally defensible no-blocking and nondiscrimination rules. But *Verizon* in no way suggests, much less demands, that the Commission fundamentally rethink its approach to the open Internet—an approach that has helped to make the Internet a technological, social, economic, and cultural success story. To the contrary, the *Verizon* decision leaves open a simple and legally defensible path forward: the Commission should fine-tune its net neutrality rules to avoid imposing *per se* common carriage obligations on broadband Internet access providers but do so in a way that largely restores the balance reflected in the prior rules.[36]

Below, AT&T details how the Commission could accomplish that objective consistent with section 706. First, the Commission could directly address any potential threat that paid prioritization might pose to the open Internet.[37] And if the Commission does so, any remaining rules should mirror those adopted in the *Open Internet Order*. Specifically, the Commission should retain its existing transparency rule, re-adopt its no-blocking rule under a different rationale, and adopt a slightly revised nondiscrimination rule that bars "commercially unreasonable" differentiation in the transmission of lawful traffic over a consumer's fixed broadband Internet access service.[38] Nothing more is needed to preserve Internet openness.

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36 *See Verizon*, 740 F.3d at 651 (holding that the Commission's rules on remand must permit broadband Internet access providers "to make individualized decisions, in particular cases, whether and on what terms to deal" with edge providers).

37 *See* Part II, *infra*.

38 *See* Part IV, *infra*.

exponentially when the government attempts to regulate a technologically evolving field (like the Internet). Indeed, the risk that regulatory controls will be unable to keep up with dynamic and fast-moving changes is substantial. As Chairman Wheeler has noted, "[t]he pace of innovation on the Internet is much, much faster than the pace of a notice-and-comment rulemaking. . . . We cannot hope to keep up if we adopt a prescriptive regulatory approach."[42]

Given the well-understood costs of excessive regulation, as a general rule regulatory intervention is appropriate when—and only when—there is a concrete need for such intervention *and* regulators have enough information to appropriately balance the costs against the benefits.[43] Here, there is evidence of neither. In the *NPRM*, the Commission acknowledges that actual instances of threats to Internet openness "have been relatively few" "for over a decade," but speculates that this is because "[t]he Commission has had policies in place during the period in question that it has been ready to enforce."[44] In reality, the Commission had *no* open Internet policy in place before the Commission adopted the *Internet Policy Statement* in 2005, and even that policy was generally unenforceable.[45] But regardless of the extent to which the Commission's policies during the past ten years can be credited for protecting Internet openness, that track record certainly provides no basis for concluding that *additional* measures are warranted that go further than the rules and policies that were in place during that time.

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42 Remarks of FCC Chairman Tom Wheeler, American Enterprise Institute, Washington, D.C. (June 12, 2014) (discussing the FCC's new approach to cybersecurity).

43 *See* note 41, *supra*.

44 *NPRM* ¶ 40.

45 *See Comcast*, 600 F.3d 642 (explaining that the policy statement was unenforceable); *Internet Policy Statement*, 20 FCC Rcd at ¶ 5 n.15 (noting the Commission was "not adopting rules in this policy statement"). In December 2006, AT&T agreed to comply with those principles as a merger commitment. *See* Memorandum Opinion and Order, *AT&T Inc. & BellSouth Corp. Application for Transfer of Control*, 22 FCC Rcd 5662, 5814-5815, Appendix F (2007).

Considerable economic research supports this common-sense notion. A broadband platform provider has strong and rational market-driven incentives to deal evenhandedly with independent application providers because to behave otherwise would ultimately decrease, not increase, the value of its platform.[50] As Nobel Prize-winning economist Gary Becker and Dennis Carlton have explained, "consumers are willing to pay more for access to more content and, as a result, broadband access providers face disincentives for restricting access to Internet content."[51]

That incentive to maximize access to Internet content, applications, and services that consumers want would exist even if the market for broadband Internet access were *un*competitive.[52] But competition in the marketplace is fierce, and it further propels providers to offer access to content and applications that consumers desire.[53] Indeed, any broadband Internet

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50 *See, e.g.*, Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 Harv. J.L. & Tech. 85, 104 (2003); Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 Geo. L.J. 1847, 1888-89 (2006).

51 Comments of AT&T Services, Inc., *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, at 17 (Mar. 21, 2014) ("AT&T Remand Comments") (quoting Declaration of Gary S. Becker & Dennis W. Carlton at 12 (attached to Comments of Verizon, *Preserving the Open Internet et al.*, GN Docket No. 09-191 *et al.* (filed Jan. 14, 2010)); *see also* AT&T 2010 Net Neutrality Opening Comments at 115 (explaining that instead of consigning "best-effort Internet traffic to 'the digital equivalent of a winding dirt road' . . . cable companies [are] spending billions upon billions of dollars to upgrade their best-effort Internet access platforms to DOCSIS 3.0 so that their end users can enjoy download and upload speeds 10-50 times faster than in 2005"); *id.* at 130-31 (even though "AT&T and other providers have long offered QoS enhancements to business-class customers, no one has ever suggested that they have ever degraded bandwidth for the best-effort Internet access platform to increase the value of their prioritized services. To the contrary, such bandwidth has increased exponentially over the years, and the reason is simple: Customers demand it.").

52 *See* AT&T 2010 Net Neutrality Opening Comments at 120-22.

53 *See, e.g.*, USTelecom, *Residential Broadband Competition*, http://www.ustelecom.org/broadband-industry/broadband-industry-stats/residential-competition (last visited June 24, 2014) ("As of 2012, 88% of the U.S. population has a choice of two or more wired broadband competitors."); Everett Ehrlich, Progressive Policy Institute, *The State of U.S. Broadband: Is It Competitive? Are We Falling Behind?* 12 (2014) ("Rather than a one-

### D. There Is No Justification for Any Changes to the Open Internet Rules for Mobile Broadband Internet Access Services.

The Commission also seeks comment on whether changes are necessary to the net neutrality rules adopted for mobile broadband Internet access providers in 2010.[56] The answer is no. In the *Open Internet Order*, the Commission appropriately recognized that "mobile broadband presents special considerations that suggest differences in how and when open Internet protections should apply" and, consequently, adopted a more measured approach to regulation.[57] The Commission based its determination on various factors, including the particularly robust investment, innovation, and competition in the mobile broadband marketplace,[58] as well as unique "operational constraints" that mobile providers face.[59] Those same factors exist today, amply supporting, if not compelling, the Commission's "tentative[] conclu[sion]" to continue its measured approach to mobile broadband.[60]

To begin with, as the Commission and others have recognized, investment and innovation have been extraordinarily strong in the mobile wireless ecosystem, both before the 2010 rules and after. For example, annual investment in U.S. wireless networks grew more than 40 percent between 2009 and 2012, from $21 billion to $30 billion.[61] Private investment in mobile wireless infrastructure over the next five years will generate $1.2 trillion in economic growth and create

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56 *E.g.*, *id.* ¶ 62.

57 *Open Internet Order*, 25 FCC Rcd at 17956 ¶ 94.

58 *See id.* at 17956 ¶¶ 94-95.

59 *See, e.g.*, *id.* at 17956 ¶ 95 ("existing mobile networks present operational constraints that fixed broadband networks do not typically encounter").

60 *Id.* at 17941 ¶ 62.

61 Office of Science & Technology & The National Economic Council, *Four Years of Broadband Growth* at 2 (June 2013), *available at* http://www.whitehouse.gov/sites/default/files/broadband_report_final.pdf.

networks and, just like wireline providers, they therefore must increase the economic value of their networks to recover those investments.[69] And both economic research and common sense dictate that networks are more valuable to mobile providers the more end users subscribe to them, and the more data those users consume.[70] That imperative compels mobile providers to continue to ensure that customers can access the applications, services, and content of their choosing. Indeed, mobile providers enable customers to access an array of applications that compete in some sense with services that mobile providers offer—including, for example, Skype, You Tube, and text messaging apps. Those competing applications are used millions of times daily without incident, evidencing concretely the incentives that providers have to maximize the use of their networks and those networks' value to end users.

These developments are also driven by competition. The massive investments in state-of-the-art mobile networks are not happening in a vacuum; they are indicative of an intensely competitive marketplace for mobile broadband Internet access services. The Commission cited this competition in 2010 as one basis for treating mobile services differently from fixed services, and competition has only grown more intense since then. The Commission's most recent Report to Congress, issued in March 2013, documents that upward trend.[71] It shows, among other things, not only the astounding pace of investment and innovation, but also a continuing legacy

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69 *See* AT&T Remand Comments at 16-17 (citing Becker and Carlton declaration).

70 *See id.*; *see also* pages 16-18, *supra* (discussing similar incentives of wireline providers); Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 Geo. L.J. 1847, 1888 (2006) ("One would . . . expect a network owner's natural instinct would be to open up its network to all content and applications providers, because doing so would maximize the value of its network and thus maximize the amount that it could charge for network access.").

71 *See* Sixteenth Report, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, WT Docket No. 11-186 (Mar. 21, 2013) ("*Mobile Wireless Competition Report*").

In addition, and importantly, mobile providers continue to face unique "operational constraints" that require a different approach to Internet openness than in the wireline context.[78] The Commission recognized in adopting the 2010 rules that special characteristics of mobile broadband infrastructure make it essential to afford mobile providers additional flexibility in how they operate their broadband services.[79] Specifically, as AT&T has previously explained in detail, mobile networks face spectrum constraints, a shared "last mile" radio access network, and other impediments that make it far more challenging to provide mobile broadband than wireline service.[80] These factors create capacity and quality-of-service challenges for mobile broadband Internet access providers that are particularly acute in the "last mile" radio access network. To ensure high-quality service for all customers, mobile providers need greater flexibility in how they address congestion over their networks—particularly in the "over-the-air" segment.[81] Intrusive net neutrality rules that hamstring mobile providers' efforts to grapple with such network management challenges would degrade the quality of mobile service for all users.[82]

Given the exponential growth of bandwidth-intensive mobile data usage, these challenges show no sign of abating. As the Commission explained to Congress, "[i]t is estimated that U.S.

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78 *Open Internet Order*, 25 FCC Rcd at 17957 ¶ 95.

79 *Id.*

80 *See* AT&T 2010 Net Neutrality Opening Comments at 157-66; *see also* Jeffrey H. Reed & Nishith D. Tripathi, *The Application of Network Neutrality Regulations to Wireless Systems: A Mission Infeasible* (2010) (attached as Exh. 2 to AT&T 2010 Net Neutrality Opening Comments); Comments of AT&T Inc., *Preserving the Open Internet*, GN Docket No. 09-191 *et al.*, at 57-63 (Oct. 12, 2010).

81 *See* AT&T 2010 Net Neutrality Opening Comments at 157-72.

82 These considerations apply whenever providers use their mobile networks to offer broadband Internet access service. Therefore, the Commission should treat any fixed broadband services that use mobile networks as mobile broadband services for purposes of the net neutrality rules.

iPhones.[88] When Apple deployed iOS6, FaceTime became available for use on cellular networks for the first time. AT&T was concerned that the launch of iOS6 could result in a flood of FaceTime usage that would adversely impact service quality for all customers.[89] AT&T was particularly sensitive to this concern because it was widely known at the time that AT&T had experienced congestion on its network as a result of the extraordinary popularity of the iPhone and the resulting surge in mobile broadband usage.

AT&T thus took the prudent course of action by phasing in FaceTime use over its cellular network. This process enabled AT&T to monitor any effects of FaceTime on network congestion and thereby ensure continued high-quality service for all of its customers.[90] The Commission's net neutrality rules explicitly recognize, as they should in such a capacity-constrained network structure, the imperative of reasonable network management for wireless providers. Far from demonstrating the need for additional rules, the FaceTime example demonstrates that mobile providers have every incentive to ensure that their customers can use the applications of their choosing, consistent with reasonable network management practices.

For all of the reasons discussed above, the Commission should continue to follow the sound course it took in 2010 with respect to mobile broadband Internet access service. As with the other 2010 rules, experience since those rules were adopted confirms that the Commission struck the right balance.

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88 *See* AT&T Public Policy Blog, *A Few Thoughts on FaceTime* (Nov. 8, 2012), *available at* http://www.attpublicpolicy.com/consumers-2/a-few-thoughts-on-facetime/.

89 *Id.*

90 *Id.*

### A. Net Neutrality Advocates Have Identified Non-User-Directed Paid Prioritization As the Principal Threat to Internet Openness.

Net neutrality advocates have long argued that paid priority arrangements pose a threat to the open Internet and therefore justify regulation.[93] In making these arguments, however, they have not claimed that all types of commercial prioritization arrangements are problematic. Instead, they have conceded that paid prioritization is a concern only when it is *not* directed by end users. These advocates have thus acknowledged—and rightly so—that "user-driven prioritization is *unobjectionable* and should be a capability that is preserved in the course of enacting any new Internet openness rules."[94] As the Center for Democracy & Technology explained in 2010, "CDT and others have repeatedly made a clear distinction between paid prioritization and user-driven prioritization"; prioritization that "would occur on the user's last-mile facilities at *the user's request*" would be permissible.[95] That is because user-driven prioritization, CDT emphasized, poses no threat to "Internet openness."[96] Similarly, Free Press has explained that its "long-held position" is that "prioritization over open Internet services" that is "purely edge-driven prioritization, such as the prioritization used in many business services

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93 *See, e.g.*, Comments of Free Press, GN Docket No. 09-191, at 3 (Jan. 14, 2010) ("Free Press 2010 Comments").

94 Letter from Alissa Cooper, et al, Chief Computer Specialist, CDT, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-191, at 2 (Sept. 8, 2010) (emphasis added); *see id.* (explaining that Differentiated Services architecture is different from paid prioritization that concerns net neutrality advocates because the former "would be a capability offered to users and would occur on the user's last-mile facilities at the user's request").

95 *Id.* (emphasis added).

96 *Id.*

There is no conceivable reason that such services, demanded and used widely by business customers today, should be foreclosed by regulatory fiat.

Consumers could benefit from other forms of user-directed prioritization as well. Such prioritization, for example, could facilitate life-saving telehealth services, particularly for consumers in rural areas.[102] It might also be important to enable certain online educational services or to facilitate commerce more generally. In addition, end users who have a greater need for high-definition video conferencing might want the ability to direct their broadband Internet access providers to prioritize accordingly.

Importantly, such user-directed differentiation of Internet traffic is not foreign to the Internet, but instead was built into the Internet's DNA.[103] Since the early days of the Internet, engineers have recognized a need to build intelligence into the Internet Protocol to enable networks to distinguish among packets on the basis of their associated applications. They recognized that different applications would have different needs but that those needs could be addressed in part by dividing applications into different handling classes within an IP network. For example, the original standards "treat[ed] high precedence traffic as more important than other traffic" and defined informational flags for prioritization of packets traveling on Transmission Control Protocol/IP networks.[104] The standards document outlined the process for

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Internet Service); Letter from Robert W. Quinn, Jr., Sr. Vice President, AT&T, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-191 and 10-127 (Aug. 30, 2010) (similar).

[102] *See, e.g.*, Report and Order, *Rural Health Care Support Mechanism*, WC Docket No. 02-60, ¶ 1 (2012) (noting that "access to broadband for medical providers saves lives while lowering health care costs and improving patient experiences").

[103] *See* AT&T 2010 Net Neutrality Opening Comments at ii.

[104] Information Sciences Institute, Request for Comment (RFC) 791: Internet Protocol DARPA Internet Program Protocol Specification (Jon Postel ed., 1981), *available at* http://www.ietf.org/rfc/rfc791.txt.

with "fast lanes" and unworkably "slow lanes." AT&T believes that these concerns are vastly overstated. Even net neutrality advocates have recognized that paid prioritization could offer, at most, limited benefits to a limited set of customers.[108] Thus, their claims that it could lead to the deliberate creation of a "slow lane" on the Internet are illogical in that they would have, not just the tail, but the tip of the tail, wagging the dog. In reality, paid prioritization could provide tangible but limited benefits to those consumers and edge providers that need a higher level of service for particular types of latency and jitter-sensitive applications—just as CDNs and other mechanisms do today, without any harm to the openness of the Internet.[109] Nonetheless, AT&T has no intention of creating fast lanes and slow lanes or otherwise using prioritization for discriminatory or anticompetitive ends, and AT&T does not oppose rules that are designed to prevent such behavior. As discussed below, the Commission has ample authority under section 706 to adopt such rules. We discuss, in particular, two of the many alternatives available to the Commission: an outright ban on paid prioritization and a two-path elective regime.

#### 1. The Commission Could Ban Paid Prioritization over Fixed Broadband Internet Access Service.

The first option—a ban on paid prioritization—requires little explanation: it would prohibit providers from engaging in paid prioritization of traffic over mass-market fixed

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108 *See, e.g.*, Free Press, *Paid Prioritization: The Antithesis of Openness on the Internet* (July 26, 2010), *available at* http://www.freepress.net/sites/default/files/resources/Paid_Prioritization.pdf.

109 There are many other practices that edge providers and others engage in that are designed to differentiate traffic speed on the Internet. Indeed, mechanisms such as collocated CDNs may affect Internet traffic more than last-mile prioritization by ISPs. *See, e.g.*, George Ou, *Data Shows CDN Prioritization More Harmful Than Router Prioritization*, Digital Society, Aug. 10, 2010, *available at* http://www.digitalsociety.org/2010/08/data-shows-cdn-prioritization-more-harmful-than-router-prioritization/; *see also* Reply Comments of AT&T Inc., GN Docket No. 09-191, at 49-53 (Apr. 26, 2010) (explaining why there is no "plausible basis for distinguishing as a policy matter between CDN collocation arrangements . . . and packet-prioritization techniques").

broadband objectives in section 706.[115] Indeed, the D.C. Circuit has already upheld the Commission's determination that "broadband providers' potential disruption of edge-provider traffic [is] the sort of 'barrier' that has the 'potential to stifle overall investment in Internet infrastructure.'"[116] And, third, insofar as a ban on paid prioritization would not preclude user-directed prioritization, the Commission would avoid "contraven[ing] any specific prohibition contained in the Communications Act."[117] That is because the Commission could reasonably conclude that a restriction on such prioritization is not a *per se* common-carriage regulation of broadband Internet access providers in contravention of the statutory prohibition on treating Title I information service providers as common carriers.[118]

As a threshold matter, and as the D.C. Circuit has made clear, whether a regulation imposes a *per se* common-carriage obligation on a provider is a determination subject to *Chevron* deference.[119] Furthermore, precedent establishes that "there is a gray area in which although a given regulation might be applied to common carriers, the obligations imposed are not common carriage *per se*."[120] In other words, the mere fact that a regulation "bears some

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115 *See id.* at 642-49 (holding that the 2010 rules would reasonably advance section 706 broadband objectives).

116 *Id.* at 642.

117 *Id.* at 649.

118 *See* 47 U.S.C. § 153(51) ("A telecommunications carrier shall be treated as a common carrier under this Act only to the extent that it is engaged in providing telecommunications services . . .").

119 *See Verizon*, 740 F.3d at 650 ("We apply *Chevron*'s deferential standard of review to the interpretation and application of the statutory terms 'common carrier.'"); *see also Cellco Partnership v. FCC*, 700 F.3d 534, 544 (D.C. Cir. 2012) ("[T]he Commission's interpretation and application of the term 'common carrier' warrants *Chevron* deference.").

120 *Verizon*, 740 F.3d at 652.

broadband speed tier, obviating the need for the customer to pay for a higher-speed service just to obtain a better experience when using a particular application. Additionally, an ISP might enter into arrangements that provide incentives for edge providers to transmit their traffic during non-peak hours.

In short, there are many innovative arrangements that would still be permissible, provided that they were commercially reasonable. Broadband Internet access providers accordingly would not be categorically prohibited from entering into individual relationships with specific edge providers or compelled to carry edge providers' traffic on identical terms. Indeed, the Commission would not be banning all prioritization arrangements as an undifferentiated whole, but instead would be imposing restrictions on *when* such arrangements may be used (*i.e.*, at the direction of the end user). In that way, the rules would be akin to time, place, and manner restrictions—not a broad, unqualified *per se* common-carriage obligation.[123]

The D.C. Circuit's decision in *Verizon* does not foreclose this line of argument.[124] The Commission's principal litigation defense in *Verizon* was that broadband Internet access service providers are not "carriers" with respect to edge providers. As the court of appeals explained, "[h]aving relied almost entirely on the flawed argument that broadband providers are not carriers with respect to edge providers, the Commission offer[ed] little" argument that the nondiscrimination rule at issue did not impose common-carrier obligations.[125]

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[123] *Cf. NPRM* ¶ 111 (tentatively concluding that the Commission may adopt a rule that "permit[s] broadband providers to engage in individualized practices, while prohibiting those broadband provider practices that threaten to harm Internet openness").

[124] *See id.*¶ 147 ("[s]eek[ing] comment generally on how the court's *Verizon* decision should impact [the Commission's] exercise of authority").

[125] 740 F.3d at 656; Brief of Respondent-Appellee FCC, *Verizon v. FCC*, No. 11-1355, at 60-68 (D.C. Cir. Sept. 10, 2012).

### 2. The Commission Could Permit Broadband Internet Access Providers to Choose Between a Voluntary Ban and More Regulation.

A second option would be to permit fixed broadband Internet access providers to choose between (i) a voluntary commitment to refrain from paid prioritization or (ii) more substantial regulation designed to mitigate the perceived harms of such prioritization. Providers would be required to specify their chosen path in their transparency statements, rendering that choice enforceable under the Commission's existing transparency rule and enforcement procedures.[131]

Providers selecting the first path would agree not to engage in paid prioritization over mass-market fixed broadband Internet access service. In addition, they would be subject to the existing transparency rule, the 2010 no-blocking rule, and a commercially reasonable nondiscrimination standard.[132] There would seem to be little reason, however, to subject these providers to the additional safeguards on which the Commission seeks comment in the *NPRM*, because many of those proposals appear to be designed to address concerns relating to paid prioritization—in particular, the concern that paid prioritization could result in degradation of non-prioritized traffic.[133]

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the Commission articulated a discrete, flexible standard that prohibited practices that could reasonably be understood to harm Internet openness, while allowing individualized broadband provider practices. . . .").

[131] *See* 47 C.F.R. § 8.3 ("A person engaged in the provision of broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices regarding use of such services and for content, application, service, and device providers to develop, market, and maintain Internet offerings."); *see also id.* § 8.14 (formal complaint procedures).

[132] *See* Part IV, *infra*.

[133] Because the commitment is voluntary by definition, a broadband Internet access provider would be free to change its election later. But the provider would be required to give advance notice to consumers before doing so and to change disclosures in its transparency statement, as directed by the Commission.

achieve its open Internet goals without imposing anything resembling a *per se* common-carriage obligation.

## III. REGULATING BROADBAND INTERNET ACCESS PROVIDERS UNDER TITLE II WOULD VIOLATE THE COMMUNICATIONS ACT AND CAUSE TREMENDOUS HARM TO THE INTERNET ECOSYSTEM.

Because the Commission can address any potential threat to Internet openness by exercising its authority under section 706, there is no policy need to resort to reclassification of broadband Internet access service.[134] Nonetheless, in the wake of the *Verizon* decision, some advocates have renewed calls for the Commission to regulate broadband Internet access providers as "telecommunications carriers" under Title II. That approach is badly misguided for several reasons.

*First*, there is no valid legal rationale for reclassifying broadband Internet access services. To the contrary, broadband Internet access fits squarely within the statutory definition of an "information service." A long line of Commission and judicial decisions has confirmed that statutory classification, and nothing about broadband Internet access service has changed that would justify reversing those precedents. *Second*, there is no policy justification for such a radical change. Title II regulation would stifle broadband investment and pitch the industry into years of wasteful litigation and regulatory disputes. Reclassification also would unavoidably expose broad swaths of the Internet ecosystem—including CDNs and many edge providers—to Title II regulation as well, because once the Commission finds that the transmission component of an information service is actually a telecommunications service in its own right, there is no coherent basis for limiting that finding to broadband Internet access service. The ripple effects

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[134] *See* Part II (discussing paid prioritization); Part IV (discussing all other forms of differentiation).

### 1. Broadband Internet Access Service Must Be *Either* an Information Service *or* a Telecommunications Service—Not Both.

The Communications Act defines a "telecommunications service" as "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used."[138] And "telecommunications" is defined as "the transmission . . . of information of the user's choosing, *without change in the form or content of the information as sent and received*."[139] By contrast, an "information service" is the "offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information *via telecommunications*."[140] Because broadband Internet access service indisputably provides "a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information," as a straightforward textual matter, it necessarily is an "information service."[141]

Some have argued, however, that broadband Internet access service also encompasses a severable "telecommunications" or "telecommunications service" component that can be regulated under Title II. This argument is irreconcilable with both the statutory text and nearly two decades of Commission and judicial precedent.

In the *Stevens Report*, the Commission concluded that the two statutory categories—"telecommunications service" and "information service"—are "mutually exclusive."[142] This

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138 *Id.* § 153(53).

139 *Id.* § 153(50) (emphasis added).

140 *Id.* § 153(24) (emphasis added).

141 *See, e.g.*, *Brand X*, 545 U.S. at 987 (noting that it was "unchallenged" by any party that "cable modem service is an 'information service'"; the only question was whether cable providers offered telecommunications and thus also provided a "telecommunications service").

142 Report to Congress, *Federal-State Joint Board on Universal Service*, 13 FCC Rcd 11501, 11524 ¶ 43 (1998) ("*Stevens Report*") ("The language and legislative history of both the House

received."[147] Instead, it is offering a unitary information service. In passage after passage, the *Stevens Report* found—correctly—that the statutory text, structure, and history all compel that conclusion.[148] As the Commission explained, "the statute and the legislative history" preclude any conclusion that Congress intended to "subject [information] services to regulatory constraints by creating an expanded 'telecommunications service' category incorporating enhanced services," thereby "effect[ing] a major change in the regulatory treatment of those services."[149]

The Supreme Court affirmed the Commission's reading of the 1996 Act in *Brand X*.[150] It rejected calls to invalidate the "mutual exclusivity" principle and instead held that the touchstone for the classification analysis is what is being "offered" to the end user. As the Court explained, "[i]t is common usage to describe what a company 'offers' to a consumer as what *the consumer perceives to be the integrated finished product*, even to the exclusion of discrete components that compose the product . . . ."[151] In fact, the Court added, it would be "odd" to construe the statutory language any other way. The Court rejected an argument to "classif[y] as

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147 47 U.S.C. § 153(50) (definition of "telecommunications") (emphasis added); *see id.* § 153(53) (defining "telecommunications service" as "the offering of telecommunications for a fee directly to the public . . . regardless of the facilities used").

148 *E.g.*, *Stevens Report*, 13 FCC Rcd at 11520-25, 11529-30, 11534 ¶¶ 39, 41 n.79, 43-45, 57-59, 69 n.138. For example, the *Stevens Report* explained that the "language and legislative history of both the House and Senate bills indicate that the drafters of each bill regarded telecommunications services and information services as mutually exclusive categories." *Id.* at 11522-23 ¶ 43.

149 *Id.* at 11524 ¶ 45. Many other observers agreed with the Commission's analysis. *See, e.g.*, Letter from Senator John Kerry et al. to William E. Kennard, Chairman, FCC, at 1 (Mar. 20, 1998) ("[N]othing in the 1996 (Telecommunications) Act or its legislative history suggests that Congress intended to alter the current classification of Internet and other information services or to expand traditional telephone regulation to new and advanced services.").

150 *Brand X*, 545 U.S. 967.

151 *Id.* at 990 (emphasis added).

functions, including email, web-hosting, DNS look-up, and often caching.[155] These factual findings focused on the particularities of the service actually being "offered" to end users and involved a straightforward application of the Commission's "mutual exclusivity" principle.

The Supreme Court affirmed the Commission's statutory classification of broadband Internet access service. It held that "[t]he entire question is whether the [broadband Internet access] products here are functionally integrated (like the components of a car) or functionally separate (like pets and leashes). That question turns not on the language of the Act, but on the factual particulars of how Internet technology works and how it is provided . . . ."[156] The Court held that the Commission had reasonably answered that question by concluding that ISPs offer consumers a unified service consisting of functionally integrated telecommunications and data-processing components, including the DNS look-up and caching services discussed below.[157]

Faced with this compelling interpretation of the statutory text and the weight of Commission and judicial precedent, some advocates of Title II reclassification attempt to manufacture precedent of their own. They claim that, prior to 2005, the Commission had viewed broadband Internet access service as a "telecommunications service," and they urge the Commission to readopt that interpretation. But these advocates are simply wrong. The Commission has never considered *retail* broadband Internet access service—*i.e.*, the finished service that providers sell to end users—to be a common-carrier service. Those retail services have always been information services outside the scope of Title II, and this question was never

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155 *See Cable Modem Order*, 17 FCC Rcd at 4822-23 ¶ 38; *Wireless Broadband Order*, 22 FCC Rcd at 5910-11 ¶¶ 25-26.

156 *Brand X*, 545 U.S. at 991.

157 *Id.* at 999-1000.

proponents like Free Press either misunderstand or are attempting to rewrite history; broadband Internet access service has *never* been classified as a Title II service.[162]

As this analysis makes clear, reclassification would run headlong into the Commission's longstanding factual conclusions concerning broadband Internet access service—most critically, that, from an end user's perspective, the transmission component is inextricably intertwined with information-processing capabilities. The Supreme Court recognized that this determination is not a legal question, but instead "turns . . . on the factual particulars of how Internet technology works and how it is provided."[163] And, as the Court explained in *FCC v. Fox*, when an agency's new policy "rests upon *factual findings that contradict those which underlay its prior policy*" or "when its prior policy has engendered *serious reliance interests* that must be taken into account," the agency must "provide a more detailed justification than what would suffice for a new policy created on a blank slate."[164] Here, the Commission could not reclassify broadband Internet access services without both (1) "contradict[ing]" the still-unchanged facts underlying its characterization of broadband Internet access as a unitary "information service," and (2) defeating the "serious reliance interests" that broadband Internet access providers have

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[162] *See* Letter from Matthew F. Wood, Free Press, to Marlene H. Dortch, Secretary, FCC, at 1 (June 11, 2014) (stating that "available data . . . shows that [Regional Bell Operating Companies'] capital expenditures ***increased*** while their broadband offerings remained under Title II, and ***decreased*** after the Commission's 2005 *Wireline Framework Order* took effect in August 2006") (emphasis in original). Indeed, even under the legacy *Computer Inquiry* framework, the Commission regulated only a discrete point-to-point service between the end user and an ISP's point of presence. Title II reclassification would have a far broader reach, requiring common-carrier regulation of the complete broadband Internet access service. There is no precedent for that approach under any reading (or misreading) of the regulatory history.

[163] *Brand X*, 545 U.S. at 991.

[164] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009) (emphasis added); *see also id.* at 537 (Kennedy, J., concurring in part and concurring in the judgment) (an "agency cannot simply disregard contrary or inconvenient factual determinations that it made in the past").

security screening, spam protection, pop-up blockers, parental controls, email with virtually unlimited storage, instant messaging with enhanced voice communication, a streaming music service, access to programing content, on-the-go access to the entire national AT&T Wi-Fi Hot Spot network, and the att.net Toolbar for quick access back to a customer's homepage, email, search, games, videos, music, and AT&T support tools.[168] AT&T's marketing materials illustrate that Internet access service is perceived and offered as far more than a pure "connectivity" service.[169] If anything, the data-processing functions of broadband Internet access service that the Commission found relevant in the *Cable Modem Order* have become more complex and more essential to the overall offering than they were in 2002.[170] All of AT&T's offerings involve investment, ongoing expense, and customer support requirements—yet, notably, they are provided to AT&T customers at *no extra charge*.[171] This is because consumers view these as core components of their broadband service offering. And the same is true for other broadband Internet access providers. The market compels them to supply similar applications and capabilities, and the resulting offer is an integrated whole that responds to this consumer demand.[172]

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168 *See AT&T High Speed Internet Access*, http://www.att.com/shop/internet.html (last visited June 23, 2014); *AT&T U-Verse High Speed Internet Access*, http://www.att.com/shop/internet/u-verse-internet.html (last visited June 23, 2014).

169 *See, e.g.*, *id.*; AT&T, *Mobile Broadband, Wi-Fi & High Speed Internet Services*, http://about.att.com/mediakit/broadband (last visited June 23, 2014).

170 *See id.*; AT&T Title II Opening Comments at 74-78.

171 *See AT&T High Speed Internet Access*, http://www.att.com/shop/internet.html (last visited June 23, 2014); *AT&T U-Verse High Speed Internet Access*, http://www.att.com/shop/internet/u-verse-internet.html (last visited June 23, 2014).

172 *See, e.g.*, Verizon, *High Speed Internet Service*, http://www.verizon.com/home/highspeedinternet/ (last visited June 23, 2014); *High Speed Internet Service by XFINITY Internet from Comcast*, http://www.comcast.com/internet-service.html (last visited June 23, 2014).

- "We also seek comment on the nature and the extent of the Commission's authority to adopt open Internet rules relying on Title II . . . ." *Id.* ¶ 142.

By framing its request for comments on Title II reclassification in this way, the Commission is improperly focused on outcomes—its goals of "protecting and promoting Internet openness"—instead of adhering to the plain language of Title II and the actual nature of how end users perceive broadband Internet access service. As demonstrated above, both the law and the facts make clear that broadband Internet access is appropriately classified as a Title I information service. Reclassification thus would be susceptible to legal challenge as nothing more than a transparently outcome-based maneuver lacking both factual and legal foundation.

### B. Regulating ISPs Under Title II Would Stifle Broadband Investment, Stall the "Virtuous Circle" of Innovation, and Countermand Congress's Broadband Objectives As Set Forth in Section 706.

As the Commission recognized in the National Broadband Plan, "the American broadband ecosystem has evolved rapidly" over the past decade, and this evolution has been "[f]ueled primarily by private sector investment and innovation."[173] Broadband Internet access providers are continuing to invest tens of billions of dollars each year into broadband services, creating thousands of new jobs.[174] But achieving the next phase of broadband deployment envisioned by the National Broadband Plan will require far more investment—according to the Commission's own estimates, hundreds of billions more.[175] And such sums will not be sunk into

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173 *National Broadband Plan* at XI.

174 *See* USTelecom, *Historical Broadband Provider Capex*, http://www.ustelecom.org/broadband-industry-stats/investment/historical-broadband-provider-capex (last visited June 20, 2014) (noting that annual broadband capital expenditures have increased from $64 billion in 2009 to $68 billion in 2012).

175 Staff Presentation, *September Commission Meeting*, at 45 (Sept. 29, 2009), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-293742A1.pdf ("September 2009 Staff Presentation").

wired and wireless broadband networks" that is "[t]he lifeblood of [the] app economy"; and would discourage "incumbent phone companies to invest increasing amounts in broadband and IP."[180] Other observers have expressed similar concerns, noting that reclassification would create tremendous uncertainty in a fast-evolving marketplace, inhibiting future investment by broadband Internet access providers and those from whom they raise capital. *See also* AT&T Title II Opening Comments at 2-5, 39-44 (detailing such comments from analysts, investors, legislators, and companies).[181]

When reclassification was considered in 2010, Congress expressed similar concerns, and emphatically so. More than half of the combined members of the House and Senate urged the Commission to reject any Title II reclassification. As the 74 Democratic Members signing one House letter explained, reclassification would "create regulatory uncertainty" and thus "distract[] from what should be our Nation's foremost communications priority," ubiquitous broadband deployment; and, perhaps most important, would "jeopardize jobs and deter needed investment for years to come."[182] They further admonished that reclassification is "not something that should be taken lightly and should not be done without additional direction from Congress. *We urge you not to move forward with a proposal that undermines critically important investment in broadband and the jobs that come with it.*"[183]

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180 Anna-Maria Kovacs, *The Internet is Not a Rotary Phone*, Re/Code (May 12, 2014), http://recode.net/2014/05/12/the-internet-is-not-a-rotary-phone/.

181 As AT&T has explained in prior comments, Title II regulation also would unreasonably interfere with ISPs' investment-backed expectations. *See* AT&T Title II Opening Comments at 109-12.

182 *See* Letter from Representative Gene Taylor, Representative Gene Green, et al., to Julius Genachowski, Chairman, FCC (May 24, 2010), *available at* http://netcompetition.org/House_Democrat_Letter.pdf.

183 *Id.* at 1-2 (emphasis added).

particular Title II requirements, and, given the subjective nature of Title II standards, how the various provisions from which the Commission does *not* forbear would apply in this novel context.[186] As Commissioner Pai has inquired, "Why should we apply anti-consumer rules like tariffing to the broadband world? How would the Part 36 separations process apply to apportion the various components of the network between the several states and the FCC for regulatory purposes?"[187] Debating these and the multitude of other questions that reclassification would engender would foster uncertainty and divert time and resources away from deploying broadband networks and developing service innovations.

### C. Reclassification of Broadband Internet Access Service Also Would Have Far-Reaching and Unintended Disastrous Consequences for the Rest of the Internet Ecosystem.

Although Title II proponents suggest that reclassification would affect only broadband Internet access providers, the consequences would not be so narrowly cabined. Rather, reclassification would have a significant impact on edge providers, backbone providers, CDNs, providers of Internet-enabled devices, and many others throughout the Internet ecosystem.

#### 1. Any Interpretation of the Communications Act That Permits Reclassification of Broadband Internet Access Services Would Compel Reclassification of Many Other Services As Well.

There is no dispute that broadband Internet access providers are an essential element of the "virtuous circle" of investment and innovation lauded by the Commission. As the D.C. Circuit noted in *Verizon*, "[t]he Commission's emphasis on this connection between edge-provider innovation and infrastructure development is uncontroversial."[188] By deterring

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186 *See* Sections III.C and III.D, *infra* (discussing the effects of reclassification on the Internet ecosystem and forbearance, respectively).

187 Pai Remarks at 2.

188 *Verizon*, 740 F.3d at 644.

the distinction between information services and telecommunications services, so that some information services were classed as telecommunications services, *it would be difficult to devise a sustainable rationale under which all, or essentially all, information services did not fall into the telecommunications service category.*"[190]

Indeed, as discussed below, the latter category would extend to ISPs such as Earthlink and AOL that do not own last-mile transmission facilities; to CDNs such as Akamai; to Internet backbone providers like Level 3; to providers of broadband-enabled devices such as Amazon.com and Garmin; to Internet search engines and online advertising companies such as Google; to online video services like Netflix; and to cloud-computing services like Amazon.com's EC2. In short, Title II reclassification would be a sledgehammer, not a scalpel.[191]

***Non-facilities-based ISPs.*** The Commission has previously suggested that Internet service providers that do not own last-mile transmission facilities, such as AOL and Earthlink, would not be subject to reclassification. For the reasons discussed below, it is irrelevant to the classification decision whether these entities own facilities.[192] In any event, many of these ISPs do own network facilities that are indispensable to their provision of Internet access, including fiber-optic links connecting their local access equipment to cache servers and Internet backbone

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190 *Stevens Report*, 13 FCC Rcd at 11529 ¶ 57 (emphasis added).

191 Even some Title II proponents recognize the logical consequences for the rest of the Internet ecosystem. *See* Letter from Matthew Friendly, Data Foundry, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (filed June 11, 2010), Attach. at 3 (arguing that, to be effective, reclassification "would sweep in a far larger class of regulated entities" and would "subject[] to potential regulation . . . the non facilities based information service providers that previously were not subject to regulation under Title II").

192 *See* Section III.C.2, *infra.*

Public Knowledge's Harold Feld, for example, has noted that Akamai is "moving information from one place to another" and is "offering telecom" when it provides CDN services.[196]

***Internet backbone providers.*** Internet transport companies like Level 3, Savvis, Cogent, and Limelight offer backbone Internet access and content-delivery services to thousands of large and small businesses and edge providers using facilities they either own or lease. Therefore, just like CDNs, they transmit "information of the user's choosing" over the Internet for a fee to a class of thousands of business customers "as to be effectively available directly to the public."[197] Under reclassification, all of these historically unregulated peering and transit arrangements would be subject to common-carrier regulation designed for the legacy telephone network.

***Broadband-enabled devices.*** Providers of devices with integrated broadband Internet access functionality, such as e-readers and GPS devices, also would fall within the scope of Title II. For example, Amazon.com's Kindle provides Internet access through integrated 3G connectivity and web-browsing functionality.[198] Amazon thus assumes responsibility for "transmission of information of the user's choosing" through the Internet "for a fee directly to

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*Investigation of Special Access Tariffs of Local Exchange Carriers*, 8 FCC Rcd 4712, 4712 ¶ 2 (1993)); Third Report and Order, *MTS and WATS Market Structure, Phase I*, 93 FCC 2d 241, 249-50 ¶¶ 20-23 (1983); Notice of Inquiry and Proposed Rulemaking, *American Telephone & Telegraph Company; Private Line Rate Structure and Volume Discount Practices*, 74 FCC 2d 226 (1979) (investigating whether the pricing of AT&T's competitive private line services was consistent with 47 U.S.C. § 202, which prohibits unjust discrimination by common carriers).

196 Harold Feld, *Want to Play FCC Fantasy Baseball? Follow the Title II Debate*, Wetmachine.com, May 16, 2010, http://tales-of-the-sausage-factory.wetmachine.com/content/want-to-play-fcc-fantasy-baseball-follow-the-title-ii-debate ("Akamai is moving information from one place to another. That's plainly 'telecommunications.'").

197 47 U.S.C. § 153(53).

198 *See* Joanna Stern, *Among E-Readers, Competition Heats Up – Comparing the iPad, Kindle, Nook and Alex E-Readers*, N.Y. Times, June 9, 2010, http://www.nytimes.com/2010/06/10/technology/personaltech/10TAB.html (also mentioning other e-readers that function as multipurpose devices providing access to the Web and other applications).

"of the user's choosing" to and from cloud computing server farms "for a fee directly to the public." Thus, these services too could not escape classification as "telecommunications services."

All of the entities described above—as well as others that transmit data over the Internet, such as email providers or social networks that enable messaging or chat sessions—would be "telecommunications carriers" providing "telecommunications services" if the Commission were to reclassify broadband Internet access service. Once the Commission conceptualizes a line dividing a pure transmission function from information-processing capabilities, there is no principled way to cabin the reach of Title II to just one segment of the Internet and not others. Every entity that provides an over-the-top communications capability, whether voice, text, or video, would be either a facilities-based provider, or a reseller, of a telecommunications service.

### 2. Title II Reclassification Cannot Be Confined to Owners of Last-Mile Transmission Facilities.

Title II proponents may argue that, even though these entities provide transmission services, they should not be regulated as "telecommunications carriers" because they do not own the facilities over which those transmissions are made. This proposed limiting principle to Title II reclassification is both factually and legally wrong. First, many of the entities described above *do* own transmission facilities, including last-mile facilities that they use to deliver services to edge providers. For example, Google owns the multi-billion-dollar content-delivery network that it uses to transmit not just its own services, but also (among other things) paid advertisements from its many business customers to end users around the globe. Furthermore,

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[202] Amazon, *Amazon Cloud Drive: Web*, http://www.amazon.com/gp/feature.html?docId=1000796781 (last visited July 11, 2014) (for consumers).

Internet—and, specifically, would automatically "subject to common-carrier regulation non-facilities-based ISPs that *own no transmission facilities*."[206]

Examples beyond the broadband context drive this point home. Calling-card providers and other resellers of long-distance services are "telecommunications carriers" subject to Title II even though they (i) may not own or even lease facilities and (ii) provide no "local" connectivity.[207] Similarly, standalone long-distance companies (like the legacy AT&T Corp., MCI, and Sprint) are also Title II providers when they sell interexchange services, even though they rely on local exchange carriers to bridge the last few miles between their long-haul networks and their subscribers.

In short, any distinction between facilities-based and non-facilities-based providers for purposes of Title II classification would be indefensible. At the very least, attempts to insulate from Title II regulation non-facilities-based providers or those that do not provide the last-mile connection to end users would result in pitched regulatory battles and protracted litigation that could last a decade. Until resolved, these disputes would throw a cloud of uncertainty over the Internet that could throttle investment throughout the Internet ecosystem.

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206 *Id.* at 994 (emphasis added).

207 *See, e.g.*, Declaratory Ruling and Report and Order, *Regulation of Prepaid Calling Card Services*, 21 FCC Rcd 7290, 7293-94, 7312 ¶¶ 10, 65 (2006) ("all prepaid calling card providers" "are subject to regulation as telecommunications carriers"), *vacated in part on other grounds by Qwest Servs. Corp. v. FCC*, 509 F.3d 531 (D.C. Cir. 2007); Order to Show Cause and Notice of Opportunity for Hearing, *Nos Communications, Inc., Affinity Network Incorporated and Nosva Limited Partnership*, 18 FCC Rcd 6952, 6953-54 ¶ 3 (2003) (switchless long-distance reseller is subject to regulation under Title II); Report and Order, *Regulatory Policies Concerning Resale and Shared Use of Common Carrier Services and Facilities*, 60 FCC 2d 261, 265 ¶ 8 (1976) ("[A]n entity engaged in the resale of communications service is a common carrier, and is fully subject to the provisions of Title II."), *aff'd sub nom*, *AT&T v. FCC*, 572 F.2d 17 (2d Cir. 1978); *see also Trans Nat'l Commc'ns, Inc. v. Overlooked Opinions, Inc.*, 877 F. Supp. 35, 38 (D. Mass. 1994) (discussing 1976 order).

Moreover, the Commission's 2010 "Third Way" proposal, which included some level of forbearance, did not provide for forbearance from sections 201 and 202 of the Communications Act.[211] And some passages in the *NPRM* suggest that this Commission might take the same approach.[212] But those statutory provisions are vague, broad, and entirely untested in the broadband context. There is simply no telling how this or later Commissions would apply those sections in the context of the Internet, and thus no way of predicting what conduct would be prohibited. ISPs would thus have to assess litigation risk whenever, among other things, they engage in new anti-piracy measures, network-management techniques, or commercial arrangements with any content provider or other "person, class of persons, or locality."[213] And the same would be true of the other entities that necessarily would be swept within Title II by the Commission's reclassification decision.[214] All of this would work to the detriment of investment, which is crucial to innovation and the achievement of Congress' and the Commission's broadband objectives.[215]

In the *Stevens Report*, the Commission itself recognized the limits of forbearance. In rejecting claims that forbearance would eliminate the policy harms of Title II classification, the Commission explained:

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211 Austin Schlick, FCC, *A Third-Way Legal Framework for Addressing the Comcast Dilemma* at 4, 8 (May 6, 2010), *available at* http://www.fcc.gov/document/statement-fcc-general-counsel-austin-schlick-third-way-legal-framework-addressing-comcast-d.

212 *See, e.g.*, *NPRM* ¶ 121 ("If the Commission ultimately adopts a Title II approach, how should the Commission define the [nondiscrimination] rule in light of the requirements under sections 201 and 202 of the Act?"); *id.* ¶ 154 (mentioning sections 201, 202, 208, 222, 254, and 255).

213 47 U.S.C. § 202(a).

214 *See* Section III.C.1, *supra.*

215 *See* AT&T May 9 Letter at 5; AT&T Title II Opening Comments at 115-16.

reversed by a reviewing court, broadband Internet access providers and any others swept into Title II would be forced to bear the full brunt of monopoly-era, common-carrier regulations, with devastating results for the entire Internet ecosystem.

Furthermore, forbearance may be even more difficult to accomplish as a practical matter than as a legal matter. Under recent Commission precedents, there are obstacles to a grant of forbearance on a nationwide basis, or even with respect to "broadband Internet access service" in general.[218] In the *Qwest Phoenix Order*, for example, the Commission set a high bar for forbearance and imposed a number of procedural hurdles that could impede an efficient decision here.[219] While AT&T believes that order was wrongly decided, it might nonetheless require the Commission to undertake a highly fact-specific and granular inquiry that demonstrates market-by-market and product-by-product that the exacting forbearance standard has been met.[220] If so, forbearance would be an incredibly arduous task for both the Commission and the private sector. These forbearance proceedings could take years to conclude, all the while creating more uncertainty and increasing transaction costs.

And the initial forbearance determination would be far from the end of the matter. Any decision to forebear likely would spark protracted litigation from those who believe that broadband should be regulated just like twentieth-century common carriers. There also would be no assurance that later Commissions would adhere to the forbearance decisions made by this

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218 Memorandum Opinion and Order, *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, 25 FCC Rcd 8622, 8645-48 ¶¶ 41-45 (2010).

219 *Id.*

220 *See* Pai Remarks at 2 ("In the *Qwest-Phoenix Order*, the Commission dramatically raised the bar for regulatory relief. It essentially presumed that relief should be denied. And it imposed onerous (perhaps impossible) evidentiary burdens on petitioners to prove otherwise in each particular geographic area where they request relief.").

### E. Title II Regulation Would Embolden Other Countries to Impose Even More Intrusive and Burdensome Regulations on Broadband Internet Access Providers.

Finally, Title II reclassification would seriously undermine efforts by the U.S. government to promote international Internet policy objectives. As Administration officials have explained, the "overriding goal in the Obama Administration is to the preserve an open, interconnected global Internet that supports continued innovation, economic growth and the free flow of information."[225] Title II reclassification could imperil that objective.

Specifically, a decision by the Commission to regulate broadband Internet access providers as Title II common carriers would provide a justification (and, indeed, a blueprint) for other foreign governments to regulate those providers under monopoly-era, public-utility-model regulation—or worse. Indeed, some members of the Administration have expressed concern that the Commission's efforts to regulate broadband Internet access service under Title II could provide a green light for other governments to impose regulations that might go beyond common-carrier regulation to include such things as surcharges or content controls (including censorship of content).[226]

For example, some nations connected with the World Conference on International Telecommunications ("WCIT")—a conference convened by the International

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[225] Keynote Speech by Lawrence E. Strickling, Assistant Secretary of Commerce for Communications and Information (June 15, 2012), http://www.ntia.doc.gov/speechtestimony/2012/keynote-speech-lawrence-e-strickling-assistant-secretary-commerce-communication.

[226] *See* John Eggerton, *FCC's Net Neutrality Proceeding Means More Work for State Department*, Broadcasting and Cable (March 17, 2010), http://www.broadcastingcable.com/news/washington/fccs-net-neutrality-proceeding-means-more-work-state-department/57276 (discussing speech by Ambassador Philip Verveer, Assistant Secretary of State and U.S. Coordinator for International Communications and Information Policy).

international Internet regulation" proposed by some at the WCIT would threaten the United States' goal of "a virtuous cycle of innovation and investment" for the global Internet.[230]

A Title II reclassification decision would undercut the credibility of the United States' opposition to Internet regulation and would provide momentum for this type of intrusive regulation of broadband Internet access providers' international commercial arrangements. As Ambassador David Gross has put it:

> We can continue to lead the world toward greater prosperity and the socially transformational benefits long associated with the internet. But if we fail to match our words with action; if we insist that others avoid an approach that imposes regulations and laws that limit the internet's capacity to advance freedom, openness and creativity, micromanages markets, or limits competition and investment, but do otherwise at home, then the world will quickly recognize our hypocrisy.[231]

None of these concerns, of course, could be remedied through forbearance. That is because a decision by the Commission to forbear from more burdensome common-carrier regulations may be one that other countries would not or could not follow. As the Commission explained in the *Stevens Report*, while the Commission "has authority to forbear from unnecessary regulation, foreign regulators may not have comparable deregulatory authority to avoid imposing the full range of telecommunications regulation on information services."[232] A decision by the United States to pursue Internet openness at home through Title II regulation could thus have the paradoxical effect of crippling the growth and openness of the Internet

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230 Statement from FCC Chairman Julius Genachowski on U.S. Actions at the Word Conference of International Telecommunications (WCIT) (Dec. 14, 2012), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-317950A1.pdf.

231 *See* Ambassador David A. Gross, *Walking the Talk: The Role of U.S. Leadership in the Wake of WCIT*, Bloomberg BNA (Jan. 17, 2013), http://www.bna.com/walking-the-talk-the-role-of-u-s-leadership-in-the-wake-of-wcit-by-david-a-gross/.

232 13 FCC Rcd at 11525 ¶ 48.

. . ., with a clarification that it does not preclude broadband providers from negotiating individualized . . . arrangements" with edge providers, so long as those arrangements comport with Commission rules (or the broadband provider's election) governing paid prioritization.[234] To the extent that the Commission deems it necessary to clarify the no-blocking rule by establishing a "minimum level of access," the Commission should use the benchmark of a provider's "best efforts" Internet access service—subject to reasonable network management—and it should reject calls to define a "minimum level of access" using a "quantitative" or "reasonable person" standard.[235]

This approach is fully consistent with *Verizon*. Although the D.C. Circuit vacated the 2010 no-blocking rule, it proposed a path forward for the Commission to re-adopt the same rule under a revised rationale. Specifically, the court suggested that the Commission could lawfully promulgate a no-blocking rule if it required that "broadband providers furnish . . . access to their subscribers generally, as opposed to access to their subscribers at the specific minimum speed necessary to satisfy the anti-blocking rules" and permitted sufficient individualized bargaining with edge providers above that minimum level of service.[236] Such a rule, the court stated, "might . . . leave sufficient 'room for individualized bargaining and discrimination in terms' so as not to run afoul of the statutory prohibitions on common carrier treatment."[237] As noted, this would be true even if the Commission prohibits paid prioritization. The *NPRM* is thus correct that the

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reasonable network management; nor shall such person block applications that compete with the provider's voice or video telephony services, subject to reasonable network management.").

234 *NPRM* ¶ 89; *see also NPRM*, App A, Proposed Rule 8.5.

235 *NPRM* ¶¶ 101, 104.

236 *Verizon*, 740 F.3d at 658.

237 *Id.* (quoting *Cellco Partnership*, 700 F.3d at 548).

There is no sensible policy reason for the Commission to adopt such a standard and, indeed, the arguments made by proponents are refuted by the record. *First*, broadband Internet access providers have powerful market incentives not to degrade their standard service offerings and, indeed, to provide customers with the best-quality service possible. There is ample proof of this in today's marketplace. As AT&T has noted, broadband speeds and service quality continue to advance at an impressive pace.[244] For example, as part of its "U-verse with GigaPower" service, AT&T now offers customers what would have been considered fanciful just a few years ago: a state-of-the-art, all fiber-optic network capable of offering download and upload speeds of 300 Mbps, with a planned free upgrade to 1 Gbps in 2014.[245] These phenomenal speeds are not just limited to AT&T: the recently released Measuring Broadband America 2014 Report demonstrates that other ISPs are not only meeting advertised speeds, but surpassing them.[246] Regulatory intervention is simply not necessary to ensure that providers continue to compete fiercely to provide faster, more reliable service.

*Second*, contrary to the claims of some net neutrality advocates, broadband Internet access providers have no incentives to degrade transmission for services that purportedly compete with those providers' own services. For example, services such as text messaging,

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244 *See* pages 8-9 and notes 14-24, *supra*; *see also* Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 20-21 (2010), *available at* http://download.broadband.gov/plan/national-broadband-plan.pdf ("*National Broadband Plan*") ("Both telephone and cable companies continue to upgrade their networks to offer higher speeds and greater capacities."); *id.* at 38-39 ("New choices—at new, higher speeds—are becoming available, as well."); NTIA, *U.S. Broadband Availability June 2010-June 2012*, *available at* http://www.ntia.doc.gov/files/ntia/publications/usbb_avail_report_05102013.pdf (May 2013).

245 AT&T, *Introducing AT&T U-verse with GigaPower*, http://www.att.com/shop/u-verse/gigapower.html#fbid=EIAlRpw4KjV.

246 *See* Measuring Broadband America, *2014 Measuring Broadband America Fixed Broadband Report*, at 11 (2014) ("Many ISPs now closely meet or exceed the speeds they advertise, but there continues to be room for improvement.").

Commission would need to revisit and update a minimum level of service frequently.[247] And given the light-speed pace of innovation in the marketplace as well as differences among providers, it would be difficult, if not impossible, for the Commission to keep up with industry changes.[248] Setting such prescriptive standards, moreover, would risk regulators effectively picking and choosing network technologies and making engineering decisions with respect to providers' networks. Particularly in the absence of any showing of need, there is no justification for government regulators to assume such an intrusive role in setting the very basic terms of Internet service providers' commercial offerings.

*Second*, a minimum quantitative performance standard could irrationally hold broadband Internet access providers accountable for broadband speed and service-quality issues over which they have no control. As the Commission has rightly acknowledged, network congestion may be the result of factors outside the "control of a consumer's ISP."[249] Similarly, commenters have explained "that sources of congestion that impact end users may originate beyond the broadband provider's network."[250] A minimum quantitative performance standard could arbitrarily and inappropriately place the regulatory costs and burdens of compliance on broadband Internet access providers. Compelled by regulation to respond to congestion or other performance issues

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247 *NPRM* ¶ 103 ("[A] specific technical definition of minimum access could become outdated as available broadband network technologies change and available broadband speeds improve.").

248 *Id.*; *see also* Chairman Wheeler Remarks, American Enterprise Institute (June 12, 2014) ("The pace of innovation on the Internet is much, much faster than the pace of a notice-and-comment rulemaking. . . . We cannot hope to keep up if we adopt a prescriptive regulatory approach."), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0612/DOC-327591A1.txt.

249 Federal Communications Commission, *State of U.S. Broadband Report*, at 5-6 (2014), *available at* http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf.

250 *See NPRM* ¶ 82.

In short, a minimum quantitative performance standard could increase the costs of broadband and inhibit deployment, stalling the virtuous circle that net neutrality rules are intended to promote. At the least, there has been no showing and there is no reason to believe that a "best efforts" standard would not be an effective benchmark for a no-blocking rule. There is thus no justification to use the no-blocking rule to arrogate to regulators unprecedented control over the Internet.[252]

### B. The Commission Should Retain Its Existing Transparency Rule.

The Commission adopted the existing transparency rule in 2010, and that rule was upheld in *Verizon*. There is no credible evidence that this rule has not served its purpose. And there is no sound reason to revise it, at least in circumstances where broadband Internet access providers will not be offering paid prioritization.[253] In these circumstances, the changes proposed in the *NPRM* would do little to promote a deeper understanding of providers' practices, but they would inflict a variety of harms that far outweigh their purported marginal benefit. Among other things, more prescriptive transparency rules would confuse end users, short-circuit ongoing industry standards-setting processes, consume finite resources that could be devoted to

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[252] The *NPRM* calls for comment on an objective, evolving "reasonable person" standard. *NPRM* ¶ 104. This cannot be a serious candidate for regulation. Such a standard would be even more misguided than a minimum quantitative performance standard. There is no "typical end user" with defined expectations against which the Commission could benchmark such a standard. *Id.* Thus, as the Commission recognizes, such a "reasonable person" standard would generate substantial and investment-deterring uncertainty as to what is lawful under the no-blocking rule. *Id.*

[253] And even outside those circumstances, any changes to the transparency rule should be narrowly targeted to remedy the purported harms of paid prioritization, unlike many of the unworkable and unnecessary requirements proposed in the *NPRM*. Instead, the Commission should require broadband Internet access providers offering paid prioritization to disclose the nature of those agreements and their impact on non-prioritized traffic.

that affect broadband performance (broken out separately for wired, mobile, and Wi-Fi services);[259] speed and expected latency disclosures (again, broken out by service type);[260] measures taken to guard against and respond to security threats such as viruses, botnets, and spam; rates and data plan information for wired, mobile, Wi-Fi, and small-business customers; links to usage calculators and other tools; and a variety of other information.[261] The Broadband Information page also provides links to other resources, such as AT&T's Acceptable Use Policy and AT&T's Terms of Service for wired, mobile, and Wi-Fi services.[262] Not only are these disclosures prominently displayed on AT&T's website, but all AT&T customers are alerted to them when they subscribe; the order confirmation and related e-mails direct customers to the Broadband Information page.

These disclosures provide comprehensive information about broadband speeds. AT&T's wireline disclosures detail a variety of service "Speed Tiers," as well as the "Downstream Speed

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257 *Id.* ("AT&T does not favor certain Internet applications by blocking, throttling or modifying particular protocols, protocol ports, or protocol fields in ways not prescribed by the protocol standards. However, in response to a specific security threat against our network or our customers, AT&T may occasionally need to limit the flow of traffic from certain locations or take other appropriate actions.").

258 *Id.* ("AT&T customers may attach 3G- or 4G-capable devices of their choice to our wired, mobile and Wi-Fi broadband Internet access services, so long as the devices do not harm our network or other users.").

259 *Id.*

260 *Id.* ("Though latencies can vary due to several factors, including some beyond AT&T's control, our customers can typically expect the following round-trip latencies when accessing the Internet: Wired Service: approximately 30 to 55 milliseconds[;] Mobile Service: approximately 115 to 270 milliseconds for HSPA, approximately 110 to 170 milliseconds for HSPA+, and approximately 35 to 90 milliseconds for LTE[;] Wi-Fi Service: approximately 50 to 250 milliseconds.").

261 *Id.*

262 *Id.* (providing separate links to the different Terms of Service for each of these products).

broadband data plans.[269] And the Broadband Information page synthesizes this information, providing separate links for consumer wired service, consumer mobile service, small business wired service, small business mobile service, and Wi-Fi.[270] .That page also supplies additional information about early termination fees.[271] In addition, every customer receives a comprehensive "Customer Service Summary" that details all relevant features and conditions of the specific service that the customer has ordered.[272] These materials discuss not just basic rates, but all other fees and potential charges.[273] AT&T also provides clear disclosures regarding its tethering policies and plans.[274] In short, AT&T provides customers with far more effective and tailored disclosures than would be possible under a one-size-fits-all solution mandated by prescriptive rules.

AT&T also provides detailed and timely information to customers about their broadband usage, and it offers tools to help them remain within their data plan allowances.[275] For example, AT&T's Data Calculator allows users to anticipate their data needs and adjust their plans

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269 *See* AT&T, http://www.att.com.

270 *See* AT&T, *Broadband Information*, http://www.att.com/gen/public-affairs?pid=20879#terms-service.

271 *Id.*

272 *See, e.g.*, AT&T, *About your Customer Service Summary*, http://www.att.com/esupport/article.jsp?sid=KB413369&cv=812&_requestid=7840#fbid=i5RyWxPJiPL.

273 *See* AT&T, *Facts About Your Plan*, http://www.att.com/esupport/internet/usage.jsp#fbid=o94IfAeX2n8.

274 *See, e.g.*, AT&T, *Wireless Customer Agreement*, http://www.att.com/shop/en/legalterms.html?toskey=wirelessCustomerAgreement#dataPlusDataProWithTeth ("Wireless Customer Agreement") (stating that "a data plan designated for use with a basic phone or a Smartphone may not be used with a LaptopConnect card, tablet, or stand-alone Mobile Hotspot device, by tethering devices together" but that "[a] data tethering plan, . . . may be purchased for an additional fee to enable tethering on a compatible device").

275 *NPRM* ¶ 73.

"include, but are not limited to, the following: (i) a cap on data usage; (ii) a modification of a customer's serving facility or service technology; and/or (iii) a modification of or a limitation on a customer's data throughput speed or data consumption."[280] If network management is needed, AT&T notifies customers that it will "describe[] the network management practice, explain[] how it will work, and explain[] how it could impact" the customer's service.[281]

Finally, AT&T makes available ample information to edge providers, device manufactures, and other entities. For example, on its Broadband Information page, AT&T provides links for device manufacturers and application developers to obtain information about the wide range of tools and resources AT&T has made available to help them design, test, and market their applications or devices for use on AT&T's mobile network.[282] AT&T also teams with edge providers to bring new applications and services to customers through its Foundry innovation centers.[283] Developers who work at AT&T Foundry facilities, now at five locations worldwide, gain unique access to AT&T network capabilities and test beds, as well as advice from AT&T technology experts and project coaches.[284] In a related initiative, the AT&T Developer Program allows developers to access AT&T's Application Program Interfaces ("APIs") to develop and test new products.[285] The Program also provides developers with access to the AT&T Application Resource Optimizer tool, which allows mobile app developers to

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280 *Id.*

281 *Id.*

282 AT&T, *Broadband Information,* http://www.att.com/gen/public-affairs?pid=20879.

283 *See* AT&T, *Experience the AT&T Foundry*, http://www.att.com/gen/press-room?pid=2949.

284 *See* John Donovan, *Powering up the AT&T Foundry to Power Up Innovation*, Feb. 3, 2011, http://www.attinnovationspace.com/innovation/story/a7704304.

285 *See* AT&T, *AT&T Developer Program*, http://developer.att.com/developer/forward.jsp?passedItemId=100006.

or device contributed to which part of the total data usage."[290] AT&T already provides device-specific (and thus user-specific) usage information for mobile customers. However, for customers of fixed broadband Internet access services, different users and devices within a single household are not authenticated separately when they use the local network. Consequently, it would be infeasible for AT&T or any other ISP to provide device-specific or user-specific information about such data usage.

Requiring ISPs to provide usage information on an application-specific basis[291] would be impractical and raise other concerns. Broadband Internet access providers generally cannot identify which applications are responsible for usage without conducting Deep Packet Inspection ("DPI"). And requiring providers to conduct DPI for *all* traffic on their networks would surely prompt concerns from privacy and net neutrality advocates alike. Moreover, the increasing use of encryption and proxy servers would complicate efforts by providers to gather or disclose more granular usage information.

***Congestion.*** For each of its broadband Internet access services, AT&T clearly discloses that advertised speeds are not guaranteed, but rather subject to conditions present on, and beyond, the network. As the Commission recognizes, the "sources of congestion that impact end users may originate beyond the broadband provider's network,"[292] and thus are outside the provider's control. AT&T already discloses what information it can to consumers concerning "the sources of congestion that might impair the performance of edge-provider services"[293]—

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290 *See NPRM* ¶ 73.

291 *Id.* (asking whether the Commission should "require disclosures that permit end users to identify application-specific usage").

292 *Id.* ¶ 82.

293 *Id.* ¶ 81.

Second, requiring more technical disclosures would not yield meaningful benefits to edge providers or device manufacturers, because there is no single industry-accepted meaning or method of measurement for broadband metrics like corruption and jitter. Indeed, the only thing that the industry appears to agree on is that these measurements are meaningless unless they are provided separately for *each* different type of traffic (e.g., video, voice, email, web pages, etc.). Thus, requiring ISPs to disclose additional technical information would not facilitate apples-to-apples comparisons and would merely create disputes about how to accurately report such data.

Instead, the Commission should await the work of industry standards-setting bodies, which have begun taking steps to define the relevant terms and reach consensus on how to measure them. Although the issues are complex and substantive work is just beginning, many of the transparency questions that the Commission raises in the *NPRM* touch on issues being studied in various industry forums. For example, the Internet Engineering Task Force (IETF) has been working on sampling methods and metrics for measuring network performance.[299] Additionally, the MEF, which works in the Ethernet technology space,[300] has published specifications explaining some other performance parameters, such as Frame Delay and Inter-Frame Delay, among others.[301] Progress also is being made in the IETF and the Broadband Forum on large-scale measurement as part of a coordinated industry effort to define a framework for standardized configuration, management, and reporting of measurements.[302] These industry

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299 IETF Network Working Group, *Network Performance Measurement with Periodic Streams*, RFC 3432 (Nov. 2002), *available at* http://www.rfc-base.org/txt/rfc-3432.txt.

300 *See* MEF, *About the MEF*, http://www.metroethernetforum.org/about-us/mef-overview.

301 *See* MEF, *Technical Specification MEF 10.2.1*, Jan. 25, 2011, *available at* http://www.metroethernetforum.org/Assets/Technical_Specifications/PDF/MEF_10.2.1.pdf.

302 *See, e.g.*, http://tools.ietf.org/html/draft-ietf-lmap-framework; http://tools.ietf.org/html/draft-ietf-ippm-lmap-path; http://tools.ietf.org/html/draft-ietf-lmap-

disclosures would give other providers an opportunity to respond to service and network innovations before they can be rolled out. And this, in turn, would blunt providers' incentive to develop and deploy such innovations in the first place.

In short, enhanced transparency rules not only are unnecessary, but also would be counterproductive. Rather than adopting additional onerous obligations, the Commission should focus on enforcing its existing rule.[305]

### C. Only Minimal Changes to the Commission's Nondiscrimination Rule Are Necessary.

Finally, the Commission need make only minimal changes to the nondiscrimination rule proposed in the *NPRM*. If paid prioritization is forbidden (or Internet service providers agree not to engage in it), that would directly address the main discrimination concern. There could be no justification for adopting any of the more intrusive nondiscrimination obligations contemplated in the *NPRM*, all of which seem designed to counter the feared consequences of paid prioritization.[306] Instead, AT&T submits that the best approach would be for the Commission (i) to establish a "commercially reasonable" standard to evaluate whether other forms of differentiation arrangements (if challenged) are consistent with preserving an open Internet, and

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[305] In the enforcement context, the Commission should not permit anonymous reporting of complaints. *See NPRM* ¶ 87. Anonymous reporting would make it impossible for ISPs to adequately investigate claims and to address issues directly with complainants if problems are identified. The *NPRM* indicates that anonymous reporting might prevent retaliation by ISPs against complainants. *Id.* But there is no evidence that *any* ISP has *ever* retaliated against a customer for making a complaint regarding transparency.

[306] *See, e.g.*, *NPRM* ¶ 119 (seeking comment on whether there are "alternative legal standards" to a commercial reasonableness standard in "analogous contexts or otherwise" that the Commission should consider); *id.* ¶ 121 (seeking comment on whether the Commission should "adopt a rule that prohibits unreasonable discrimination"); *id.* ¶ 126 (seeking comment on whether the Commission should "adopt a rebuttable presumption that a broadband provider's exclusive . . . arrangement prioritizing service to an affiliate would be commercially unreasonable"); *id.* ¶ 133 (seeking comment on whether the Commission should impose a good-faith negotiation requirement similar to retransmission consent).

access providers enter into with unaffiliated providers of Internet content, applications, or services should be deemed or presumed commercially reasonable. Such an approach makes good policy sense: in situations in which a provider is neither favoring its own content, applications, or services nor providing a service on an exclusive basis, it is difficult to conceive of how there could be a threat to Internet openness that could undermine the goals of section 706.[308]

Regardless of the specific approach that the Commission takes, however, there is one essential change that the Commission should make to its proposed nondiscrimination rule. Consistent with the 2010 rule, the Commission should make explicit that the proposed nondiscrimination rule applies to the "transmi[ssion] [of] lawful network traffic over a consumer's broadband Internet access service."[309] The rule proposed in the *NPRM* sweeps more broadly, but it could easily be narrowed by adding similar language at the end of the rule's first sentence, namely: "in the transmission of traffic over a consumer's broadband Internet access service."[310] Without such an express statement, the Commission could create needless confusion

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308 *See* AT&T Remand Comments at 12.

309 *See* 47 C.F.R. § 8.7 (prohibiting fixed broadband providers from "unreasonably discriminat[ing] in transmitting lawful network traffic over a consumer's broadband Internet access service"); *see also Open Internet Order*, 25 FCC Rcd at 17933 ¶ 47 n.150 ("We also note that our rules apply only as far as the limits of a broadband provider's control over the transmission of data to or from its broadband customers.").

310 *Compare* Proposed Rule 8.8 ("A person engaged in the provision of fixed broadband Internet access service, insofar as such person is so engaged, shall not engage in commercially unreasonable practices. Reasonable network management shall not constitute a commercially unreasonable practice.").

## CONCLUSION

The Commission should embrace the opportunity presented by the D.C. Circuit's remand in *Verizon* by adopting the policies outlined above.

Respectfully submitted,

*/s/ Gary L. Phillips*

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Seeking Alpha

# AT&T's (T) CEO Randall Stephenson on Q4 2015 Results - Earnings Call Transcript

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AT&T, Inc. (NYSE:T)

Q4 2015 Earnings Conference Call

January 26, 2016 4:30 pm ET

**Executives**

Michael Viola - IR

Randall L. Stephenson - Chairman and CEO

John J. Stephens - Senior EVP and CFO

**Analysts**

Michael McCormack - Jefferies

Philip Cusick - J.P. Morgan

Amir Rozwadowski - Barclays

Brett Feldman - Goldman Sachs

David Barden - Bank of America Merrill Lynch

James Ratcliffe - Buckingham Research Group

Simon Flannery - Morgan Stanley

Frank Louthan - Raymond James

Michael Rollins - Citi

Timothy Horan - Oppenheimer

**Operator**

Ladies and gentlemen, thank you for standing by and welcome to the AT&T Fourth Quarter Earnings Conference Call. At this time, all participants are in a listen-only mode. Later we will conduct a question-and-answer session and instructions will be given at that time. [Operator Instructions]

Now at this time, I would like to turn the conference call over to your host, Senior Vice President of Investor Relations, Mr. Mike Viola. Please go ahead.

**Michael Viola**

But to compete in today's market, the solutions do have to be global solutions because at the end of the day our customers are global, and that global focus is why we're the leader in serving multinational businesses. In fact, we connect 3.5 million businesses that include nearly all the Fortune 1000, and we do it in almost 200 countries and territories. We've extended our wireless network into Mexico now, and as you're going to see in a few minutes our growth in Mexico is exceeding all of our expectations.

And also in 2015, we built on our global leadership position in the Internet of Things and our IoT solutions are not U.S. solutions, they are global solutions. We invested very early in this space and it is paying off. We now have over 26 million devices connected to our network. We're also a leader in Connected Cars. We added a million of them in the fourth quarter and recently we completed a deal with Ford that we believe is going to connect at least 10 million cars over the next five years.

And finally, we're investing aggressively in the network architecture that is going to give us a competitive advantage in cost. We're driving the industry to software defined networks, and I have seen few opportunities over my career to drive down the cost to deliver service like this. We're also on track to deliver at least $2.5 billion in annual DIRECTV synergies by 2018, and we continue to invest in spectrum. We began last year by investing $18 billion in the auction to significantly deepen our spectrum footprint, and as a result we now have 40 MHz of fallow spectrum to deploy over the next few years to support TV Everywhere.

But just as important is the impact that such a deep spectrum footprint will have on our cost to build and operate our networks. So as we look out over the next few years, we're convinced the software and defined networks combined with the DIRECTV synergies and our deep spectrum position are going to give us an industry-leading cost structure, and our objective is really straight-forward, we want to move the most traffic at the lowest cost per bit.

Today, we think we're a company with no obvious peer. We have a nationwide TV and wireless footprint. Our IP broadband footprint reaches nearly 60 million customer locations. We have end to end capabilities in enterprise, world-class distribution, and a globally respected brand, and while all these transformative moves were taking place, we executed pretty well in 2015.

If you look at Slide 5, as you see, adjusted EPS growth was solid, our cash flows were way up, margins continued to expand, and consolidated revenue growth was on track. We ended 2015 with 137 million mobility subscribers, 45 million video subscribers, 13 million IP broadband customers, and an LTE network that's covering 355 million people, and we're seeing nice growth across all of our key product categories. In the fourth quarter, we had really solid net adds at wireless, satellite, video, and IP broadband.

So to wrap it up, strategy is working. We have the critical capabilities we need to execute the strategy, and I'm going to hand it over to John now, and then I'll come back later to give a full year outlook for what we see in 2016. So with that, John?

**John J. Stephens**

Thanks, Randall, and hello everyone. It's great to have you on the call. Let's start by taking a look at the quarter and our financial summary on Slide 6. We finished the year strong. We had double-digit growth in consolidated revenues, adjusted earnings, and free cash flow. At the same time, we continued to see margin expansion in every segment of our domestic business.

In the fourth quarter, reported EPS was $0.65 and adjusted EPS was $0.63. That's up more than 12% over last year's fourth quarter. This includes adjustments for merger and integration related costs and the annual mark to market of our benefit plans. This strong growth comes even with earnings pressure from our Mexico wireless operations and some deferral of recognition of video revenue.

Consolidated revenues grew to $42.1 billion. That's up more than 22% year-over-year, mostly due to our acquisition of DIRECTV. That growth comes even with lower equipment sales as customers chose to hold on to their smartphones for a longer period of time.

During the quarter, the Company aligned DIRECTV's revenue recognition for new customer promotional offers to AT&T's practices. The Company will now recognize revenues from customers reflecting the amounts billed over time. Recognition of expenses will not change. The fourth quarter impact of this change resulted in lower booked revenues by about $300 million, and it had a corresponding impact on income, margin, and a $0.03 impact on EPS as well.

Cash flows continue to be a great story. Free cash flow was more than $3 billion in the quarter and nearly $16 billion for the full year. That brought our free cash flow dividend coverage to about 64% for the year.

Cricket has energized the prepaid space for us. We added more prepaid subscribers than any other carrier in 2015. In fact, we added more subscribers than the rest of the industry combined, and Cricket churn is coming in at industry leading levels. This helped drive an increase of 213,000 branded phone subscribers in the quarter. Compare that with our postpaid pressure of about 250,000 phones, the vast majority of which were higher churning feature phones with average ARPUs at about $35. All the while three quarters of our Cricket gross adds in the fourth quarter were on rate plans that were $50 or higher. This points the overall strength of our business and our ability to operate an efficient smart business in the competitive mature market.

We also continued to grow our high-value smartphone base, adding about 1 million branded smartphone subs during the quarter. At the same time, we had another strong churn quarter. Total churn was down year-over-year once again, thanks to our great networks, our quality offers and our top-notch customer service. Postpaid churn came in at 1.18% for the quarter, an improvement from the year ago quarter, and full-year postpaid churn was 1.09%, one of our best years ever. That's an impressive performance at a time when we focus on higher value subscribers in a heavily competitive market.

And I need to add a point about the Cricket churn. We have seen improving churns throughout the year even as we shut down the legacy CDMA network and move subscribers to our 4G LTE network. Fourth quarter Cricket churn was the best yet, coming in at 3.8% or 170 point improvement over last year's fourth quarter and about half when you look at the comparable weak fourth quarter from two years ago. Cricket has become a powerful part of our wireless story and we are very pleased at how it's performing and we expect it to do even more in 2016.

Wireless margins and ARPU are on Slide 10. Our relentless efforts to drive efficiency and move our smartphone customer base to the no subsidy model once again drove record wireless EBITDA margins. You can see this clearly in our operating expenses. Equipment revenues were down more than $700 million, mostly due to lower upgrade volumes. Total cash operating costs were down 1.8 million, thanks to our sharp focus on cost management and efficiency. That helped increase EBITDA by nearly $900 million in the quarter and drive our best ever fourth quarter EBITDA service margin of 43.2%.

We also had our best ever full year service EBITDA margin coming in at 46.7%. By the way, if you exclude regulatory and insurance fees from service revenues, as some of our competitors do, our full-year number is about 50%. Total wireless revenue was impacted by lower smartphone sales. Service revenues continue to stabilize. Equipment revenues also were impacted by increasing number of bring-your-own-device subscribers. We had about 700,000 in the quarter. That includes those who purchased new smartphones through vendor leasing programs or vendor installment programs. BYOD sales are our lowest cost subscribers and we're happy to have them. They value our quality network coverage and reliability as well as our [indiscernible] selection of rate plans.

Phone-only plus Next ARPU continue to grow at a steady pace, up 4.6%, even with a growing number of BYOD subs. The number of smartphone customers on no device subsidy plans continues to expand. More than two thirds of smartphone subscribers or nearly 70% are on no subsidy plans with about 46% of that smartphone base on AT&T Next plans.

Now let's look at our international operations. That information is on Slide 11. The wireless scene in Mexico is really getting [indiscernible] these days. First, we blew through our year-end 4G LTE deployment target by reaching 44 million POPs. That puts us well on our way to our next benchmark of reaching 75 million POPs by the end of the year and it brings our North American LTE coverage to 355 million people, which is more than any other carrier.

We also launched our rebranding to the AT&T name in several areas, beginning in markets where we've deployed LTE. That includes Guadalajara and Monterrey with Mexico City slated for April. And we continue to expand our distribution network. We've added 1,000 new store locations since we acquired these properties earlier in the year. All of this helped drive strong subscriber growth for the quarter with nearly 600,000 total net adds with gains in both prepaid and postpaid.

Mexico financials continue to reflect our operational investment and strong subscriber growth. We expect comparable results for the first half of the year and the investment cycle to continue through 2016. In Latin America, our DIRECTV operations continue to show solid growth on a local currency basis, but foreign exchange rates continue to pressure our results. Revenues, ARPUs and margins are all pressured by FX, are being hampered by challenging economies across Latin America. Subscriber pressures in Brazil impacted net adds. But even with all of this, we generated modest positive cash flow from these operations in the quarter.

All in all, we feel very confident that we will be able to create value with this business and with these assets. We're more integrated with the day-to-day operations and we have solid local management teams that are adding stability in a very challenging economic environment.

sequential margins versus year-over-year, it looks flatter sequentially but there was the impact of the revenue recognition change. Just trying to get a sense for what we should be thinking about with margin trajectory there, maybe particularly as you go in there and get more wireless rights for content and maybe where those wireless right content costs flow through the model?

**John J. Stephens**

Let me give you a couple of insights there. First into the service revenues in wireless, we have to wait and see what 2016 brings, but we're expecting it to improve throughout the year, the year-over-year trends. We continue to see a little optimism in what we're seeing from the customers and demand, so we expect to see improvement throughout the year in that service revenue.

On the Entertainment margins, the first point I'd like to make is the $300 millionrevenue deferral did impact margins in this quarter. The margins would have been close to a couple of basis points higher if we would have had that recognition. That's the first point I want to make to you.

Second point, what we'll see is we will see the merger synergy savings starting to show up in margins in 2016, and specifically most of the $1.5 billion worth of run rate savings we expect to get to by the end of the year we'll start seeing coming through the Entertainment Group. As we go through the year, we'll see what happens with other competing interests, but clearly those items are leaving us with the expectation that we will have improving margins in the Entertainment Group.

**Michael McCormack**

John, just as you sort of progress on getting more and more mobile rights for content, how should we think about where those incremental costs for the rights should flow through, is it entertainment or is it on the mobility side?

**John J. Stephens**

We expect it to flow through in the Entertainment Group.

**Operator**

That will come from Phil Cusick with J.P. Morgan. Please go ahead.

**Philip Cusick**

Two things. First to follow-up on Mike's question, can you just remind us, John, what the deferral is and will that impact revenue any further or is this sort of the most you'll need to defer? And then second, Randall, since 2009 you've been known as a bit of an economic savant. Can you give us an idea of what you're seeing from your customers in the U.S., both consumer and enterprise, and do you see any signs of economic weakness?

**John J. Stephens**

Phil, on the revenue deferral, this had to do with one of our major contracts and a customer signed up a two-year contract, and so previously DTV had recognized equally over each month of the contract. We recognize it as we bill it. So we just came to a consistency, brought it to the AT&T methodology. So that $300 million is not in anyway, shape, or form lost revenue, it's just deferred, doesn't change our customer contracts, it won't change our cash collection. It's just a deferral. And additionally, we didn't defer any expenses. We continue to recognize any out of pocket expenses with regard to that in the same way we have done before.

**Philip Cusick**

And that's mostly only going to impact 4Q, right?

**John J. Stephens**

There will be some further impacts throughout next year, but by the end of the next year, we'll get into the situation where the originating piece and the reversing piece of this will be offsetting, but that will take us through the next year.

**Philip Cusick**

**Amir Rozwadowski**

Thank you very much. And then maybe if I can switch gears to the video side, as you mentioned it seems though you continue to benefit from [indiscernible] integration has progressed, are you on the verge of rolling out more converged offerings with broadband and video and how should we think about that opportunity set for yourselves?

**Randall L. Stephenson**

So, Amir, I'll tell you right now we are early in the process. The sales channel is just really starting to get their legs underneath them on how to attach satellite and mobility together. This is a new category and so we're very, very new in this and the performance continues to get better and better in the sales channel.

Also keep in mind that we don't even have the installation workforce up to speed on provisioning this. So we're just getting the installation and workforce up. We just had the latest union contract gave us the rights we needed to push this out across our entire footprint. And so you're going to see us continue to get better and better there as well.

As you pointed out, the satellite adds were strong in the fourth quarter but U-verse churn offset that, so we were slightly negative in total. You'll see that relationship get better and we are doing some things to shore up the U-verse base because we are focused on the satellite product and so as a result you're seeing U-verse churn up. We're doing some things to shore that up. It will improve. Not the least of which, we did some things on pricing to ensure that we can help begin to mitigate the U-verse churn.

The other thing we did, and it's early but I think we are going to see some not inconsequential impacts from this, is the unlimited offer for all of our TV customers. U-verse customers can now step into an unlimited data offer and this is we think a hugely retentive offer. It's a great value for our customers to have this type of offer put in front of them.

So we think you'll see the U-verse churn get better, you'll see the subscriber numbers continue to improve as we move through 2016 and the sales channel improves, the provisioning channel improves. And then some of these offers I talked about, some unique offers that will be mobile centric offers and some unique content available, we think those are going to continue to add momentum to this as well. So bottom line, we think the subscription numbers get better as we go through the course of the year.

**Operator**

The next question in queue will come from Brett Feldman with Goldman Sachs. Please go ahead.

**Brett Feldman**

John, just a question on the cash flow outlook that you provided for this year, you obviously gave us some help thinking about the revenue, the EBITDA and the CapEx piece parts in that calculation. I think you mentioned some deferred CapEx related to Mexico. I'm curious if that's factored into the guidance. If you can give us any help on how to think about cash taxes with deferred bonus depreciation or extended bonus depreciation and anything else that we need to think about, like pension, that would be very value added. Thanks so much.

**John J. Stephens**

Couple of things. One, with regard to the deferred payments in Mexico, those have been our plans all along. We continue to work on the cash flow opportunities and we're doing for a number of years. So those are all in already. There's nothing new here.

Secondly, with regards to bonus depreciation, as we told the community when we first gave our guidance that we were taking that into consideration assuming that we'll get passed but we would meet that – we would meet this guidance even if it didn't get passed. It has gotten passed.

The one point I would make to everyone is that it's now 15 years our bonus depreciation has been in place, and so getting the bonus depreciation extended for five years and [indiscernible] is really important, but the creation of benefits from bonus depreciation is now being largely offset by the reversal of prior year's benefits that have been taken by taxpayers. So it's much more of a balancing item there.

**Randall L. Stephenson**

We'll see what the auction brings and then how everybody participates, but I haven't been bashful in saying if there's an opportunity to get another 2x10 at that spectrum, we would pursue it. And so we think we can do that within the guidance John has given here and execute on that, but we'll have to see, David. It's not yet to us really clear what the spectrum footprints are going to look like and whether you can piece together truly a ubiquitous 2x10 type footprint which is really important to us to be bringing another band of spectrum into our operation, it's going to be really important to have a ubiquitous broad footprint. And so we'll have to look at that and obviously we're going to have to look at the person, that bid that the government has just issued the RFP on. So there are a lot of ways we'll evaluate the spectrum scenario, but it's reasonable to assume that we'll be active one place or the other.

**Operator**

Our next question in queue will come from James Ratcliffe with Buckingham Research Group. Please go ahead.

**James Ratcliffe**

Two if I could. First of all, just to dive in a little more into the DTV integration, any incremental thoughts on sizing what the revenue upside there is? I know it's early but now that you have for example some track record regarding unlimited data and you'd be able to share data across the two operations. And secondly, any incremental thoughts and the status of sponsored data and how you expect to see that roll out over the course of the year?

**John J. Stephens**

On the DTV integration and the revenue upside, let me frame it this way. We are pleased with what we have seen so far, specifically the unlimited data and the wireless I mentioned here. We had 500,000 wireless customers signed up for it already. So we're overall pleased with it. We think there's [great opportunity] [ph] there. The timing of those could give us a reason for some carefulness there for this reason.

For example, Randall mentioned the training of our technicians who do the installs. We're just going through the completion of that now, and that's really going to be more off a second half of the year where we'll see how really effective that is. We have seen a lot more bundling of the satellite with broadband but we need some more time to make sure that we understand the momentum of that and the progress of that.

Additionally, we are still going through the sales process of training our reps who never sold broadband when they sold satellite before or who sold broadband but never sold satellite before, and as Randall pointed out, because we sell wireless we have to increase all their sales activities, whether in the stores or in the call centers.

So all of this is going to take some time for us to really track [indiscernible]. I will tell you, we are optimistic and pleased with the initial results but giving any guidance on the revenue synergy sort of perspective is a little premature.

**Randall L. Stephenson**

On your question on sponsored data, James, I think it's important to think about what we have assembled here. And so between DIRECTV and our Otter Media relationship, we think we have the best premium set of content available to anybody anywhere and we're getting the rights secured to allow us to begin delivering this over whatever platform the customer wishes. If the customer wants it on a tablet or a smartphone or on a TV and we're getting to the place where we can do that.

Now if you think about the most premium set of content, whether it would be sports programming, whether it would be binged type programming that has stacking rights and [look-back] [ph] capabilities, whether it would be movie libraries or whatnot, it's just a very, very robust set of content that we're piecing together here to be delivered. I think one would just have to assume that sponsored data would be a critical element on how the customer would take advantage of this.

And so we haven't developed or announced I should say, we are doing a lot of work right now on how we come to market. We have not announced any plans but I think it would be reasonable to assume sponsored data would be a part of how our customers would take advantage of this kind of content library.

**Operator**

So the Ford deal is exclusively the cars coming off the manufacturing floor, and so those are new cars coming out over now in 2020. Like we said, we are expecting 10 million automobiles to roll off the floor between now and 2020 with our connectivity and just from Ford.

You bring up an interesting point and that is there is a massive used car fleet out there that is not connected and there is actually technologies that are now available. I have a sports car, old sports car that I now have connected to the Internet and it's actually a fairly elegant solution.

And so there are some capabilities that we are putting into the market, in fact we are selling into the market today, to connect the used car fleet that is out on the U.S. roads and we think that's important because the average age of a car on the road today is 11 years. And so if you really want to grow this business, you need to tap into the used car fleet. So that's a priority for us and you'll see us pursue that.

On Mexico, and as it relates to the video opportunity, we are fairly convicted that mobile and video are going to be a category that's very, very relevant in the U.S. and we're early on here in the U.S. but based on early success we continue to get more and more convicted, it is going to be an important category, bringing the two together is going to be important. And if it's going to be important in the U.S., we think it will be important in other markets and Mexico will be no different.

As you know, we have a minority share position in a satellite company in Mexico and hopefully we'll be able to do some partnering there but we do think the video combination with mobile is going to be important in all geographies in all markets.

**Frank Louthan**

At some point, does it make sense to take a larger position in that ownership?

**Randall L. Stephenson**

I don't know if our partner has any interest in selling that position. So time will tell. We'll just have to see.

**Operator**

Our next question will come from Michael Rollins with Citi. Please go ahead.

**Michael Rollins**

Just two if I could. First, the management in the past has discussed the investments in broadband within the wireline footprint over the last few years. Is there a way you can size the footprint where you've made the upgrades but you are underpenetrated for broadband share and help us think about the gap you hope to close given the speeds that you are now offering? And then if I could just throw in a second question, I was wondering if you could share some of the segmentation of how you spent capital in 2015 capital expenditures specifically and how those allocations might change as you look at the 2016 budget?

**John J. Stephens**

Let me take a shot at this. With regard to our wireline footprint, we have about 60 million IP broadband enabled customer locations [indiscernible] from our consumer side and we've got about 15 million IP broadband customers today. So these are round numbers. The stat profile will give you the details. But with that, you can see that [indiscernible] penetration right now is about 25%. The key change here is the fact that we now have a national video product in DIRECTV and a satellite product, and such that we didn't have that before.

So many of our, if you will, broadband capable locations didn't have a video offering, now they do. And so as we improve this single [indiscernible] capability, this sales channel capability, all of that, we expect to grow that share and we would expect that it would be a significant improvement over where we're at today.

With regard to the expansion that we are doing now with regard to fiber, we are seeing very good results and the ability to always have video available with the satellite product is going to prove I think to be very beneficial for us. So we will expand on that 60 million footprint over the next four years when we will also get to – some of it will overlap but we will get to 14 million fiber-enabled and quite frankly there is a likelihood that we may get to more than that when we are finished. So that's the way to think about that footprint issue.

really impressive to continue taking expense out of the business.

I would tell you, if you look at just this quarter's results, it ought to give you some degree of comfort in terms of what's possible, even at a company of our size and our scale. Whether it's Business Solutions segment, our Mobility segment, our Entertainment Group segment, consolidated – I mean it was a clean sweep in terms of taking margins up and we weren't taking them up 5 or 10 basis points, the margins really moved up considerably. And so we feel really good about the path we are on and the momentum we have on the cost side of taking cost out of the business.

On the capital spending side, this is a unique opportunity. We're at a place where a lot of things are converging in terms of maturity that's going to create some incredible opportunities as we go forward. These ubiquitous high-speed mobile networks, I mean they are here and they are ubiquitous, they are low latency, combine that with cloud, combine that with data analytics capabilities that are available to the masses, I mean the world of big data is here and it's available to everybody, and then sensors.

The sensor technology, the ability to actually put in sensors at virtually no – I mean the cost is nominal to put these sensors in place. Millions upon millions of these sensors, all of these, these four elements coming together at one time is a massive opportunity and people are not thinking about how to take advantage of ubiquitous mobility, high-speed, low latency networks with cloud, with data analytics, with this sensor technology are going to miss it and we think we're at a place right now where we have a unique position on bringing all of this together and creating growth. We're going to invest through this cycle. We're going to invest in video and making sure we can deliver video to our customers, we think that's going to be a huge opportunity, and expanding our footprint into Mexico.

I mean all of these are converging we think to give us a growth platform for the next four or five years that is unique. So we're trying to be prudent, our downward bias on an incremental basis of capital. As we continue to emphasize that, we are being more and more efficient with our capital spend. John pointed out the implications of spectrum. Don't miss this. As you deploy these 2x10 MHz blocks of spectrum, the efficiencies it brings to building and operating mobile networks is significant and we think we're in a very unique position in that regard too.

So I said in my opening comments and I'll say it again, our intention is to deliver over these networks the most traffic at the lowest cost per bit to deliver. That's our objective and that's the path we're headed down. So we feel good about being able to achieve that.

So thanks for the question and I also thank everybody for your participation on the call. We are off and running with the DIRECTV acquisition in Mexico, those are going well, and we feel good about where we are as a business and looking forward to 2016. So thank you for your interest.

**John J. Stephens**

Thank you all. Take care.

**Operator**

Thank you. And ladies and gentlemen, that does conclude your conference call for today. We do thank you for your participation and for using AT&T's Executive TeleConference. You may now disconnect.

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BEFORE THE

# Federal Communications Commission

WASHINGTON, D.C.

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|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Protecting and Promoting the Open Internet | ) | GN Docket No. 14-28 |
| | ) | |
| Framework for Broadband Internet Service | ) | GN Docket No. 10-127 |
| | ) | |

**COMMENTS OF COMCAST CORPORATION**


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July 15, 2014

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pursuant to its judicially recognized authority under Section 706 of the Telecommunications Act of 1996.[4]

## I. INTRODUCTION AND SUMMARY

Comcast agrees with the Commission that "[t]he Internet is America's most important platform for economic growth, innovation, competition, free expression, and broadband investment and deployment."[5] These benefits are closely tied to the Internet's openness, which enables a "virtuous circle" of innovation, demand for Internet-based content and applications, and deployment of broadband infrastructure. Thus, just as Comcast recognized the importance of the *2010 Open Internet Order* and was one of its strongest supporters, Comcast again supports the Commission's proposal to adopt new, enforceable rules in furtherance of its goal of maintaining an open Internet. In designing these rules, it is essential that the Commission strike an appropriate balance between establishing effective oversight and promoting investment in broadband infrastructure.

To achieve this balance, the Commission should follow the D.C. Circuit's guidance and base its new rules on Section 706 of the Telecommunications Act of 1996. This provision, as interpreted by the court, provides the Commission with ample authority to fulfill its objectives in this proceeding. Although the court vacated the Commission's 2010 no-blocking and nondiscrimination rules because they improperly imposed common carrier regulation on information service providers, it also cleared the way for the Commission to adopt sensible and legally sound open Internet rules that would not run afoul of this prohibition. This marks the

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4 47 U.S.C. § 1302.

5 NPRM ¶ 1.

capabilities. Treating these two categories of wireless services differently would be irrational as a policy matter and unworkable as a practical matter in today's marketplace.

In all events, the Commission should not reclassify broadband Internet access service, or any component thereof, as a Title II telecommunications service. Doing so is unnecessary because Section 706 provides the Commission with sufficient authority to fulfill its objectives. It also would be unwise in that it would stifle capital investment and dynamic innovation at the very time the Commission is seeking to encourage the deployment of higher speed services. And it would present needless risk as a legal matter, resulting in years of protracted litigation and uncertainty. If the Commission's intention is to protect and promote the development of the open Internet, and to do so promptly, it should keep faith with the classification decision it made in 2002, successfully defended before the Supreme Court, and applied further in 2005, 2006, and 2007, especially now that the D.C. Circuit has recognized the Commission's authority under Section 706.

## II. THE COMMISSION SHOULD CALIBRATE ITS RULES IN A MANNER THAT PRESERVES STRONG INCENTIVES FOR PRIVATE SECTOR INVESTMENT.

Consumers across the nation routinely enjoy access to the open Internet that is one thousand times as fast as the dial-up access that was prevalent when the Telecommunications Act of 1996 became law. Consumers today obtain broadband Internet access service from cable companies, telephone companies, wireless companies, and even satellite companies. The vast increase in speeds, and the growing choice among providers, flow directly from the willingness of broadband providers to invest and innovate.

Since 1996, broadband providers have invested a staggering $1.2 trillion in their networks in the United States, which they have used to provide consumers in virtually every

businesses, and consumers have come to expect and demand the ubiquitous and unrestricted access that these companies have consistently offered them. If a provider were to block or degrade Internet applications or content, the provider would incur substantial subscriber losses and reputational harm. Thus, in order to undertake such a strategy, a broadband provider would first need to conclude that any theoretical benefits of the strategy outweigh these very real costs.

In light of the significant and still-growing level of competition in the broadband marketplace, it is hard to envision a situation in which this would be the case. As Comcast has documented elsewhere, it faces competition from companies providing broadband Internet access services across a range of technological platforms.[9] ILECs provide fiber-to-the-premises services to a growing number of American households and are upgrading their DSL-based services, in many cases by building fiber-to-the-node, to offer faster speeds across the country.[10] Cable overbuilders, new entrants like Google fiber, municipal providers, fixed wireless providers, and satellite broadband providers also exert significant competitive pressures. And

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[9] *See* Comcast Corp. and Time Warner Cable Inc., Applications and Public Interest Statement, MB Docket No. 14-57, at 42-56 (Apr. 8, 2014).

[10] Verizon currently offers DSL service at speeds up to 15 Mbps, Frontier offers speeds up to 25 Mbps, CenturyLink offers speeds up to 40 Mbps, and AT&T offers speeds up to 45 Mbps. *See* Letter from Lynn R. Charytan, SVP, Legal Regulatory Affairs and Senior Deputy General Counsel, Comcast Corp., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 10-56, Ex. A, Pt. 3, at 10 (Feb. 21, 2014) (detailing competitive standalone broadband options in Comcast's top 30 markets). Many ILECs are upgrading their DSL-based services by investing in technologies such as VDSL2 and pair bonding. *See, e.g.*, Glen F. Post, President and CEO, CenturyLink, Inc., Q4 2013 Earnings Call, Tr. at 5 (Feb. 12, 2014) ("We have utilized and continued to utilize a balanced capital investment approach, including gigabit fiber, VDSL2, and pair bonding deployments to efficiently enable higher speeds, enhanced services to consumers and businesses in our markets."); Robert W. Starr, Treasurer & SVP, Frontier Communications Corp., Goldman Sachs TMT Leveraged Finance Conference, Tr. at 5 (Mar. 19, 2014) (noting Frontier is "compet[ing] against [cable] today on the residential and on the small business side and we're taking share away from them on the residential side . . . . [W]e think that our opportunit[y] against the cable companies continue to be a very good one").

broadband technologies to as many as 70 million customer locations.[14] Google, CenturyLink, Cox, and others have also announced ambitious plans to roll out fiber-to-the-premises networks and have begun to set these plans into motion.[15] In 2010, none of the four nationwide mobile broadband providers had even begun to deploy LTE networks until Verizon began its deployment in December of that year.[16] Now, all four major wireless providers operate LTE networks that collectively blanket the nation.[17]

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[14] *See* Press Release, AT&T, Inc., AT&T to Acquire DIRECTV (May 18, 2014), http://about.att.com/story/att_to_acquire_directv.html ("*AT&T/DirecTV Press Release*").

[15] *See Exploring New Cities for Google Fiber*, Google Fiber Blog (Feb. 19, 2014), http://googlefiberblog.blogspot.com/2014/02/exploring-new-cities-for-google-fiber.html; Press Release, CenturyLink, Inc., CenturyLink Brings 1 Gigabit Fiber Service to Las Vegas (Oct. 9, 2013), http://news.centurylink.com/news/centurylink-brings-1-gigabit-fiber-service-to-las-vegas-2598362; Press Release, Cox Communications, Cox Communications Kicks Off Plan to Offer Residential Gigabit Speeds (May 22, 2014), http://cox.mediaroom.com/index.php?s=43&item=753.

[16] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, 26 FCC Rcd. 9664 ¶¶ 108-114 (2011) (describing the four nationwide mobile broadband providers' initial efforts to test and deploy LTE services); *see also* Press Release, Verizon, Blazingly Fast: Verizon Wireless Launches the World's Largest 4G LTE Wireless Network on Sunday, Dec. 5 (Dec. 3, 2010), http://www.verizonwireless.com/news/2010/12/pr2010-12-03.html (touting Verizon's LTE network, which launched in 38 cities in December 2010, as "the world's largest").

[17] *See The Verizon Wireless 4G LTE Network*, Verizon, http://www.verizonwireless.com/news/LTE/Overview.html (last visited July 9, 2014); *About Our Network*, AT&T, http://about.att.com/news/wireless-network.html (last visited July 9, 2014); *4G LTE Launched Markets*, Sprint, http://newsroom.sprint.com/news-releases/4glte-launchedmarkets.htm (last visited July 9, 2014); *T-Mobile 4G LTE*, T-Mobile, http://t-mobile-coverage.t-mobile.com/4gcitylist.aspx (last visited July 9, 2014). The Commission notes in the NPRM that LTE subscriptions grew by a factor of nearly 500 during this period, *see* NPRM ¶ 48 n.110, and SNL Kagan predicts that there will be 224 million unique 4G subscriptions in the United States by 2018, *see* SNL Kagan, *Covered Pops & Subscribers by Technology in U.S. Wireless* (July 2013). Mobile data traffic is projected to grow three times faster than fixed IP data traffic between 2013 and 2018. *See* Cisco, *Visual Networking Index: Forecast and Methodology, 2013-2018*, at 3 (2014), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html.

| Number of Fixed or Mobile Broadband Providers[21] | % of Households in Applicable Census Tracts as of December 31, 2009 | % of Households in Applicable Census Tracts as of June 30, 2013 |
|---|---|---|
| **At Least 3** | 40% | 99% |
| **At Least 2** | 80% | 100% |
| **At Least 1** | 97% | 100% |

This heightened competition undoubtedly raises the costs to a broadband provider of attempting to limit Internet openness.

Moreover, there is no reason to believe that "switching costs" would prevent a consumer from changing among these competitors if a provider were to interfere with his or her connection to the open Internet.[22] Although certain advocates for regulation allege that subscribers are "captive" to their broadband providers, they have failed to provide any evidence indicating that churn rates are lower for broadband than they are for other services such as video or voice.[23] Indeed, a recent survey conducted by Consumer Reports found that *71 percent* of respondents would be inclined to switch to a competing broadband provider if their provider were to "block, slow down, or charge more" for certain high-bandwidth content or applications.[24] And as the

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21 This chart displays the number of households located in census tracts where fixed broadband providers reported offering broadband Internet access service speeds of at least 3 Mbps downstream and 768 kbps upstream *or* mobile broadband providers reported operating a network capable of such speeds. *See* FCC, *Internet Access Services: Status as of December 31, 2009*, at 8 & fig. 3(b) (Dec. 2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303405A1.pdf; FCC, *Internet Access Services: Status as of June 30, 2013*, at 10 & fig. 5(b) (June 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0625/DOC-327829A1.pdf.

22 *See* NPRM ¶ 46.

23 *See, e.g.*, Comments of Vonage Holding Corp., GN Docket No. 14-28, at 5-6 (Mar. 21, 2014) (making an unsupported claim that "a broadband subscriber is captive to his or her access provider").

24 *71% of U.S. Households Would Switch from Providers that Attempt to Interfere with Internet*, Consumer Reports, Feb. 18, 2104, http://www.consumerreports.org/cro/news/2014/02/71-percent-of-households-would-switch-if-provider-interferes-with-internet-traffic/index.htm.

Comcast is now the only broadband provider in America that is legally bound by the no-blocking and nondiscrimination rules adopted in the Order. This commitment will automatically extend to systems Comcast acquires from Time Warner Cable and Charter upon the approval and consummation of the transactions now pending before the Commission.

Although other providers are not similarly bound, they and their representatives have been vocal about their commitments to openness as well:

- **NCTA:** "The cable industry has always embraced the principles of an open Internet and the Court decision will not change that. Consumers have always been entitled to enjoy the legal web content of their choosing and they will continue to do so. An open Internet is good for our customers, and good for our business."[28]

- **AT&T:** "AT&T has built its broadband business, both wired and wireless, on the principle of Internet openness. That is what our customers rightly expect, and it is what our company will continue to deliver. That is also why we endorsed the FCC's original rule on net neutrality, and is why we pledged to adhere to openness principles even after the recent court decision."[29]

- **Verizon:** "Verizon has long been committed to an open Internet for a simple reason: Our customers demand it. This was true before the FCC ever considered putting rules in place, and serving our customers will ensure our commitment to an open Internet regardless of what the FCC does in the future."[30]

- **USTelecom:** "Our industry has long operated in a manner consistent with the Federal Communications Commission's Internet freedoms, and nothing about [the

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[28] Press Release, NCTA, Statement of NCTA President & CEO Michael Powell Regarding Today's Decision by the U.S. Court of Appeals for the D.C. Circuit (Jan. 14, 2014), https://www.ncta.com/news-and-events/media-room/article/3117.

[29] Press Release, AT&T Inc., AT&T Statement on Net Neutrality (Feb. 19, 2014), http://publicpolicy.att.com/att-open-internet-policy-statement. In addition, AT&T has committed to abide by the 2010 Open Internet rules for three years if its acquisition of DirecTV is approved. *See AT&T/DirecTV Press Release.*

[30] Press Release, Verizon, Verizon Comments on FCC's Proposed Rules for Open Internet (May 15, 2014), http://newscenter.verizon.com/corporate/news-articles/2014/05-15-statement-on-fcc-proposed-rules-for-open-internet/.

by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."[34]

The D.C. Circuit upheld the Commission's 2010 conclusion that promoting and protecting the open Internet fell squarely within these grants of authority. The court characterized the Commission's finding that Internet openness is crucial to edge-provider innovation and drives end-user demand, which in turn stimulates investment in broadband infrastructure—i.e., the "virtuous circle"—as "both rational and supported by substantial evidence."[35] That core justification thus plainly empowers the Commission to adopt new rules under Section 706(a) to protect and provide for such openness as a way to "encourage the deployment" of advanced telecommunications capability.[36] Because the Commission also has concluded that "broadband deployment to *all* Americans is not reasonable and timely,"[37] the Commission can similarly justify new rules protecting Internet openness under Section 706(b) as a means of "'accelerat[ing] [broadband] deployment'" by "removing 'barriers to infrastructure investment' and promoting 'competition.'"[38] The Commission should follow the court's roadmap by reaffirming the importance of the transparency framework and adopting new open Internet rules pursuant to Section 706.

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34 47 U.S.C. § 1302(b); *see Verizon*, 740 F.3d at 640-42.

35 *Verizon*, 740 F.3d at 644.

36 *Id.* at 642.

37 *Id.* at 640 (quoting *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, Sixth Broadband Deployment Report, 25 FCC Rcd. 9556 ¶ 2 (2010)); *see id.* at 642.

38 *Id.* at 642 (quoting 47 U.S.C. § 1302(b)).

whether they are receiving the full benefit of the services that they purchase.[42] Many broadband providers, including Comcast, already disclose far more information on this issue than is required.[43] In addition, the Commission may well find that the OIAC's proposal for a "standardized label" would make broadband providers' disclosures more accessible and useful for consumers.[44]

The Commission should ensure, however, that any new disclosure obligations are appropriately tailored to its objectives in this proceeding. Certain proposals in the NPRM threaten to impose substantial burdens while providing consumers with minimal or no countervailing benefits. For instance, the Commission should not require broadband providers to make additional disclosures tailored to edge providers or to "providers who seek to exchange traffic with broadband provider networks."[45] The current transparency rule already requires broadband providers to disclose information "sufficient for . . . content, application, service, and device providers to develop, market, and maintain Internet offerings."[46] Beyond this, it is

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42 *See* NPRM ¶¶ 73, 79-80. In nearly all cases, American broadband subscribers *are* receiving the full benefit of their services, unlike broadband subscribers in many other countries. For example, while American broadband providers, on average, deliver 101 percent of the speeds that they advertise, broadband providers in the European Union deliver only 76 percent. *Compare* FCC, *2014 Measuring Broadband America – Fixed Broadband Report* 14 (2014), *available at* http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf ("*Measuring Broadband America Report*") *with* SamKnows Ltd., European Commission, *Quality of Broadband Services in the E.U.* 59 (Oct. 2013), *available at* http://ec.europa.eu/digital-agenda/en/news/quality-broadband-services-eu-samknows-study-internet-speeds.

43 *See Network Management Information Center*, *Your Internet Service Performance*, Comcast, http://networkmanagement.comcast.net/index.php/component/content/article?id=48 (last visited July 9, 2014).

44 *See* NPRM ¶ 72.

45 *Id.* ¶¶ 75-76.

46 *See* 47 C.F.R. § 8.3.

providers often do not today. Aside from the obvious burdens inherent in such a requirement, this policy could raise legitimate concerns regarding consumer privacy.[49]

But setting aside these discrete problematic proposals, Comcast agrees with the Commission that it should use transparency as a critical means of promoting Internet openness. With relevant and accessible information about their options, consumers can make more informed choices and spur companies to continue providing services that meet their needs.

### B. The Commission Should Reinstate a No-Blocking Rule Designed to Guarantee End Users Access to the Entire Internet.

The *Verizon* decision also supplies a sound basis for the proposed reinstatement of the Commission's no-blocking rule.[50] Although the court struck down the 2010 no-blocking rule, it did so because the Commission had not provided a valid legal rationale to support it under Section 706—not because such a rationale did not exist.[51] In fact, the court indicated that the 2010 no-blocking rule *would* have been valid if it were understood to simply establish a minimum level of service on a broadband provider's network, while leaving room for providers

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[49] If the Commission wishes to mandate disclosure of application-specific usage information, it should look to edge providers, who are far better positioned to provide this information. Many mobile devices already track usage information on an application-specific basis. In addition, application and content providers possess comprehensive data regarding their customers' usage and could present this data in the appropriate context for their services. For example, an over-the-top video provider could present usage information in terms of how many megabytes were associated with the streaming of a given video file. As industry observers have explained, such edge provider disclosures would empower consumers to more effectively manage their data consumption. *See, e.g.*, Peter Sevcik, NetForecast, *Empowering Internet Users to Manage Broadband Consumption* (June 2012), http://www.netforecast.com/wp-content/uploads/2012/06/NFR5109_Empowering_Internet_Users_to_Manage_Broadband_Consumption.pdf.

[50] NPRM ¶¶ 89-109.

[51] *See Verizon*, 740 F.3d at 658-59 ("We are unable to sustain the Commission's action on a ground upon which the agency itself never relied. Nor may we defer to a reading of a statutory term that the Commission never offered.") (internal citations omitted).

manner that satisfies certain quantitative performance parameters; or as a requirement to deliver traffic in a manner that would meet the expectations of a "reasonable person."[55]

Any "minimum level of service" that the Commission adopts should be interpreted only as a requirement that broadband providers deliver traffic to end users on a "best efforts" basis. "Best efforts" traffic delivery is a well-understood engineering concept.[56] Among other things, it ensures that no resources are pre-allocated, pre-reserved, or prioritized in the delivery of "best effort[s]" traffic. This standard would ensure that the goal of the no-blocking rule—to guarantee end users access to the entire Internet—is fulfilled.

In contrast, any attempt to establish minimum quantitative performance parameters would be ineffective, as this approach would fail to account for the variability inherent in providing broadband Internet access service. Broadband providers engineer their networks to optimize performance across metrics such as throughput, latency, and jitter. However, performance inevitably still varies based on factors such as contention in the last mile and the distance between the endpoints of a transmission, as well as several factors that are wholly within customers' control, such as the modems, Wi-Fi routers, or devices they use to access the network. Indeed, the Commission's data show that even the performance of broadband providers that over-deliver on their advertised speeds is subject to significant variation.[57]

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[55] *See id.* ¶¶ 101-104.

[56] *See* NPRM ¶ 102 n.225 (citing S. Floyd & M. Allman, *Comments on the Usefulness of Simple Best-Effort Traffic* 9-14, Internet Engineering Task Force (July 2008)). It would be unnecessary and counterproductive for the Commission to formulate a new definition for this term.

[57] *See Measuring Broadband America Report* at 41-47 (measuring variability in download and upload speeds for fixed broadband services).

define its "minimum level of service" in terms of a quantitative performance standard (which, as explained above, it should not do), it should make absolutely clear that this standard would not interfere with the offering of *Internet Essentials* or other low-cost services in any way.[61]

### C. The Commission Should Establish a Legal Standard To Govern Direct Commercial Relationships Between Broadband Providers and Edge Providers Relating to the Transmission of Internet Traffic Over Broadband Internet Access Service.

In *Verizon*, the court struck down the "no unreasonable discrimination" rule but left room for the Commission to adopt a new rule pursuant to Section 706 to govern any direct commercial relationships between broadband providers and edge providers that address transmission of Internet traffic over broadband Internet access service, such as "paid prioritization" arrangements. As an initial matter, it is important to recognize that, for all the talk about "fast lanes" and "slow lanes," broadband providers and edge providers have not entered into "paid prioritization" arrangements throughout the many years when there has been no legal prohibition of such arrangements. Indeed, broadband providers' response to consumer demand for higher speeds has not been to create "fast lanes" but rather to make the entire Internet faster for everyone. For its part, Comcast has not entered into a single "paid prioritization" arrangement, has no plans to do so in the future, and does not even know what such an arrangement would entail as a practical matter. Nonetheless, Comcast supports the Commission in its effort to apply an enforceable legal standard for determining which limited arrangements should be permitted.

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[61] The Commission should also ensure that the no-blocking rule is not construed to stifle the development of free or low-cost services that allow end users to access only a limited subset of Internet endpoints.

reasonable," determined case-by-case based on "the totality of the circumstances,"[66] would closely mirror the rule suggested in *Verizon*.[67] It would leave sufficient room for "individualized negotiation" between broadband providers and edge providers, and would build in "considerable flexibility for providers to respond to the competitive forces at play in the [broadband Internet access] market."[68] Under *Verizon* and *Cellco*, this formulation of the "commercially reasonable" standard would be legally sound.

Comcast supports the application of such a standard. Comcast also would not be opposed to a rebuttable presumption that "paid prioritization" arrangements are commercially unreasonable. This presumption could be interpreted to preclude, among other things, exclusive arrangements and arrangements that prioritize a broadband provider's own affiliated Internet content vis-à-vis unaffiliated content. A broadband provider seeking to justify any "paid prioritization" arrangement could be required to bear the burden of showing that the arrangement is commercially reasonable and fair to consumers and edge providers. Comcast believes that few arrangements would be deemed to overcome the presumption.

However, the Commission should *not* establish a policy that would preclude *all* experimentation in this area. Arrangements could emerge between broadband providers and edge providers that could have widely varying implications for competition and consumer welfare based on the terms of an individual arrangement, the parties involved, and the markets

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66 NPRM ¶ 136.

67 *Compare Cellco*, 700 F.3d at 548 ("The rule itself actually spells out sixteen different factors plus a catch-all 'other special or extenuating circumstances' factor that the Commission must take into account in evaluating whether a proffered roaming agreement is commercially reasonable."), *with Verizon*, 740 F.3d at 657 ("[T]he *Open Internet Order* makes no attempt to ensure that its reasonableness standard remains [similarly] flexible.").

68 *Cellco*, 700 F.3d at 548.

But the rule proposed in the NPRM is different. Because on its face, it seems to prohibit *all* "commercially unreasonable practices," the rule could be construed to create a roving standard of conduct governing everything a broadband provider does. It thus threatens to subject broadband providers to new and uncertain obligations and invite abuse from other parties. For example, an over-the-top video provider might claim that it is a commercially unreasonable practice to provide customers with discounts for purchasing a bundle consisting of both broadband and video services. Or perhaps the developer of a file-sharing application would claim that it is a commercially unreasonable practice to decline to allocate a larger amount of bandwidth to upstream traffic. These issues were clearly beyond the scope of the 2010 nondiscrimination rule and are distinct from the issues that this proceeding was designed to address.[72]

The Commission should make clear that the "commercial reasonableness" rule is not intended to reach these issues. It can do so by limiting the application of this standard to direct commercial relationships between broadband providers and edge providers relating to the delivery of Internet traffic over broadband Internet access service. This approach would permit the Commission to address the practices that it is chiefly concerned about, such as "paid prioritization" arrangements, while minimizing the potential for misapplication of the standard.

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[72] *See, e.g.*, *id.* ¶ 77 ("The rule we adopt provides broadband providers' sufficient flexibility to develop service offerings and pricing plans, and to effectively and reasonably manage their networks."); *id.* ¶ 79 (explaining that broadband providers would be permitted to decide "what connection speed(s) to offer, and at what price").

Comcast agrees with the Commission's tentative conclusion that, as before, the new open Internet rules should address only the provision of "broadband Internet access service" to end users.[77] At the same time, however, the Commission should ensure that its rules holistically address any openness concerns that *do* pertain directly to consumers' use of broadband Internet access services. Thus, the Commission should carefully examine whether the regulatory distinctions adopted in 2010 between fixed and mobile broadband services continue to be justified or need to be updated in some manner.[78] At a minimum, the Commission should ensure that licensed mobile broadband services and unlicensed, public Wi-Fi services that offer similar capabilities are treated comparably.[79]

### A. The Commission Should Adopt Its Tentative Conclusion To Exclude Specialized Services from the Scope of the Rules.

The Commission properly excluded specialized services from the scope of the no-blocking and nondiscrimination rules it adopted in 2010, and it should "maintain this approach" in adopting new rules, as the NPRM proposes.[80] The *2010 Open Internet Order* appropriately recognized that "broadband providers offer services that share capacity with broadband Internet access service over providers' last-mile facilities, and may develop and offer other such services

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end users in the retail market, including, for example, Internet backbone connectivity arrangements. In short, the Commission proposes not to change its treatment of services that fall outside a commonsense definition of broadband Internet service."); *id.* ¶ 108 ("We do not intend to address the classification or treatment of these [specialized] services in this proceeding.").

77 NPRM ¶ 55.

78 *See id.* ¶ 62 (seeking comment on treatment of mobile broadband Internet access service under any new rules).

79 Comcast uses the term "public" Wi-Fi services to refer to services provided via hotspots that are accessed outside of users' own homes. Such services should not be deemed to include a fixed broadband subscriber's access to his or her own home Wi-Fi network.

80 *Id.* ¶ 60.

decision "did not disturb,"[86] already "encompasses any service that the Commission finds to be providing a functional equivalent" of broadband Internet access service "or that is used to evade the protections" set forth in the rules.[87] This definition thus fulfills the Commission's goal of "ensur[ing] that the specialized services exception is not used to circumvent our open Internet rules."[88] Because there is no realistic prospect that a broadband provider could effectively "bypass[] open Internet protections" through the provision of a specialized service—much less *evidence* to support any hypothesized theory of harm—there is no sound basis for imposing new regulations to prevent such circumvention from occurring.[89]

While it is unnecessary to impose additional mandates on specialized services, the Commission should clarify the definition of specialized services to provide increased certainty regarding the scope of its open Internet rules.[90] Specifically, the Commission should clarify, as it did in its order approving Comcast's acquisition of NBCUniversal, that the definition of "specialized services" does not encompass interconnected VoIP services or "services regulated either as telecommunications services under Title II of the Communications Act or as MVPD

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86 NPRM ¶ 55.

87 *Id.* ¶ 54 (quoting 47 C.F.R. § 8.11(a)).

88 *Id.* ¶ 60.

89 *See* FTC Staff Report, *Broadband Connectivity Competition Policy* 157 (June 2007) (noting "the inherent difficulty in regulating based on concerns about conduct that has not occurred, especially in a dynamic marketplace"); Ex Parte Filing of the United States Department of Justice, WC Docket No. 07-52, at 2-3 (Sept. 6, 2007) (warning that the premature imposition of regulatory restraints on "dynamic and evolving" services, absent any showing of harm, "can inefficiently skew investment, delay innovation, and diminish consumer welfare").

90 *See* NPRM ¶ 60 & n.138 (seeking comment on whether the Commission should define "specialized services," and noting that the *2010 Open Internet Order* merely "described them as 'services that share capacity with broadband Internet access service over providers' last-mile facilities'") (quoting *2010 Open Internet Order* ¶ 112).

been, and will continue to be, an important basis for investment in broadband networks.[92] The report found that, in recent years, "[t]he business case to justify the investment in the expansion of fiber optics and improved DSL and cable technology which led to higher broadband speeds was fundamentally predicated upon the assumption that the operator would offer multiple services" over the provider's last-mile broadband facilities.[93] This finding is plainly correct in Comcast's experience; Comcast's own network was initially constructed primarily to provide multichannel video service, and this investment later gave rise to high-speed broadband service for tens of millions of Americans. The Commission's decision in 2010 to avoid unnecessary regulatory burdens on the development of such services thus was undoubtedly correct, and continues to reap significant benefits for consumers today.

### B. The Commission Should Adopt Its Tentative Conclusion To Exclude Traffic Exchange from the Scope of the Rules.

The Commission also should "maintain th[e] approach" adopted in the *2010 Open Internet Order* with respect to peering, transit, and other traffic-exchange arrangements and reaffirm that such arrangements remain outside the scope of the open Internet rules.[94] The Commission made clear that the rules adopted in the *2010 Open Internet Order* were not intended "to affect existing arrangements for network interconnection, including existing paid peering arrangements."[95] The NPRM accordingly acknowledges that the Commission "did not apply the no-blocking or unreasonable discrimination rules to the exchange of traffic between

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92 FCC Open Internet Advisory Committee, *2013 Annual Report* 67 (Aug. 20, 2013), *available at* http://transition.fcc.gov/cgb/oiac/oiac-2013-annual-report.pdf.

93 *Id.*

94 NPRM ¶ 59.

95 *2010 Open Internet Order* ¶ 67 n.209.

do with the ability of end users to access particular content or to use particular applications or services, and nothing to do with the priority with which content might be delivered to end users over a broadband Internet access service. For these reasons, Chairman Wheeler correctly acknowledged in his statement accompanying the NPRM that traffic exchange "is a different matter that is better addressed separately" from this proceeding,[100] and explained to industry stakeholders in February that traffic exchange "is not the same issue" as net neutrality.[101]

Nevertheless, critics of the Commission's approach to traffic-exchange arrangements under the *2010 Open Internet Order* have, in a transparent effort to gain a competitive advantage in the marketplace, urged the Commission to expand the scope of the new open Internet rules to encompass such arrangements. For example, Level 3 has asked the Commission to require broadband providers to engage in traffic exchange on "commercially reasonable" terms—a standard that, according to Level 3, would require providing traffic-exchange services *for free* (and thus would turn the word "commercial" on its head).[102] Relatedly, Cogent has asked the

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[100] NPRM, Statement of Chairman Tom Wheeler, at 2.

[101] *See* Interview by Stacey Higginbotham, GigaOm, of Chairman Tom Wheeler, FCC, at the 2014 State of the Net Conference (Jan. 28, 2014) ("A lot of people seem to think that the whole peering and interconnection topic is the same as net neutrality. It's not. It's a different issue, it's a cousin, maybe a sibling, but it is not the same issue."), http://gigaom.com/2014/02/23/the-netflix-comcast-agreement-isnt-a-network-neutrality-violation-but-it-is-a-problem/. Indeed, Chairman Wheeler recently announced that the Commission has begun collecting information on traffic-exchange arrangements outside the context of this proceeding. *See* News Release, FCC, Statement by FCC Chairman Tom Wheeler on Broadband Consumers and Internet Congestion (June 13, 2014), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-327634A1.pdf.

[102] *See* Comments of Level 3 Communications, LLC, GN Docket No. 14-28, at 11 (Mar. 21, 2014) ("Level 3 PN Comments") (urging the Commission to conclude that "an ISP interconnects on commercially reasonable terms" only if "the ISP agrees to provide interconnection, including augmenting existing interconnection capacity when congested, without charge," or if "the ISP identifies a location in each local market (or larger geographic area) where it will provide sufficient interconnection capacity, including augmenting interconnection capacity as necessary, to exchange traffic for that area without charge"); *see also* Michael Mooney, *Heads ISPs Win,*

considerations relating to traffic-exchange arrangements into this proceeding would greatly slow down the rulemaking process and frustrate the goal of putting in place binding open Internet rules in the near future.

Even apart from such timing and practical concerns, it would be profoundly unwise and counterproductive for the Commission to reverse course and subject peering, transit, and similar arrangements to regulation. Unlike potential arrangements involving the prioritization of traffic over last-mile networks—arrangements that simply do not exist in today's marketplace—peering, transit, and similar arrangements for the routing of traffic over the Internet backbone are elements of a well-developed (and constantly evolving) commercial ecosystem.[106] Interfering with these commercial arrangements—or even worse, prohibiting such arrangements whenever they involve monetary settlement—would dramatically upset the economic relationships that have long undergirded the Internet and encourage arbitrage and regulatory gamesmanship. Such interference would also have serious and inevitably unintended consequences, including hindering innovation and investment in broadband infrastructure.

Moreover, the Commission consistently has found that the backbone marketplace is competitive. For instance, in approving the Verizon/MCI merger in 2005, the Commission explained that, "[b]ecause we conclude that the Internet backbone market is sufficiently competitive and will remain so post-merger, it follows that the prices and terms of

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[106] *See, e.g.*, Michael Powell, *Why is Netflix Strong Arming the Net Neutrality Debate*, NCTA Blog (June 12, 2014), https://www.ncta.com/platform/public-policy/why-is-netflix-strong-arming-the-net-neutrality-debate/ (explaining that "the myriad business arrangements by which thousands of ISPs, content providers, transit providers, and content distribution networks exchange Internet traffic was not part of Commission's 2010 Open Internet proceeding and should not be now," as "dragging these complex commercial relationships into the net neutrality proceeding would upset a well-functioning marketplace and make restoration of appropriate Open Internet rules even more difficult than it would be otherwise").

the competitiveness of the traffic-exchange marketplace that could warrant such regulatory intervention.[112]

Just as the proposals to regulate traffic exchange are misplaced, so too are calls to require disclosure of information regarding traffic exchange under the open Internet transparency rule.[113] As a threshold matter, broadband providers do not possess sufficient firsthand information to recognize many instances of congestion that arise. While broadband providers can determine the percentage of an interconnection point's capacity that is being utilized, they cannot determine in real time the extent to which the interconnecting network is attempting to deliver traffic *beyond* the full capacity of that interconnection point.[114] Moreover, broadband providers possess little if

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[112] *See* Michael Kende, Director of Internet Policy Analysis, FCC, *The Digital Handshake: Connecting Internet Backbones, Office of Plans and Policy Working Paper No. 32*, at 26 (Sept. 2000), *available at* http://transition.fcc.gov/Bureaus/OPP/working_papers/oppwp32.pdf ("Any regulation of the Internet backbone market would represent a significant shift in the unregulated status quo under which the Internet industry has grown at unprecedented rates, and therefore would require a corresponding shift in the competitiveness of the market.").

[113] *See* NPRM ¶¶ 81-83 (tentatively concluding that the Commission should require disclosure of "meaningful information regarding the source, location, timing, speed, packet loss, and duration of network congestion" even when such congestion originates "beyond the broadband provider's network or in the exchange of traffic between that network and others"). Cogent also urges the Commission to regulate broadband providers' traffic exchange practices in several other unjustified and counterproductive ways. *See* Cogent PN Comments at 20-23. But Cogent's own conduct provides perhaps the most illustrative example of how a transit provider can deliberately cause congestion and degrade the end user experience. Cogent has repeatedly agreed to provide transit services to edge providers for volumes of traffic that exceed the capacity of Cogent's interconnections with broadband providers. When broadband providers have declined to expand the capacity of these interconnection points to accommodate Cogent's new business, Cogent has characterized this as interference with its right to unlimited peering capacity for free. Of course, Cogent has no such right, and its suggestion to the contrary flies in the face of more than two decades of established norms in the traffic exchange marketplace. *See* Scott Wooley, *The Day the Web Went Dead*, Forbes, Dec. 2, 2008, http://www.forbes.com/2008/12/01/cogent-sprint-regulation-tech-enter-cz_sw_1202cogent.html (recounting Cogent's peering dispute with Sprint that led to one of the only times in history that certain Internet users could not access all Internet endpoints).

[114] In other words, an interconnection point will appear to the broadband provider to be running at 100 percent utilization (i.e., at capacity) regardless of whether the interconnecting

### C. The Commission Should Carefully Examine Regulatory Distinctions Between Fixed and Mobile Broadband Services.

The Commission should consider how to ensure that its open Internet rules properly address services that *do* involve the provision of broadband Internet access to end users—particularly mobile broadband Internet access service. As the NPRM notes, the *2010 Open Internet Order* distinguished between fixed and mobile broadband services and adopted different rules for each service.[115] Unlike the broad no-blocking and nondiscrimination rules applicable to fixed services, the no-blocking rule for mobile services applied only to websites and to applications that "compete with the provider's voice or video telephony services,"[116] and there was no non-discrimination rule at all for mobile services.[117] While such regulatory distinctions might have been defensible in 2010,[118] the NPRM's recognition of the "significant changes since 2010 in the mobile marketplace"—including "how mobile providers manage their networks, the increased use of Wi-Fi, and the increased use of mobile devices and applications"—supports at least a refreshed examination of that approach. There is no question that wireless is increasingly becoming a closer substitute for wireline broadband for many uses and for many Americans. The Commission should carefully consider arguments as to whether the current technological environment continues to justify the differential treatment accorded to fixed and mobile broadband services, especially in light of the fact that the rules will be in place over the long run,

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115 *See* NPRM ¶ 62.

116 *2010 Open Internet Order* ¶ 99.

117 *See* NPRM ¶ 62.

118 *See 2010 Open Internet Order* ¶¶ 94-95 (asserting that mobile services present "special considerations that suggest differences in how and when open Internet protections should apply," including the notion that mobile broadband services in 2010 were still developing into robust competitive alternatives to fixed services and that mobile networks faced "capacity" issues and other "operational constraints that fixed broadband networks do not typically encounter").

with the same device. It would be unreasonable—and likely arbitrary and capricious—to subject such traffic to one set of rules while it is delivered over a licensed mobile broadband network and a different set of rules whenever it is offloaded or shifted to a Wi-Fi network. After all, from the *consumer's* perspective, which has consistently been the focus of the Commission's efforts to promote Internet openness,[120] shifting between licensed mobile broadband connections and Wi-Fi connections often may go unnoticed, and there is certainly no reason for consumers to expect that Internet openness protections would be enhanced or diminished as a result of these shifts. The arbitrariness of this approach demonstrates the need for symmetrical rules for licensed mobile broadband and unlicensed Wi-Fi-based broadband services.

## V. THE COMMISSION SHOULD REFRAIN FROM RECLASSIFYING ANY COMPONENT OF BROADBAND INTERNET ACCESS SERVICE UNDER TITLE II.

The NPRM asks whether the Commission should "revisit the Commission's classification of broadband Internet access service as an information service" or "separately identify and classify as a telecommunications service a service that 'broadband providers . . . furnish to edge providers.'"[121] Comcast strongly supports the Commission's tentative conclusion that Section 706, as interpreted by the *Verizon* decision, provides "ample authority" to protect and promote

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[120] *See, e.g.*, *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements; Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, Policy Statement, 20 FCC Rcd. 14986 ¶ 4 (2005) (articulating four "Internet freedoms"—freedom to access content, to use applications, to attach personal devices, and to obtain service plan information—all phrased in terms of the rights of "consumers").

[121] NPRM ¶ 148 (quoting *Verizon*, 740 F.3d at 656).

Unlike common carrier regulation, which would be a poor fit for the dynamic and rapidly evolving broadband Internet marketplace, the Commission's longstanding light-touch regulation of the Internet has been endorsed by Congress and followed under Democratic and Republican FCC leadership.[126] As the Commission well knows, the approach has been a boon for the Internet economy, fostering an environment in which network investment, innovation, and broadband availability have flourished.[127] Due to sustained investment by broadband providers, more than 99 percent of Americans now have access to either fixed or wireless broadband service.[128] Increases in the speed of these connections have also been staggering. In the last decade, top broadband speeds have increased by 1500 percent.[129] From 2010 to 2013, the percentage of Americans with access to broadband service of over 50 Mbps jumped from 46 to 81 percent.[130] These widely available high-speed Internet connections are fueling innovation and competition in cloud services, streaming video and audio, home automation, and more.[131]

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126 *See, e.g.*, 47 U.S.C. § 230(b)(2) ("It is the policy of the United States . . . to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation."); *see also* News Release, *FCC Chairman Kennard Shares Goal of Local Governments to Achieve Open Broadband Access; Continues to Believe that Vigilant Restraint is the Right Way to Get There* (Aug. 11, 1999), http://transition.fcc.gov/Bureaus/Cable/News_Releases/1999/nrcb9014.html (endorsing and describing benefits of Commission's policy of "vigilant restraint").

127 *See* NPRM ¶¶ 30-32.

128 National Broadband Map, *Broadband Statistics Report, Access to Broadband Technology by Speed* 3 (Feb. 2014) ("*June 2013 National Broadband Map Statistics*"), http://www.broadbandmap.gov/download/Technology%20by%20Speed.pdf.

129 John Sununu & Harold Ford, Jr., *Don't Make the Internet a Public Utility*, SFGate, May 14, 2014, http://www.sfgate.com/opinion/openforum/article/Don-t-make-the-Internet-a-public-utility-5478946.php .

130 *Compare* National Telecommunications and Information Administration, *U.S. Broadband Availability: June 2010 – June 2012*, at 4, 7, tbl. 3 (May 2013),

Leading industry observers have expressed similar concerns. One such observer recently explained that reclassification would "dramatically slow the pace of advance in the technologies, business models, and network and service innovations of the future."[134] This echoed the Washington Post editorial board's prior conclusion that reclassification "could damage innovation in what has been a vibrant and rapidly evolving marketplace."[135] Another commentator went so far as to call reclassification "the worst idea in communications policy to emerge in the last 75 years."[136] To put it bluntly, it "would be disastrous."[137]

Indeed, even opening the door to such heavy-handed regulation by the Commission—*and possibly 51 different state public utility commissions as well*—would impose significant costs. The sheer uncertainty surrounding such a regulatory environment would produce "a profoundly negative impact on capital investment."[138] By itself, reduced investment would inhibit job creation, hinder the deployment of broadband infrastructure, and undermine the foundation of the "virtuous circle" of innovation that the open Internet rules are designed to advanced. The last time the Commission considered imposing such a regime stands as a stark illustration. In the days immediately following the Commission's 2010 proposal to reclassify broadband Internet

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[134] Bret Swanson, *The Real 'Slow Lane' Threat to the Internet*, Forbes, June 2, 2014, http://onforb.es/1p1z0vM.

[135] Editorial, *Internet oversight is needed, but not in the form of FCC regulation*, Wash. Post, Apr. 17, 2010, http://www.washingtonpost.com/wp-dyn/content/article/2010/04/16/AR2010041604610.html.

[136] Larry Downes, *What's in a Title? For Broadband, It's Oz vs. Kansas*, CNET News, Mar. 11, 2010, http://news.cnet.com/8301-1035_3-20000267-94.html.

[137] Anna-Maria Kovacs, *The Internet Is Not a Rotary Phone*, <re/code>, May 12, 2014, http://recode.net/2014/05/12/the-internet-is-not-a-rotary-phone/.

[138] Craig Moffett, *Quick Take-U.S. Telecommunications, U.S. Cable & Satellite Broadcasting: The FCC Goes Nuclear*, Bernstein Research (2010).

both nationwide and in rural areas in particular.[143] In contrast, this analysis indicated that the European model has had a demonstrably negative impact on European network coverage.[144] Indeed, after a decade of employing the two regulatory approaches, the United States leads Europe in fiber and LTE deployment, investment, download speeds, and price.[145] These observations ring particularly true in light of our nation's experience with public-utility-style regulation, which has led to severely diminished investment in the electrical grid and transportation infrastructure, as well as in the legacy telephone networks subject to Title II.[146]

The NPRM suggests, as the Commission had hypothesized previously, that forbearance from certain provisions of Title II might "strike the right balance between minimizing the regulatory burden on providers and ensuring the public interest is served."[147] But forbearance is not a viable solution for the problems described here. Although forbearance from "applying all but a handful" of Title II's duties and obligations is certainly preferable to full-blown common carrier regulation, it would do little to remedy the uncertainty a reclassification decision would sow. The Commission and the DOJ recognized in their *Brand X* petition for certiorari that "the FCC's forbearance authority is not in this context an effective means of remov[ing] regulatory

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143 *See* Christopher S. Yoo, *U.S. vs. European Broadband Deployment: What Do the Data Say?* 11-12 (June 2014), https://www.law.upenn.edu/live/files/3352-us-vs-european-broadband-deployment.

144 *See id.*

145 *See id.* at i-ii.

146 *See* American Society of Civil Engineers, *2013 Report Card for America's Infrastructure*, http://www.infrastructurereportcard.org (last visited July 9, 2014); *see also* Letter of Rick Chessen, National Cable & Telecommunications Association, to Marlene Dortch, Secretary, FCC, GN Docket No. 14-28, at 3 (May 14, 2014).

147 NPRM ¶ 153.

[D]epartment to have to engage in a lot of discussions with our foreign counterparts."[151] A reclassification decision, he warned, "could be employed as a pretext or as an excuse for undertaking public policy activities that we would disagree with pretty profoundly."[152] Relatedly, imposing common-carrier regulation on broadband services could undermine the United States' resistance to greater oversight of the Internet by the UN's International Telecommunication Union. That opposition has been grounded, in part, on U.S. opposition to "replac[ing] the existing, bottom-up form of Internet oversight with a government-led model."[153] As Assistant Secretary of Commerce Lawrence Strickling put it, proponents of such regulation "fail to acknowledge how fundamentally different the Internet is to the forms of communication which preceded it. The Internet does not operate under the anachronistic model of monopoly telephone providers that control all aspects of their networks within their countries."[154] Such arguments would ring hollow if the U.S. government began treating them the same.

### B. Title II Would Not Support the Type of Categorical Ban Many Reclassification Proponents Seek.

For all the problems that reclassification would cause, Title II almost certainly would not provide the Commission the authority that many proponents of reclassification seek. Those

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151 John Eggerton, *FCC's Net Neutrality Proceeding Means More Work for State Department*, Broad. & Cable, Mar. 17, 2010, http://www.broadcastingcable.com/news/washington/fccs-net-neutrality-proceeding-means-more-work-state-department/57276.

152 *Id.*

153 Eric Pfanner, *U.S. Rejects Telecommunications Treaty*, N.Y. Times, Dec. 13, 2012, http://www.nytimes.com/2012/12/14/technology/14iht-treaty14.html.

154 Lawrence E. Strickling, Assistant Secretary of Commerce, Remarks at the Brookings Institution's Center for Technology Innovation (Jan. 11, 2012), http://www.ntia.doc.gov/speechtestimony/2012/remarks-assistant-secretary-strickling-brookings-institutions-center-technology.

limits, is quite often found reasonable, and thus permissible. For example, the Commission has long held that rate differentials based on cost considerations are reasonable.[159] Telecommunications carriers also have been permitted to impose differential charges based on amounts of use.[160] Selective discounting or "haggling" has been found permissible in response to competitive marketplace conditions.[161] Likewise, the interest in meeting a competitor's price can be a valid ground for discriminating among customers.[162]

And such permissible discrimination is by no means limited to pricing differentials. Courts have "affirmed a common carrier's ability to refuse service to certain information providers if the telco determines that such carriage would harm its corporate reputation."[163] Moreover, courts have upheld the ability of common carriers to enter into individualized contracts, with varying terms and conditions, without vitiating their common-carrier status.[164] By the same token, despite the requirement that a common carrier hold itself out indifferently to

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159 *See, e.g.*, *Ameritech Operating Cos. Revisions to Tariff FCC No. 2*, Order, 10 FCC Rcd. 1960 (CCB 1994) (ILEC's disparate rates to different customers may be justified based on cost savings from serving one customer versus another); *ACC Long Distance Corp. v. Yankee Microwave, Inc.*, Memorandum Opinion and Order, 8 FCC Rcd. 85 ¶ 15 (CCB 1993) (change in costs over time justified difference in pricing).

160 *See, e.g.*, *Nat'l Ass'n of Regulatory Util. Comm'rs*, 737 F.2d at 1133.

161 *See Orloff v. Vodafone AirTouch Licenses LLC, d/b/a Verizon Wireless, and New Par*, Memorandum Opinion and Order, 17 FCC Rcd. 8987 ¶¶ 16-24 (2002), *aff'd sub nom. Orloff v. FCC*, 352 F.3d 415 (D.C. Cir. 2003).

162 *See AT&T Co. v. FCC,* 449 F.2d 439, 448 (2d Cir. 1971).

163 *Telephone Company – Cable Television Cross-Ownership Rules, Sections 63.54 – 63.58*, Second Report and Order, Recommendation to Congress, and Second Further Notice of Proposed Rulemaking, 7 FCC Rcd. 5781, 5878 (1992) (statement of Commissioner James H. Quello) (citing *Carlin Commc'ns, Inc. v. Mountain States Tel. & Tel. Co.*, 827 F.2d 1291 (9th Cir. 1987)).

164 *See, e.g.*, *Sw. Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1481 (D.C. Cir. 1994).

conclusion that the costs of any such hypothetical agreements would invariably outweigh the benefits, which is the finding that would be needed to sustain a blanket prohibition.

### C. Reclassifying Broadband Internet Access Under Title II Likely Would Be Unlawful.

Even if reclassification under Title II were sound as a matter of policy and would advance proponents' goals, such an approach likely would be unlawful. An agency is, of course, permitted to alter or even reverse its own prior positions and interpretations of statutes Congress has entrusted to its administration.[170] But it cannot do so purely for results-oriented reasons. It must "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made."[171] It "must show that there are *good reasons* for the new policy."[172] And the requirement is only heightened when the agency's prior position has "engendered serious reliance interests" or its new position "rests upon factual findings that contradict those which underlay its prior policy."[173] Reclassification of broadband Internet access as including a distinct "telecommunications service" would be precisely the sort of reversal that would upend settled reliance interests and require repudiation of consistent factual findings. And the Commission would be hard-pressed to show "good reasons" for a such a dramatic about-face.

The reliance interests flowing from the classification of broadband Internet access service as solely an "information service" are overwhelming. Since the Commission first classified

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170 *See FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009).

171 *Motor Vehicle Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks omitted).

172 *Fox Television Stations*, 556 U.S. at 515 (emphasis added).

173 *Id.*

*Order*.[180] The Commission would face a heavy burden providing good reasons for why, after purposely and explicitly engendering such massive reliance interests on the existing regulatory regime, the Commission should reverse course now.

Abandoning the Commission's long-held position on the nature of broadband Internet access service would be all the more difficult in light of the factual nature of that determination. The proper classification of broadband Internet access service hinges on "whether the transmission component of [the service] is sufficiently integrated with the finished service to . . . describe the two as a single, integrated offering."[181] That determination, the Supreme Court has explained, turns on "the factual particulars of how Internet technology works and how it is provided."[182] And the reality is that the particulars of how broadband Internet access service is provided have not materially changed since the Commission found in 2002 that it was offered as "a single, integrated service that enables the subscriber to utilize Internet access service through [the] provider's facilities and to realize the benefits of a comprehensive service offering,"[183] or since it re-analyzed broadband Internet access services provided over other platforms and reaffirmed the relevant findings in 2005,[184] 2006,[185] and 2007.[186]

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179 *BPL Order* ¶ 2 ("[A] minimal regulatory environment for BPL-enabled Internet access service . . . promotes our goal of ubiquitous availability of broadband to all Americans.").

180 *Wireless Broadband Order* ¶ 27 ("Through this classification, we provide the regulatory certainty needed to help spur growth and deployment of these services.").

181 *Brand X*, 545 U.S. at 990.

182 *Id.* at 991.

183 *Cable Modem Order* ¶ 38.

184 *Wireline Broadband Order* ¶ 9 ("Wireline broadband Internet access service, like cable modem service, is a functionally integrated, finished service that inextricably intertwines information-processing capabilities with data transmission such that the consumer always uses them as a unitary service.").

Moreover, not all third-party services are created equal. While many customers may look to other email providers, the same is not true of all other functions included in a comprehensive offer of broadband Internet access. Comcast customers, for example, overwhelmingly rely on *Comcast's* DNS and DHCP functionality. In fact, these services are inextricably intertwined with nearly every use of the integrated transmission service that Comcast provides. Every request to transport data from an end user to an edge provider and back through a domain name—like "netflix.com," "gmail.com," or "facebook.com"—relies on DHCP to supply the end user's originating IP address and DNS to translate the domain name that the end user enters or clicks on into the edge provider's destination IP address. Reclassification proponents argue that DNS capabilities should not matter because DNS lookup is "no more than a functional step carried out in service of [a] transmission."[189] But that argument was advanced by the *dissent* in *Brand X*,[190] and it was specifically rejected by the *Brand X* majority.[191]

In any event, customer reliance on third-party applications is nothing new. The Commission recognized the possibility in the *Cable Modem Order* itself, but concluded that it did not change the nature of the *offering*: "We find that cable modem service . . . is an information service . . . regardless of whether subscribers use all of the functions provided as part of the service, such as e-mail or web-hosting, and regardless of whether every cable modem service provider offers each function that could be included in the service."[192] The same is true

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189 Narechania & Wu Ex Parte Letter at 18.

190 *See Brand X*, 545 U.S. at 1012-13 (Scalia, J., dissenting) ("DNS . . . is scarcely more than routing information, which is expressly excluded from the definition of 'information service.'").

191 *See id.* at 999 & n.3 (majority opinion) ("[T]he definition of information service does not exclude 'routing information.'").

192 *Cable Modem Order* ¶ 38; *see also id.* ¶ 25 ("Whether the subscriber chooses to utilize functions offered by his cable modem service provider or obtain them from another source [e.g.,

insufficient to sustain the rules.[195] Neither approach is viable, and neither avoids the pitfalls of broader reclassification theories.

1. *Broadband Providers Do Not Offer a Distinct Telecommunications Service to Edge Providers.*

Certain commenters argue that, although broadband Internet access as furnished to end users is an information service under existing law, the Commission should reclassify the transmission functionality available to edge providers as a distinct telecommunications service.[196] Their arguments misconstrue both Commission precedent and the *Verizon* decision and, in any event, cannot be reconciled with the integrated nature of broadband Internet access service.

As an initial matter, the claim that the transmission of edge providers' content—what Mozilla calls a "remote delivery service,"[197] and what Professors Narechania and Wu call a "response transaction" or "'sender-side' traffic"[198]—falls "outside the category of services previously designated by the Commission"[199] is plainly false. To the contrary, the Commission made clear in the *Cable Modem Order* and in its subsequent classification decisions that what the Commission classified as an information service was the "single, integrated service that enables

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195 NPRM ¶ 150 (quoting Letter from Rep. Henry Waxman, Ranking Member, Committee on Energy and Commerce, to Thomas Wheeler, Chairman, FCC, at 2 (May 14, 2014)), http://democrats.energycommerce.house.gov/sites/default/files/documents/Wheeler-Title-II-Backup-Option-2014-5-14.pdf).

196 *See* Mozilla Petition at ii-iii; Narechania & Wu Ex Parte Letter at 1-2.

197 Mozilla Petition at 7.

198 Narechania & Wu Ex Parte Letter at 13-14.

199 Mozilla Petition at 9; *see also* Narechania & Wu Ex Parte Letter at 13 (asserting that "[c]lassifying such 'sender-side' traffic as a telecommunications service is, perhaps surprisingly, consistent with the *Cable Modem Order*").

whether the Commission could lawfully *compel* broadband providers to offer service as common carriers. And based on the court's core holding that the *2010 Open Internet Order* impermissibly imposed such a duty,[204] there can be little doubt that the court understood broadband providers were not independently acting in such a capacity. After all, if broadband providers were offering a telecommunications service to edge providers, they would be deemed common carriers and subject to the full panoply of Title II obligations as a matter of law, and the court would have had no basis to invalidate the no-blocking and nondiscrimination rules.

In any event, these reclassification theories cannot be squared with technical realities. While Professors Narechania and Wu contend that the service a broadband provider furnishes to an end user consists only of transmitting requests (or "calls") for data from the end user to the edge providers, and that the transmission of a "response" from the edge provider back to the end users is wholly separate, those characterizations are incorrect.[205] Modern broadband communications cannot be neatly segregated into "calls" and "responses"; rather, even relatively simple operations like downloading a webpage can entail a significant number of interactions among the website, the end user, and third parties that provide, for example, authentication, analytics, advertising, or other services. For example, when streaming a video from an edge provider, there is a constant two-way communication between the edge provider and the user's

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204 *See id.*

205 Narechania & Wu Ex Parte Letter at 13. Mozilla's petition implicitly recognizes the technical shortcomings of the Narechania/Wu proposal, as it concedes that the ostensibly distinct "call" and "response" transmissions "do not correspond to separate physical network segments, or separate directions of traffic flow, or any other 'hard' technical distinctions." Mozilla Petition at 8. Rather, in Mozilla's view, a broadband provider's service to end users and service to edge providers should be seen as "logically and legally distinguishable," even if not "physically separable." *Id.* at 7.

business relationships with end users and with their interconnection partners, not based on privity (with respect to the vast majority of edge providers).[209] Neither isolated disagreements between some broadband providers and their interconnection partners,[210] nor a broadband provider's internal network management,[211] can change that fact.

Even if the Commission could identify—technologically or logically—a separate service that is actually "offered" to edge providers, it could not legally classify that service as a telecommunications service any more than it could reclassify the service to end users. A "telecommunications service" under the Communications Act is an "offering of telecommunications for a fee directly to the public."[212] But, with the exception of a handful of interconnection agreements that are outside the scope of these proceedings,[213] broadband providers do not "offer" anything "directly" to edge providers. Broadband providers certainly do not offer edge providers any such service "for a fee," as the statutory definition of "telecommunications service" requires. Indeed, that is precisely what many proponents of reclassification seem to believe Title II would prevent.

Notably, if the Commission were to isolate and extract a "telecommunications service" from the integrated information service that broadband providers currently offer, as proposed, the decision may have much broader effects than direct reclassification. Once the Commission

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209 Mozilla Petition at 3-4.

210 *Id.* at 4-5.

211 *Id.* at 7.

212 47 U.S.C. § 153(53).

213 NPRM ¶ 59. Even if the Commission were to consider these individualized agreements, moreover, they do not constitute an offer "directly to the public, or to such classes of users as to be effectively available directly to the public." 47 U.S.C. § 153(53).

Section 706.[217] But for all the reasons Title II is unavailable as primary authority, it is unavailable as a backstop. The facts and the law do not support reclassification, and the policy is misguided. If the Commission concludes that the ample authority provided by Section 706 is insufficient to protect the open Internet, the solution is to request that authority from Congress, not to overreach under a different provision.

Moreover, an order that reclassified broadband Internet access services as a "telecommunications service" only if a court were to conclude Title II was necessary to adopt the open Internet rules would be internally inconsistent. As detailed above, the classification of broadband Internet access service must rest on the "factual particulars" of the offered service. Broadband providers either offer a single, integrated information service, or they offer a distinct telecommunications service that is subject to common carrier regulation under Title II. The Commission cannot rationally purport to find both at the same time, depending on how a court might subsequently interpret the Commission's legal authority. In other words, the proper legal basis for regulating broadband Internet access service depends on the functional nature of the service; the Commission cannot first decide the legal basis for its rules in a vacuum and then come up with a characterization of the facts that fits that legal theory.[218]

The Commission similarly should reject proposals to adopt an order reclassifying a component of broadband Internet access service as a telecommunications service and forbearing

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217 *See* NPRM ¶ 150.

218 *See* Brief for the Federal Petitioners at 23, *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967 (2005), http://www.justice.gov/osg/briefs/2004/3mer/2mer/2004-0277.mer.aa.pdf (stating that "the question whether a particular service constitutes a 'telecommunications service' under the Communications Act *must be* resolved by reference to the nature of the provider's 'offering . . . to the public,' and thus the classification 'turns on the nature of the *functions* that the end user is offered.'") (quoting 47 U.S.C. § 153(53) (formerly 47 U.S.C. § 153(46)) (emphasis added).

In developing these enforcement mechanisms, however, the Commission should take concrete steps to ensure their transparency and fairness. As an initial matter, it is vital that the Commission provide broadband providers that are the subject of any investigations or complaints with sufficient information as to the alleged conduct being investigated, the alleged target of such conduct, and the time period over which such conduct allegedly occurred. Without this information, broadband providers would be limited in their ability to respond adequately to such inquiries—thus preventing broadband providers from defending themselves effectively, and potentially depriving the Commission of critical information that could inform its case-by-case analysis. While Comcast does not suggest that the Commission cannot take anonymous complaints into account as it attempts to monitor any emerging problems,[221] broadband providers should not be called upon to respond to complaints that lack full information as to the circumstances being complained of and the complainant involved, and plainly should not be subject to administrative penalties without an adequate opportunity to respond.

While the NPRM notes concerns about possible "retaliation" in the event of a complaint, such concerns are misplaced.[222] The Commission processes tens of thousands of non-anonymous complaints of all kinds each year by forwarding them to telephone, cable, satellite, and wireless companies. The NPRM cites no evidence that this well-established procedural mechanism has led to "retaliation" of any sort against subscribers. Indeed, any adverse action by a broadband provider against an individual or entity that files a complaint with the Commission would be self-defeating, in light of the loss of goodwill and competitive harm that inevitably would result from such conduct. The Commission has appropriately declined to adopt proposals

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221 *See id.* ¶ 172 (asking whether the Commission should "permit individuals to report possible noncompliance with our Open Internet rules anonymously").

222 *Id.*

Additionally, the Commission should seek the input of technical advisory groups, such as the OIAC, the Broadband Internet Technical Advisory Group ("BITAG"), the Internet Engineering Task Force ("IETF"), and the North American Network Operators Group ("NANOG"), to assist the Commission in developing a set of industry best-practices that could serve as presumptive safe harbors in enforcement proceedings.[226] Comcast has long supported proposals to develop a government-led "co-regulatory" framework under which the Commission would leverage the expertise of one or more third-party groups in providing guidance to broadband providers and other marketplace participants.[227] As Comcast has explained in the past, such an approach has a variety of benefits, including the development of norms that reflect maximum stakeholder input and thereby reinforce the collaborative and symbiotic nature of the Internet ecosystem, and the increased likelihood that Internet openness standards keep pace with evolving marketplace practices and conduct.[228] The Commission thus should carefully examine how to incorporate the contributions of OIAC, BITAG, IETF, NANOG, and potentially other organizations and institutions into its policymaking and regulatory efforts in this area.

## VII. CONCLUSION

For the foregoing reasons, the Commission should adopt rules consistent with the discussion above to protect and preserve the open Internet. The Commission should not adopt rules that are more intrusive than those it adopted in 2010, and in all events, should not reclassify

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226 *Id.* ¶ 176.

227 *See, e.g.*, Reply Comments of Comcast Corp., GN Docket No. 09-191, at 5 (Apr. 26, 2010).

228 *See id.* at 9 (citing Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. Davis L. Rev. 529, 569-72 (Dec. 2009)).

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# EDITED TRANSCRIPT

## CMCSA - Q4 2015 Comcast Corp Earnings Call

EVENT DATE/TIME: FEBRUARY 03, 2016 / 1:30PM GMT

**OVERVIEW:**

Co. reported that 4Q15 adjusted revenue grew 7.6% YoverY and adjusted EPS came in at $0.81.



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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

Thanks, Jason and good morning, everyone and thank you for joining us today. 2015 was a terrific year for Comcast NBCUniversal and I couldn't be more pleased with the strong operational performance and financial results that we delivered both for the fourth quarter and for the full year. Honestly, 2015 was not without its challenges, but instead of letting those challenges become real distractions, our Company pivoted and executed extremely well, particularly in the second half of the year. I am so proud of our resilience and leadership team for creating the momentum that is now driving us forward in 2016. Neil Smit and Dave Watson and everyone at Comcast Cable is heroic in my mind for not only staying focused, but generating the best yearly video subscriber results that we've had in nine years and the best broadband subscriber results that we've had in eight years.

We ended on a high note as our fourth-quarter video net additions were our strongest quarterly results since the first quarter of 2007. At the same time, we expertly balanced these great customer metrics with solid financial performance. At NBCUniversal, Steve and his team exceeded expectations once again. We set new box office records, achieved number one ratings in broadcast from morning to primetime to late night, continued the outstanding progress in our theme parks and sustained healthy profits at cable networks. Altogether Comcast NBCUniversal made incredible strategic, operational and financial progress in 2015 and did this through a collaborative culture where our businesses are focused on strengthening themselves and each other.

Overall, we grew revenue 8.3% in 2015 and operating cash flow by 7.7%. We generated close to $9 billion in free cash flow and increased cash return to shareholders by over 40%. After reviewing our performance and outlook with our Board, we are announcing today our decision to raise our dividend by 10%, marking the eighth consecutive annual increase. We also increased our stock repurchase authorization to $10 billion and we expect to repurchase $5 billion of stock in 2016.

Comcast NBCUniversal is indeed a special company. This is a time of exciting change in media and technology and we're uniquely positioned. We have a diversified portfolio of businesses working well together and the best suite of products, content and experiences that we've ever had.

So with that, let me talk about some of our specific achievements in 2015 and a few of the things that we're looking forward to in 2016 and beyond. Starting with NBCUniversal, we've now fully doubled the operating cash flow since we announced the acquisition in 2009. In our TV business, we maintained our number one ranking in broadcast primetime and saw continued success in The Voice and Blacklist paired nicely with some new breakout hits, including Blindspot. In addition, we build on the strength of our Chicago franchise with our new show, Chicago Med.

Sunday Night Football remained TV's number one primetime show for the fifth year, grew viewership by 6% and completed the highest rated season in its history. And as I mentioned, we exit 2015 with strength across all parts of the day with the Today Show, Nightly News and Late Night all number one in their respective categories. NBC Sports Network had its most-watched year ever driven by NASCAR's debut and the continued growth of English Premier League and NHL. USA's Mr. Robot just won the Golden Globe and the Critics' Choice Award for the best drama on television, a terrific accomplishment. Congratulations to Bonnie Hammer and her team.

Film had the best year in its history. Jurassic World, Furious 7, Minions and Fifty Shades of Grey, along with other titles, were hugely successful. With $6 billion in worldwide box office receipts, two-thirds of which was international, and a strong and growing list of franchises, Universal Pictures is in a great position for ongoing success.

And finally, theme parks had another outstanding year. We again grew revenues and operating cash flow double digits through our proven formula of new attractions complemented by additional hotel room capacity. From Harry Potter to Transformers and Fast and Furious, our team at Universal Parks and Resorts has been on a fantastic run and there's plenty of growth on the horizon with our recent acquisition of a 51% stake in the park in Osaka, Japan, a new Harry Potter attraction opening in Hollywood, a new waterpark being built in Orlando, a brand-new park being designed for Beijing and our focus on increasing hotel room capacity.

At cable, I feel we stand out in the industry, delivering a healthy balance between solid improvements in subscriber metrics coupled with very strong financial performance. In 2015, we added 666,000 customer relationships and that's an 86% improvement versus last year. And at the same time, we increased revenue per customer relationship a healthy 4.2% and grew operating cash flow 5.6%.



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Total revenue per customer relationship reached $145 per month, a 3.5% increase that reflects the successful execution of our strategy that is focused on retaining customers, growing customer relationships and driving our value-added bundling strategy.

Taking a closer look at our video business, fourth-quarter revenue increased 4.4%, reflecting rate adjustments and higher take rates of advanced services. We ended the year with very strong video customer growth, adding 89,000 customers in the fourth quarter. This is our best quarterly result in eight years, driven primarily by another quarter of improved churn. Our churn results reflect improved customer support, better market segmentation and customer recognition of what we believe is the best video product on the market. We continue to make great progress rolling out X1 to new and existing customers, adding 1.1 million customers in the quarter, a 73% increase compared to last year. X1 customers now represent about 30% of our total video customer base.

In addition, we continue to expand our TV Everywhere and On Demand choices. We now have 75,000 shows On Demand, 700 full season stacked series, which is up 50% from a year ago and 98 live streaming channels available outside the home.

Lastly, we're doing a better job segmenting the market, providing offers with more choice and appeal to new audiences that address multiple segments of the market. For example, we have increased our penetration of Hispanic households with targeted bicultural products and offers.

The strong momentum in our high-speed data business continued. Revenue increased 9.8% during the quarter, making it again the leading contributor to overall cable revenue growth, driven by an impressive increase in our customer base, as well as rate adjustments and an increasing number of customers taking higher-speed services. We added 460,000 data customers during the quarter and 1.4 million during the full year with 77% of our customers receiving speeds of 50 megabits per second or greater. We have now added over 1 million high-speed data customers for 10 years in a row and we see significant room for growth ahead. About 74% of our residential high-speed data customers now have one of our wireless gateways, which are also fueling our impressive growth in Wi-Fi hotspots that now number more than 13 million.

Voice revenues declined by 1.7% in the fourth quarter as customer additions were offset by a modest decline in ARPU. In the fourth quarter, we increased net customer additions by 139,000, a 13% increase versus a year ago. Business Services was once again a large contributor to cable revenue growth with revenue increasing 18.9% to $1.3 billion. We have three engines of growth in Business Services each at a different stage of development -- small business, which has healthy market penetration and generates the majority of our revenue; mid-sized business where our market penetration is still less than 10%, but is growing at a higher rate; and our recently announced enterprise division that targets Fortune 1000 companies and is gaining traction with more than 20 large enterprise customers and multiple eight-figure deals already signed. Business Services has strong positive momentum and continues to represent a large and attractive growth opportunity for the Company.

Finally, cable advertising revenue declined 9.3% due to lower political revenue. Excluding political, our core cable advertising revenue increased 2.8% during the fourth quarter.

Turning to slide 7, fourth-quarter Cable Communications operating cash flow increased 4.6% to $4.9 billion resulting in a margin of 40.9% compared to 41.4% in the fourth quarter of 2014 driven by higher expenses primarily related to the investments we are making to improve the customer experience and higher programming costs. Fourth-quarter programming expense growth slowed to 4.7% reflecting the timing of programming renewals while the full year increased 7.1%.

As I said at a recent conference, the rate of programming expense growth will increase in 2016. We expect approximately 10% growth in programming costs for the year driven by several contract renewals beginning in the first quarter, as well as increases in retransmission consent fees and higher sports programming costs.

In negotiating programming deals, we continue to value expanded content rights for our On Demand and TV Everywhere platforms. We are adding more content, out-of-home rights, stacking rights and back seasons ensuring we have the most compelling and competitive video product on the market. Non-programming expenses increased 8.1% for the quarter and 6.4% for the year. This growth reflects increased spending to improve the customer experience as we've added technicians and service personnel to strengthen our dispatch teams and operations and invested in training, tools and technology. Metrics, including on-time appointments, call pickup time and new customer onboarding success rates are all trending in the right direction.



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shareholders. The compound annual growth rate in our dividend from 2009 to 2015 was 24.4% versus 10% for the S&P 500. Looking ahead, it is a high priority for us to continue this record of great total capital returns. This will be achieved by balancing three elements. First, the healthy annual return of capital to shareholders, which, for 2016, is the eighth consecutive annual increase in the dividend to $1.10 per share together with a plan to buy back $5 billion of stock over the course of the year.

The second element to balance is investment in our business to profitably grow the long-term earnings capacity of the Company. This includes a significant CapEx investment that I covered on the last slide. It also includes the deployment of capital to enhance our existing businesses through relatively modest business development efforts such as the Vox and BuzzFeed digital investments and the Japan park deal that we did in 2015. And lastly, it includes exploring contiguous growth opportunities as we were doing in both a variety of ways, including through Michael Angelakis' new fund.

As we set our capital return plan for the year, we earmark some capital for the whole basket of these types of situations, but we consider each situation on its own financial merits. And since I know it's on many of your minds, we will be filing to participate in the upcoming forward spectrum auction, but I also want to be clear that the $5 billion in planned 2016 buybacks will not be reduced in the event that we acquire some spectrum in the auction.

The third and final element of our balanced capital plan is the very important maintenance of a strong balance sheet to protect the Company in times of economic and market stress and position us to potentially capitalize on opportunities to create value in such times such as we did with the NBCU transaction. As will begin what has thus far been a very volatile 2016, we are well-positioned with our leverage at around 2 times.

With that, I'm done with the slides. I hope everyone has a good sense for how pleased we are with the fourth-quarter and full-year 2015 results, as well as our momentum as we head into 2016. Now I will turn it back to Jason to lead the Q&A.

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**Jason Armstrong** - *Comcast Corporation - SVP, IR*

Thanks, Mike. Brent, let's open up the call for questions, please.

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## QUESTIONS AND ANSWERS

**Operator**

Thank you. We will now begin the question-and-answer session. (Operator Instructions). Craig Moffett, MoffettNathanson.

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**Craig Moffett** - *MoffettNathanson - Analyst*

Good morning and thanks. So Mike, one quick clarification first and then a question for Neil. Mike, you just said a moment ago that your share repurchases wouldn't be conditional on participation in the auction. If you participate in the auction, but don't find the prices attractive enough and end up not buying in the auction, would that suggest that you might actually increase your share repurchases?

And then for Neil, you just announced yesterday your first markets for DOCSIS 3.1. I was wondering if you could give us any color on whether you plan to offer that as a standard product or as a premium product going forward and if you've got anything that you can talk about with respect to how you might price it for consumers.

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**Mike Cavanagh** - *Comcast Corporation - Senior EVP & CFO*

So you hit it right on the auction. We just said that we're going to take a paddle in the auction, which means we're going to evaluate, consider and may purchase, but only if we think the price is right after we do our evaluation of what's available. As far as what we do in the buyback, if we don't



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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

I think churn is the one thing that I would add to that and all that adds up with each of the products having a decrease in churn. I don't know if, Steve, on the NBCUniversal side, we --.

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

I think if you have great channels with great products like the Olympics or the NFL, or Mr. Robot on USA, your channels are going to stay in the bundle and it's going to continue to be a very good business for a very long time.

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**Jessica Reif-Cohen** - *Bsnk of America Merrill Lynch - Analyst*

Can I just follow up on NBC, the land acquisition? Given the IRRs on theme parks, which are really impressive, could you talk about the usage of the land and timing?

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

Well, I think it's a little early for that. We just closed on the deal this quarter. We got 475 acres, so we have a lot of land to work with and we have some ideas, but we don't have firm plans at this point.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

One of the great things about universal theme parks and we've seen this now in different geographies, there's a long lead time, a lot of smart planning, understanding what attractions work, but it all starts by having the ability to do that and so this land, we think, is really a wonderful strategic acquisition and it's long term down the road, I think.

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**Operator**

Ben Swinburne, Morgan Stanley.

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**Ben Swinburne** - *Morgan Stanley - Analyst*

Thanks. I have a question back on wireless and then some maybe housekeeping for Mike. Brian, I don't know if you'd comment, but you are obviously planning to at least participate in the auction. You have a large Wi-Fi footprint out there. You have the MVNO. Can you talk a little bit about where your head is at on wireless broadly? Like where is all this headed? Have you figured that out yet, or is it still very much a dynamic situation?

And Mike, I don't know if you'd help us as we think about that free cash flow number. You said $9 billion for 2015 and we think about that for 2016. I don't know if you want to help us on things like cash taxes, working cap and maybe the intangibles, which are numbers that factor in to how we think about I guess this year. Thank you, both.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

I think you put your finger on it. We have a lot of assets in the Company and, Neil, feel free to join on this answer, but really all we're doing today is saying, we'll, as Mike called it, take a paddle in the auction to see if there's an opportunity for the Company to be rewarded in that auction with something that we think has strategic value. And in the past, that has proved to be not only a moneymaker, but given us more strategic flexibility and we want to know if that's the case this time.



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Internet Plus is an example; Stream is an example of a product that we're targeting at a specific segment. So we're giving them the product they want at the right price and we're retaining and we're servicing them well and retaining them longer.

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**John Hodulik** - *UBS - Analyst*

Got it. Thanks.

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**Operator**

Vijay Jayant, Evercore ISI.

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**Vijay Jayant** - *Evercore ISI - Analyst*

Thanks. Also for Neil, any color you can give us where you are on your trajectory with some of the segmented skinny products and how much runway do we have there, at least very broadly to your carried minimums? And second, on an IP-only product, I know you have a low-end proposition in the market, some of your peers have talked about rolling that out in the next year. Is that something you think could be a good strategy going forward? Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning the skinny bundles, they are actually a very small percentage of our overall video customer base and we do feel we have room with the programmers and the penetration rates. In the fourth quarter, 75% of [the year over year improvement in] (corrected by company after the call) our video adds were at the higher-end packages. So I don't want to overstate the significance of skinny bundles. The Stream product we just rolled out in a few markets in Boston and Chicago. It's probably too early to say what it will turn into over time, but we feel good about the usage and good about the product. It's a good value proposition for the customer and we'll continue to roll it out to other markets.

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**Vijay Jayant** - *Evercore ISI - Analyst*

Great. Thank you.

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**Operator**

Jason Bazinet, Citi.

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**Jason Bazinet** - *Citi - Analyst*

I have a question for Mr. Roberts. Given your past success in M&A, the lean balance sheet that you have, the more muted, maybe, buyback relative to your cash flow, a lot of investors in meetings that we're in put on the radar screen more transformative M&A in wireless, in the Internet space, European cable. Do you think that's a misguided notion, or is that something that investors should think about in terms of the realm of possibilities for the next year?

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**Brett Feldman** - *Goldman Sachs - Analyst*

And then just with regards to the second part, do you feel like you've done a lot of that work, or do you think it's something that's going to be ongoing for a period of time?

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

I think it's going to be ongoing. I think the video marketplace is very dynamic now. There's a lot of competition and I think the programmers recognize this as do the distributors and we work together to -- we trial things all the time and we're working in both the programming packaging space, as well as the advanced advertising space to deliver more value via more targeted advertising. So it's an ongoing conversation.

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**Brett Feldman** - *Goldman Sachs - Analyst*

Great. Thanks for the color.

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**Operator**

Anthony DiClemente, Nomura.

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**Anthony DiClemente** - *Nomura Securities - Analyst*

Thanks for taking my questions. I have two for Steve. Steve, can you just share with us please the strategic thinking on licensing the five Thursday night football games and how that NFL contract will work its way into the NBCU financials this year?

And then, secondly, the distribution revenue growth at the cable networks is 6.8% in the quarter. Just wondering if you can give us -- kind of break down that number in terms of what was the affiliate rate increase per sub and then what's the subscriber volume underneath that number and is that a sustainable type of growth rate going forward into 2016? Thank you.

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

Let me answer the second question first. We had a slight decline in the number of subscribers that was overmatched by a series of rate increases. It's going to be lumpy quarter-by-quarter and year-by-year on the affiliate side, but -- and this is probably on the low end of what you can see in the future -- but it will be lumpy.

On the NFL, the number one show on television is Sunday Night Football and is a very, very important part of our business. Football is profitable for us now. It will be profitable for us after the Thursday night deal and the ability to have these 24 football games, which will be 24 of the highest rated nights of the year, is very, very valuable for a marketer that wants to reach a broad audience. In fact, getting more valuable all the time as the world continues to fragment. So we're very happy that we were selected. The NFL has put their faith in our team and our broadcast and we're delighted about it. It's really the best programming, most powerful programming on television and we got it at a very fair rate.

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**Anthony DiClemente** - *Nomura Securities - Analyst*

Thanks very much.

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**Operator**

Marci Ryvicker, Wells Fargo.



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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Steve, why don't I start and then hand it over to you if you have any additional comments. We believe there is a real opportunity in the linear space to do some of the things that the digital space does so well such as measurements and targeting and we have done a few acquisitions, FreeWheel and Visible World, that fit into building that platform that delivers from targeted advertising both from the demand side, as well as the sales side, making it easier for the customers to deliver their ads.

We have Visible World, which delivers the targeting system. We have set-top box data, which can power it and we think we've -- we're still building the platform, but we're delivering value as it is to a number of programmers. I think that concerning Canoe, it's an integral part of delivering the dynamic ad insertion and I think we're -- one of the other things we're working on is what's the right ad load in VOD and can we improve the ad targeting and delivery of that system. Steve, do you want to add anything?

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

I think broadly what advertisers are talking about in almost every single discussion is how to use the data that they are accustomed to getting from when they place a digital buy, how to get that with a television buy. And if anything, I think the pendulum is swinging a little bit back toward traditional television advertising, putting a 30-second spot on television. Obviously, the Nirvana is to have nationwide addressability. I think that's years away and difficult to cobble together for all the obvious reasons.

But, in the interim, we have a whole variety of products that we have right now in the market that take advantage of set-top box data and other information overlaid on top of our shows and existing ratings data so that we can go to advertisers and say we have more eyeballs than anybody else in America, than any other company in America and we can inform your purchases of those eyeballs, we think, as well or better than anyone else. So it's not like we're waiting for addressability, but obviously addressability is a final end state, which I think is going to make television advertising that much more valuable.

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**Bryan Kraft** - *Deutsche Bank - Analyst*

Great, thank you.

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**Operator**

Mike McCormack, Jefferies.

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**Mike McCormack** - *Jefferies & Co. - Analyst*

Neil, maybe just a quick comment on very strong broadband adds, what you are seeing out there. Was it a reduction in churn, better gross adds, a combination of the two? Any particular markets where you had more success than normal? And then maybe just the follow-up on Wi-Fi hotspots and handoff. Can you just give us an update on what you're seeing from a customer experience standpoint on handoff technology and quality of service? Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning the HSD numbers, I think that it was strong delivery across the board. Almost every market had indexed higher on connects, but the biggest driver was disconnects or churn and that was across the board in the business, not just HSD. So I think there's still room for growth. 70% of America has broadband and there's room for growth within the sector and we feel we've got the best, fastest Wi-Fi in the household and we can deliver a great experience. We are rolling out DOCSIS 3.1 and I think it's going to be a good business for us going forward.



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

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|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Protecting and Promoting the Open Internet | ) | GN Docket No. 14-28 |
| | ) | |
| Framework for Broadband Internet Service | ) | GN Docket No. 10-127 |

# COMMENTS OF TIME WARNER CABLE INC.


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

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| In the Matter of | ) | |
| | ) | |
| Protecting and Promoting the Open Internet | ) | GN Docket No. 14-28 |
| | ) | |
| Framework for Broadband Internet Service | ) | GN Docket No. 10-127 |

## COMMENTS OF TIME WARNER CABLE INC.

Time Warner Cable Inc. ("TWC") hereby submits its comments in response to the Notice of Proposed Rulemaking ("NPRM") and Public Notice in the above-captioned dockets.[1]

## INTRODUCTION AND SUMMARY

The NPRM's central goal—"protecting and promoting Internet openness"[2]—enjoys near-universal support. While there have been differences in opinion concerning the most effective (and lawful) means of preserving the open Internet, there has never been any disagreement about the importance of doing so. In particular, TWC and other broadband Internet access service providers not only have been consistent champions of the open Internet—they built it in the first place. Indeed, broadband Internet access providers, despite being portrayed by some advocates as posing a threat to the open Internet, are primarily responsible for its emergence as a robust and essential platform for innovation, economic growth, and free expression.

The private sector has fueled the proliferation of broadband services throughout most areas of the nation. Leading the way have been cable operators, such as TWC, which offered broadband Internet access as an alternative to dial-up long before telephone companies offered

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1 *Protecting and Promoting the Open Internet*, Notice of Proposed Rulemaking, GN Docket No. 14-28 (rel. May 15, 2014) ("NPRM"); *see also Wireline Competition Bureau Seeks to Refresh the Record in the 2010 Proceeding on Title II and Other Potential Legal Frameworks for Broadband Internet Access Service; Pleading Cycle Established*, Public Notice, GN Docket No. 10-127, DA 14-748 (rel. May 30, 2014).

2 NPRM ¶ 4.

TWC has not sought to prioritize any class of Internet traffic at the expense of another. Rather than divide the Internet into a world of "haves" and "have nots," TWC's business interests and corporate values spur it to give customers unfettered access to online content and services.[4]

The sustained, massive investment that allowed TWC and others to build today's broadband networks would not have been possible were it not for the environment of minimal regulation that prevailed during most of the past several decades. In light of that experience, TWC continues to believe that the Commission could preserve the Internet's openness by maintaining vigilance and acting only in response to demonstrated problems, and that overbroad regulation—especially in its most extreme form, fashioned under Title II—would pose particular risks to the Internet's vitality that far outweigh any benefits.

Nevertheless, TWC appreciates that there remains widespread support, particularly in the wake of the D.C. Circuit's *Verizon* decision,[5] for adopting certain baseline protections to ensure that all participants in the Internet ecosystem continue to thrive. Consistent with that consensus, TWC supports the Commission's existing transparency rules, which create a strong foundation for consumers to make informed choices among broadband providers and service levels. TWC also believes that reinstatement of a "no blocking" rule will create a helpful regulatory backstop, provided it is applied evenhandedly and construed in a manner that does not unduly constrain the flexibility of broadband providers. And a new rule that would enable the Commission to screen any business arrangements between broadband access providers and edge providers for "commercial reasonableness," if properly tailored to the realities of the broadband marketplace, could bolster stakeholders' confidence that the virtuous circle that drives the Internet's success

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4 As discussed below, it is far more likely that content owners would seek payment from broadband providers, rather than the other way around. *See infra* at 23.

5 *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

forbearance authority to mitigate some of the problems, the prospect of more intrusive regulation (including prescriptive rate and service-quality regulation) would undercut incentives to expand and enhance broadband networks. And such serious harms would not even be counterbalanced by any meaningful benefits, as Title II would not expand the Commission's authority with respect to the no-blocking and commercial reasonableness rules at issue. In contrast, not only does Section 706 give the Commission ample authority to adopt the proposed safeguards, but it will enable the Commission to do so in a far more certain and stable manner that avoids the profound risks that would flow from upending parties' reliance on well-settled statutory classifications.

*Second*, consistent with the NPRM's interest in ensuring that purchasers of broadband Internet access have unfettered access to online content and services, the Commission should address the entire Internet ecosystem in a technologically and competitively neutral manner, rather than singling out providers of fixed broadband Internet access for unique restrictions. This more holistic approach to preserving Internet openness would be an important correction to the Commission's previous attempt to regulate in this area. As TWC and others have observed, while there continues to be no evidence that wireline broadband Internet access service providers are actually acting in furtherance of purported incentives to restrict openness, several large edge providers have not only the ability to restrict access to online content and services but also troubling track records of doing so. Thus, the new rules should apply evenhandedly to edge providers that engage in transmission by wire or radio (as almost all large edge providers today

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*Broadband Plan for Our Future* at 136 (rel. Mar. 26, 2010) ("National Broadband Plan") (recognizing that meeting just one of the Plan's goals—extending terrestrial broadband infrastructure to seven million unserved households—would cost $24 billion in 2010 present value).

## DISCUSSION

### I. THE COMMISSION SHOULD EXERCISE ITS AUTHORITY UNDER SECTION 706 RATHER THAN REVISIT AND REVERSE ITS BROADBAND CLASSIFICATION DETERMINATIONS

The Commission issued the NPRM in response to the D.C. Circuit's *Verizon* decision, in which the court "remand[ed] the case to the Commission for further proceedings consistent with [its] opinion."[8] The only jurisdictional option identified in the NPRM that could reasonably be deemed "consistent" with the court's guidance is reliance on the Commission's authority under Section 706. The Commission should follow the blueprint provided by the *Verizon* court and refrain from inviting the various harms associated with a radical reclassification of broadband Internet access service pursuant to Title II.

#### A. Section 706 Provides Ample Authority to Adopt Open Internet Protections.

In *Verizon*, the D.C. Circuit confirmed that the Commission has sufficient authority pursuant to Sections 706(a) and (b) to adopt the safeguards discussed in the NPRM and also set forth guidance on how the Commission could do so lawfully. Section 706 directs the Commission to take action to "encourage the deployment of broadband telecommunications capability."[9] Because the court agreed with the Commission that Internet openness fosters a "virtuous circle" of investment and innovation in broadband networks and services, it found that protecting openness through enforceable rules is within the Commission's authority under Section 706.[10] In particular, the court upheld the transparency rules adopted in the *2010 Open Internet Order*, which as noted above provide a solid foundation for preserving the open

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8 *Verizon*, 740 F.3d at 659.

9 *Id.* at 634.

10 *Id.* at 644. For the same reasons, Section 706 authorizes the Commission to extend open Internet protections to edge providers, given that blocking or unreasonable discrimination by such entities poses an even more direct threat to openness. *See infra* at 23.

### B. The Commission Should Reject the Various Proposals to Reclassify a Component of Broadband Internet Access as a Title II Telecommunications Service.

The Commission has consistently found that all transmission elements involved in the provision of broadband Internet access are part of a single, integrated information service. And that remains true today. Accordingly, there is no sound basis for reclassifying any "telecommunications" component as a stand-alone "telecommunications service"—to the contrary, doing so would invite substantial legal challenges and would prove counterproductive from a policy standpoint.

#### *1. Reclassification of the Telecommunications Component Used to Provide Broadband Internet Access Would Be Legally Unsound.*

Despite acknowledging that the *Verizon* decision offers a judicially sanctioned roadmap adopting the proposed open Internet safeguards, the NPRM suggests that the Commission nevertheless should "seriously consider" reclassifying the telecommunications component of broadband Internet access as a telecommunications service as a basis for imposing those rules.[17] But even apart from the absence of any need to pursue that risky and destabilizing path, Title II simply is not a viable alternative to Section 706, and the Commission already has an extensive record detailing why. If anything, the case against reclassification is even stronger today than when the Commission last examined the issue. TWC's previous submissions have set forth the serious problems with this approach in detail, and TWC incorporates those arguments by reference and summarizes them below.[18]

First, the Commission cannot simply abandon the factual findings underlying its long-standing classification decisions for policy-driven reasons. The Supreme Court made clear in

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17 NPRM ¶ 4.

18 *See generally* Comments of Time Warner Cable Inc., GN Docket No. 10-127 (filed July 15, 2010) ("TWC Title II Reclassification Comments").

telecommunications, because the telecommunications and information-processing elements are inextricably combined in the service furnished to end users.[23]

Nothing about the "factual particulars" of how broadband Internet access is offered has changed. Cable operators have never offered the telecommunications component of broadband Internet access as a common carrier telecommunications service, and features such as Domain Name System ("DNS") resolution and security capabilities remain core components of the ISP service offered to end users. Today, just as in years past, TWC's broadband Internet subscribers rely on the advanced tools that TWC provides to access the Internet and to find and retrieve content. And while TWC's service has continued to improve, there has been no material change in the capabilities offered to its subscribers. Subscribers retrieve the information they seek because the ISP's DNS server delivers information-processing capabilities rather than mere

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[23] *See Cable Modem Order* ¶ 38 (holding that, while "cable modem service provides the[se] [information-processing] capabilities . . . 'via telecommunications,'" that telecommunications component is not "separable from the data-processing capabilities of the service"); *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 ¶ 9 (2005) ("*Wireline Broadband Order*") ("Wireline broadband Internet access service, like cable modem service, is a functionally integrated, finished service that inextricably intertwines information-processing capabilities with data transmission such that the consumer always uses them as a unitary service."); *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, 22 FCC Rcd 5901 ¶ 26 (2007) ("Like cable modem service, wireline broadband Internet access service, and BPL-enabled Internet access service, wireless broadband Internet access service offers a single, integrated service to end users, Internet access, that inextricably combines the transmission of data with computer processing, information provision, and computer interactivity, for the purpose of enabling end users to run a variety of applications."); *United Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband Over Power Line Internet Access Service as an Information Service*, Memorandum Opinion and Order, 21 FCC Rcd 13281 ¶ 1 (2006) (addressing the classification of "Broadband over Power Line" or "BPL" services and finding that "the transmission component underlying BPL-enabled Internet access service is 'telecommunications,' and that the offering of this telecommunications transmission component as part of a functionally integrated, finished BPL-enabled Internet access service offering is not a 'telecommunications service'").

where it can provide a cogent rationale for doing so, it must "provide a more detailed justification than what would suffice for a new policy created on a blank slate" when "its new policy rests upon factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be taken into account."[27] Both factors are present here. Any reclassification effort would require contradicting the Commission's consistent factual findings. And, as noted above, TWC and other broadband providers invested many billions of dollars in reliance on the Commission's consistent finding that broadband Internet access does not include a distinct telecommunications service offering that subjects them to common carrier regulation, and that reliance has continued—if not increased—since the Commission last compiled a record on this question.[28]

As the foregoing analysis shows, TWC and similarly situated broadband providers are not *voluntarily* offering a telecommunications service to end users today; nor can the Commission *compel* them to do so based on policy preferences. To the contrary, the D.C. Circuit has made clear that the Commission cannot "impose common carrier status upon any given entity on the basis of the desired policy goal the Commission seeks to advance."[29] The

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27 *FCC v. Fox Television Stations*, 556 U.S. 502, 515 (2009).

28 Moreover, any perception that limitations imposed by the D.C. Circuit represent a "problem" to be "solved" cannot provide a sound basis for reclassifying broadband Internet access services; if the facts do not align with the Commission's statutory authority, even where it wishes to provide "safeguards desirable or necessary to protect the public interest, that is a problem for Congress, and not the [agency] or the courts, to address." *Board of Governors of Fed. Reserve Sys. v. Dimension Fin. Corp.*, 474 U.S. 361, 374 (1986).

29 *Southwestern Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1481 (D.C. Cir. 1994); *see also Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC*, 525 F.2d 630, 644 (D.C. Cir. 1976) (holding that the Commission does not have unfettered discretion to impose common-carrier status "depending upon the regulatory goals it seeks to achieve"). In any event, as explained further below, Title II would not materially expand the Commission's authority to

customers differently as long as such "discrimination" is not "unreasonable."[34] The Commission recognized this limitation in the NPRM that preceded the *2010 Open Internet Order*, as it distinguished between a proposal to adopt an "unqualified prohibition[] on discrimination" and the "general prohibition on '*unjust or unreasonable* discrimination' by common carriers in section 202(a) of the Act."[35] And a long line of Commission precedent confirms that differential treatment (including the imposition of different prices or other terms and conditions) is reasonable where there is a "neutral, rational basis underlying [the] apparently disparate [terms]."[36] Accordingly, after examining alleged preferences or discrimination, courts and the Commission have often found that practices at issue were "reasonable" and thus permissible.[37]

Against this backdrop, it is highly unlikely that Title II would support a flat ban on an entire category of potential business arrangements, such as paid prioritization. As a threshold matter, the provision of a prioritized delivery service might not be considered sufficiently "like" standard broadband transmission to support a discrimination claim at all.[38] Just as "an apple does not have to be priced the same as an orange" in order for the sale of either to be reasonable, broadband Internet access service providers can, and routinely do, provide business-class

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34 47 U.S.C. § 202(a); *see also id.* § 201(b) (requiring "just and reasonable" practices).

35 *Preserving the Open Internet; Broadband Industry Practice*, Notice of Proposed Rulemaking, 24 FCC Rcd 13064 ¶ 109 (2009) (emphasis in original).

36 *Nat'l Ass'n of Regulatory Utility Comm'rs v. FCC*, 737 F.2d 1095, 1133 (D.C. Cir. 1984).

37 *See, e.g.*, *Orloff v. FCC*, 352 F.3d 415 (D.C. Cir. 2003) (upholding carriers' ability to offer differential discounts to retail customers); *Ameritech Operating Cos. Revisions to Tariff FCC No. 2*, Order, DA 94-1121 (CCB 1994) (upholding reasonableness of rate differentials based on cost considerations).

38 *See, e.g.*, *Ad Hoc Telecomms. Comm'n v. FCC*, 680 F.2d 790, 795 (D.C. Cir. 1982) (applying "functional equivalency" test to determine the "likeness" of two service offerings, which asks "whether the services in question are 'different in any material functional respect'"); *Am. Broad. Co., Inc. v. FCC*, 663 F.2d 138-39 (D.C. Cir. 1980) (noting that the issue of "likeness" is fact-specific and decided on a case-by-case basis).

networks clear. Network owners relied on the Commission's steadfast assurances that its fact-based classification was fully aligned with the Commission's interest in maintaining a light regulatory touch.[41] Abandoning the settled classification rulings would signal a radical change, of course, that would have a devastating impact on investment and innovation, and thus would be starkly at odds with the core objectives that gave rise to this proceeding, as well as the goals at the heart of the National Broadband Plan.[42] The uncertainty associated with Title II regulation also would impact many edge providers, some of whom could be ensnared within the broad scope of the enlarging regulatory regime. While TWC encourages the Commission to apply any new rules in a technologically neutral fashion to all facilities-based service providers, edge providers—like broadband Internet access service providers—might well find it more difficult to attract capital investment under a threat of Title II regulation, and thus might be impeded from innovating.[43] Making matters worse, pursuing Title II reclassification would make it far more likely that the Commission's order would spur protracted legal challenges, thus miring all stakeholders in debilitating uncertainty.

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41 *See, e.g.*, *Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd 11501 ¶ 46 (1998) (finding that regulating broadband Internet access providers as common carriers could "seriously curtail the regulatory freedom that . . . was important to the healthy and competitive development of the enhanced-services industry"); *Cable Modem Order* ¶ 5 (seeking to "remove regulatory uncertainty that in itself may discourage investment and innovation" and "limit unnecessary and unduly burdensome regulatory costs"); *Wireline Broadband Order* ¶ 1 (establishing a "minimal regulatory environment for wireline broadband Internet access services to benefit American consumers and promote innovative and efficient communications").

42 *See National Broadband Plan* at 18.

43 *See, e.g.*, Letter of Robert W. Quinn, Jr., AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, at 6 (filed May 9, 2014) (explaining how Title II reclassification could result in the application of common carrier rules to many edge providers, as "the logic behind reclassification would dictate that . . . [e]very entity that provides an over-the-top communications capability, whether it's voice, text, or video, becomes either a facilities-based provider or a reseller (or both) of a telecommunications service").

reasons, the Commission has previously recognized that its "forbearance authority is not in this context an effective means of removing regulatory uncertainty" and likely would only contribute to the uncertainty presented by reclassification.[48]

Even the most earnest supporters of Title II paired with forbearance cannot provide any comfort that a reviewing court would uphold any forbearance decisions by the Commission. Nor could they guarantee that state regulators would be amenable to granting forbearance from their own burdensome regimes applicable to "telecommunications carriers" (including potentially taxes that the Commission could not preempt).[49] Even with forbearance from some of the more onerous requirements of Title II, reclassification would likely result in a patchwork of state regulations and heightened fees for broadband providers, which would deter further network deployment and innovations and increase costs for consumers.

### 3. *The Partial Reclassification Proposals Set Forth in the NPRM Are Equally Flawed.*

In an apparent effort to sidestep the Commission's prior classification rulings, some parties argue that the Commission should reclassify *half* of the transmission functionality employed in providing broadband Internet access—specifically, the transmission of information between remote servers and end users, or a so-called "remote delivery service"[50] or "response

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48 Petition for Writ of Certiorari, U.S. Dept. of Justice and FCC, *FCC v. Brand X Internet Servs.*, No. 04-277, at 28 (Aug. 27, 2004).

49 *See* TWC Title II Reclassification Comments at 68 (noting that a state's taxation power is arguably beyond the scope of the Commission's ability to preempt).

50 *See* Mozilla, Petition to Recognize Remote Delivery Services in Terminating Access Networks and Classify Such Services as Telecommunications Services Under Title II of the Communications Act, GN Docket Nos. 09-91, 14-28, WC Docket No. 07-52, at 7 (filed May 5, 2014) ("Mozilla Petition").

for example, newsgroups),[55] the Commission has always focused on the outward-facing possibilities of Internet access. "Click-through access" was and is a vital part of the broadband service classified by the Commission.[56] The Commission noted that, for example, "a subscriber to Comcast's cable modem service may bypass that company's web browser, proprietary content, and e-mail," and is "free to download and use" other sources of content.[57] The Commission even had the foresight to envision the "sophisticated 'real time' applications" that broadband Internet service could provide.[58] These applications, such as multi-player online gaming, require a constant stream of call-and-response transmissions, all of which are interdependent on each other and traverse the breadth of the global Internet. The Commission also spoke of network platforms becoming more "multi-purpose in nature and more application-based, rather than existing for a single, unitary, technologically specific purpose."[59] In short, the Commission from the outset has recognized that broadband Internet access service not only includes integrated transmission between the end user and the ISP, but also the ISP's delivery of Internet content from remote servers.

Moreover, such a determination was critical to the Commission's assertion of exclusive jurisdiction over Internet access services, which is premised on the *interstate* communication they enable. The Commission defined broadband Internet access service as an "interstate information service" based on an "end-to-end analysis" of Internet traffic, which regularly

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55 Narechania & Wu *Ex Parte* Letter at 8, 16.

56 *Cable Modem Order* ¶ 25.

57 *Id* ¶ 25.

58 *Id* ¶ 10.

59 *Wireline Broadband Order* ¶ 40.

*require* the imposition of a fee, as that is a necessary element of any telecommunications service.[61]

## II. ANY RULES SHOULD ENCOMPASS ALL POTENTIAL THREATS TO ONLINE ACCESS FOR PURCHASERS OF BROADBAND INTERNET ACCESS SERVICES

In adopting new rules under Section 706, the Commission should pay careful attention to the scope of those requirements. TWC submits that the Commission should apply any new open Internet requirements evenhandedly to access providers and edge providers alike, as well as to fixed and mobile broadband providers. But there is no basis to extend regulation to specialized services or traffic-exchange arrangements.

### A. The Commission Has Both the Authority and a Strong Policy Basis to Extend the Open Internet Rules to Other Entities That Can Thwart Access to Content and Services on the Internet.

The NPRM focuses singularly on the prospect that broadband Internet access providers will act as "gatekeepers" to the Internet by granting or denying access to content, services, and applications as they see fit.[62] But the NPRM fails to acknowledge that the real—and growing—threat to Internet openness continues to be posed by entities *other than* broadband Internet access providers, and instead merely declares without elaboration that while "other forms of discrimination in the Internet ecosystem may exist, … such conduct is beyond the scope of this proceeding."[63]

As with prior attempts to regulate in this area, the NPRM is thin on examples of actual harms caused by broadband Internet access providers—in fact, it even concedes that there have

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61 47 U.S.C. § 153(53) (defining a telecommunications service as the transmission of information of the user's choosing "for a fee")).

62 *See, e.g.*, NPRM ¶ 46.

63 NPRM ¶ 52, n.118.

subscribers from accessing programming on CBS.com as a blatant means of obtaining leverage in retransmission consent negotiations.[69] Chairman Wheeler recently expressed "concern" about broadcasters' blocking access to online programming and agreed that such incidents represent an issue "that we should all worry about."[70] Relatedly, the Commission previously has recognized that the principles of Internet openness apply equally to other participants in the broadband ecosystem.[71]

The NPRM's discussion of so-called "fast lanes" likewise reflects an overly myopic view of the sources of potential harm to consumers and to principles of openness. The NPRM focuses on the hypothetical prospect that broadband Internet access providers will pursue paid prioritization arrangements through which they would charge edge providers for access or prioritized access to end users.[72] But that concern is a red herring. To TWC's knowledge, no broadband provider has expressed any intention of prioritizing one class of Internet traffic at the expense of another. If anything, it is more likely that some content owners might well seek payment *from* broadband Internet access providers as a condition of delivering their content—

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69 That incident is described more fully in Letter from Matthew A. Brill, Counsel to Time Warner Cable Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 10-71 (filed Aug. 2, 2013).

70 Doug Halonen, *Wheeler "Concerned" Over Online Blackouts*, TVNewsCheck, May 20, 2014, *available at* http://www.tvnewscheck.com/article/76465/wheeler-concerned-over-online-blackouts.

71 *Internet Policy Statement* ¶ 4 (recognizing that the principles at stake were relevant not only for broadband Internet access providers, but also for "application and service providers, and content providers"); *Broadband Industry Practices NOI* ¶ 8 (seeking "a fuller understanding of broadband market participants today, including network platform providers, broadband Internet access service providers, other broadband transmission providers, Internet service providers, Internet backbone providers, content and application service providers, and others").

72 *See, e.g.*, NPRM ¶ 6.

providers that engage in blocking or discrimination that curtails access to online content and services. Most edge providers transmit information by wire or radio over owned or leased facilities in conveying information to and from transit providers and ISPs. Thus, the Commission has clear authority under Section 706 to adopt rules that prevent edge providers as well as ISPs from interfering with Internet openness.

### B. Any Rules Should Be Technologically Neutral and Apply to All Facilities-Based Broadband Providers.

For similar reasons, the Commission should not adopt different rules for mobile and fixed broadband providers, but should instead hold all facilities-based providers to the same standards. The NPRM itself notes that the few incidents reflecting potential violations of Internet openness principles have been localized in the wireless sector.[74] Yet, the Commission historically has sought to subject wireless broadband providers to less stringent requirements.

The rationale for that disparate treatment has always been questionable, and it is even more so now. As TWC and others have explained, mobile wireless providers are not uniquely situated, in that all broadband providers face capacity constraints and therefore must retain flexibility to manage traffic on their networks.[75] Meanwhile, competition between fixed and mobile broadband services continues to grow, with wireless services increasingly standing as a viable substitute—as the Commission has recognized.[76] Indeed, wireless providers have followed up their 3G deployments with upgrades to 4G LTE technology, offering speeds comparable to those available through many wireline broadband services with the additional

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74 NPRM ¶ 41.

75 *See, e.g.*, TWC 2010 Net Neutrality Comments at 68-69.

76 *Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700 ¶ 2 (2013).

refrain from regulating "specialized services" as well as traffic-exchange arrangements, such as peering and CDN arrangements.[79]

The Commission has refrained from regulating "specialized" or "managed" services since it coined these terms, and the NPRM proposes that the Commission continue that approach while monitoring the development of these offerings.[80] TWC supports that recommendation. Fundamentally, because any specialized service will be offered independent of broadband Internet access, the open Internet rules do not and should not apply. TWC and others have described the benefits of a policy of vigilant restraint in connection with these services,[81] and nothing has changed to warrant regulatory intervention now. In fact, specialized services remain very much an emerging and amorphous concept, such that any theorizing about their potential effect on Internet openness would involve multiple layers of speculation. Accordingly, the Commission lacks any reasoned basis to determine that they pose a threat, let alone a threat that outweighs the potential benefits of such services. Indeed, as the Commission's Open Internet Advisory Committee has found, the ability to offer multiple services over the facilities used to deliver broadband Internet access has been an important spur to broadband investment.[82] Moreover, to the extent this category is deemed to include existing IP voice and video services, those services already are subject to extensive Commission regulations that independently safeguard consumers' interests.

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79 NPRM ¶¶ 59-60.

80 NPRM ¶ 60.

81 TWC Specialized Services Comments at 3-4; TWC 2010 Net Neutrality Reply Comments at 77.

82 Open Internet Advisory Committee, 2013 Annual Report 67 (Aug. 20, 2013).

## III. THE COMMISSION SHOULD PROCEED WITH CAUTION IN CONSIDERING EXPANDED DISCLOSURE OBLIGATIONS FOR BROADBAND PROVIDERS

TWC has long valued transparency for its subscribers. In addition to investing significant resources into complying with the existing disclosure requirements,[87] TWC has consistently provided clear and conspicuous disclosures to consumers regarding its acceptable use policies and the impact of its network management practices, as described in detail in this docket and others—and did so well before the Commission began to require such disclosures.[88] TWC thus supports the NPRM's goal of ensuring that "accurate" information about broadband networks is available.[89] But as a practical matter, some of the NPRM's proposals would veer from that objective and would simply burden broadband Internet access providers without making consumers or edge providers any more informed.

As a threshold matter, there is no reason to conclude that any changes in this area are necessary; rather, there is every reason to believe that the disclosure requirements now in place are working effectively. The NPRM presumes that neither the existing rule nor any voluntary disclosure practices are sufficient to inform consumers and other stakeholders, and it thus tentatively concludes that some sort of "enhancement" of the current disclosure obligations is

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87 TWC's network management disclosures, provided pursuant to the existing rules, are available at: http://help.twcable.com/description_of_network_management_practices.html (for residential and small business customer), http://help.twcable.com/description_of_network_management_practices_wireless.html (for wireless broadband Internet access services), and http://business.timewarnercable.com/legal/network-management-disclosure.html (for business class services).

88 *See, e.g.*, TWC 2010 Net Neutrality Comments at 98 (citing previous comments); TWC "Need for Speed" Comments at 3-6.

89 NPRM ¶ 66.

providers should be held to a higher standard in terms of transparency.[93] For instance, edge providers and transit providers control how they route their traffic and can cause congestion that in turn degrades the consumer experience. Such practices create further problems for broadband Internet access providers like TWC, which must respond accordingly but must do so in an informational vacuum. Requiring such providers to disclose information about their routing practices would better enable TWC and others to manage traffic on their own networks and preserve the quality of the online experience for all stakeholders.

The Commission likewise should decline to require disclosures that are tailored to particular "subgroups."[94] The NPRM posits that various entities that participate in the exchange of Internet traffic—such as edge providers and CDNs—have "distinguishable needs for information" to which broadband Internet access providers should cater; it even suggests that these categories can be refined further based on economic considerations, noting that a start-up edge provider may require different information than a more established company.[95] But this proposal overlooks the fact that there is a well-developed commercial ecosystem in which ISPs exchange information with transit providers and CDNs. In any event, apart from loosely describing what some of these various subgroups may be, the NPRM offers no structure to the proposal. For instance, it does not define any category, let alone suggest what information each should have. Given these very faint outlines, broadband Internet access providers would be left to guess at what information these providers need and when they need it—forcing them to try to satisfy targets that are in constant motion. Moreover, the NPRM acknowledges that different

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93 TWC 2010 Net Neutrality Comments at 99-100.

94 NPRM ¶ 76.

95 NPRM ¶¶ 75-76.

## CONCLUSION

TWC supports the NPRM's core goal of "ensur[ing] that the open Internet remains open."[97] The Commission can best achieve that objective by relying on its Section 706 authority rather than a destabilizing Title II reclassification, and by appropriately tailoring the scope and content of its rules to the relevant policy interests at stake.

Respectfully submitted,

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[97] NPRM ¶ 2.

limits, is quite often found reasonable, and thus permissible. For example, the Commission has long held that rate differentials based on cost considerations are reasonable.[159] Telecommunications carriers also have been permitted to impose differential charges based on amounts of use.[160] Selective discounting or "haggling" has been found permissible in response to competitive marketplace conditions.[161] Likewise, the interest in meeting a competitor's price can be a valid ground for discriminating among customers.[162]

And such permissible discrimination is by no means limited to pricing differentials. Courts have "affirmed a common carrier's ability to refuse service to certain information providers if the telco determines that such carriage would harm its corporate reputation."[163] Moreover, courts have upheld the ability of common carriers to enter into individualized contracts, with varying terms and conditions, without vitiating their common-carrier status.[164] By the same token, despite the requirement that a common carrier hold itself out indifferently to

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159 *See, e.g.*, *Ameritech Operating Cos. Revisions to Tariff FCC No. 2*, Order, 10 FCC Rcd. 1960 (CCB 1994) (ILEC's disparate rates to different customers may be justified based on cost savings from serving one customer versus another); *ACC Long Distance Corp. v. Yankee Microwave, Inc.*, Memorandum Opinion and Order, 8 FCC Rcd. 85 ¶ 15 (CCB 1993) (change in costs over time justified difference in pricing).

160 *See, e.g.*, *Nat'l Ass'n of Regulatory Util. Comm'rs*, 737 F.2d at 1133.

161 *See Orloff v. Vodafone AirTouch Licenses LLC, d/b/a Verizon Wireless, and New Par*, Memorandum Opinion and Order, 17 FCC Rcd. 8987 ¶¶ 16-24 (2002), *aff'd sub nom. Orloff v. FCC*, 352 F.3d 415 (D.C. Cir. 2003).

162 *See AT&T Co. v. FCC,* 449 F.2d 439, 448 (2d Cir. 1971).

163 *Telephone Company – Cable Television Cross-Ownership Rules, Sections 63.54 – 63.58*, Second Report and Order, Recommendation to Congress, and Second Further Notice of Proposed Rulemaking, 7 FCC Rcd. 5781, 5878 (1992) (statement of Commissioner James H. Quello) (citing *Carlin Commc'ns, Inc. v. Mountain States Tel. & Tel. Co.*, 827 F.2d 1291 (9th Cir. 1987)).

164 *See, e.g.*, *Sw. Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1481 (D.C. Cir. 1994).

the "public," courts have made clear that a common carrier may serve specialized classes of users, including even a single affiliated customer.[165] The Commission would accordingly face a serious hurdle in concluding that application of Section 202(a) in *this* instance somehow supported a far more draconian rule.

*Second*, Section 201(b) also would not provide a basis for any categorical ban on a broad range of hypothetical commercial arrangements between broadband providers and edge providers. That provision requires all "charges, practices, classifications, and regulations" for and in connection with a telecommunications service to be "just and reasonable."[166] The Commission has historically relied on this provision to address discrete consumer protection issues, such as deceptive billing practices,[167] or "blocking or otherwise restricting or degrading" communications to rural consumers.[168] Potential commercial agreements in which edge providers agree to pay a higher price for a higher level of service (without diminishing or degrading the quality of existing broadband Internet access service) are nothing like these practices. Indeed, they are far more akin to individualized contract tariffs that have been long been *permitted* under the Act.[169] Again, the Commission would have to show why here, the same provision produces an outright prohibition on arrangements that mirror many that have previously been permitted under the same statute. And, in all events, because such arrangements scarcely exist in today's marketplace (if any exist at all), there is no record evidence to support a

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165 *See, e.g.*, *Verizon Cal., Inc. v. FCC*, 555 F.3d 270, 275-76 (D.C. Cir. 2009).

166 47 U.S.C. § 201(b).

167 *See NOS Communications, Inc., and Affinity Network Incorporated*, Notice of Apparent Liability for Forfeiture, 16 FCC Rcd. 8133 ¶ 6 (2001).

168 *Rural Call Completion*, Report and Order and Further Notice of Proposed Rulemaking, 28 FCC Rcd. 16154 ¶ 29 (2013).

169 *See Sw. Bell*, 19 F.3d at 1481.

conclusion that the costs of any such hypothetical agreements would invariably outweigh the benefits, which is the finding that would be needed to sustain a blanket prohibition.

### C. Reclassifying Broadband Internet Access Under Title II Likely Would Be Unlawful.

Even if reclassification under Title II were sound as a matter of policy and would advance proponents' goals, such an approach likely would be unlawful. An agency is, of course, permitted to alter or even reverse its own prior positions and interpretations of statutes Congress has entrusted to its administration.[170] But it cannot do so purely for results-oriented reasons. It must "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made."[171] It "must show that there are *good reasons* for the new policy."[172] And the requirement is only heightened when the agency's prior position has "engendered serious reliance interests" or its new position "rests upon factual findings that contradict those which underlay its prior policy."[173] Reclassification of broadband Internet access as including a distinct "telecommunications service" would be precisely the sort of reversal that would upend settled reliance interests and require repudiation of consistent factual findings. And the Commission would be hard-pressed to show "good reasons" for a such a dramatic about-face.

The reliance interests flowing from the classification of broadband Internet access service as solely an "information service" are overwhelming. Since the Commission first classified

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170 *See FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009).

171 *Motor Vehicle Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks omitted).

172 *Fox Television Stations*, 556 U.S. at 515 (emphasis added).

173 *Id.*

retail broadband Internet access service in 2002, Comcast and other broadband providers have built their broadband networks in reliance on the Commission's consistent pledge that they would not be regulated as "common carriers" under Title II of the Communications Act. For example, Comcast has poured tens of billions of dollars into expanding and enhancing its network and has made business and technical decisions relying on the Commission's rulings that it would not be required to unbundle its network or incur the multitude of other potential regulatory duties and costs that Title II regulation may entail.[174]

Indeed, that is what the Commission intended. The Commission explained in the *Cable Modem Order* that it believed "broadband services should exist in a minimal regulatory environment that promotes investment" and limits "unnecessary and unduly burdensome regulatory costs"[175]—a view, it noted, that Congress shared.[176] The Commission thus sought to "remove regulatory uncertainty" to encourage "investment and innovation."[177] It reiterated these points in the *Wireline Broadband Order*,[178] the *BPL Order*,[179] and the *Wireless Broadband*

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174 *See, e.g.*, 47 U.S.C. § 201(a) (requiring common carriers to furnish communication "upon reasonable request"); *id.* § 201(b) (to charge "just and reasonable" rates as determined by the Commission); *id.* § 203 (to file schedules of all charges with the Commission); *id.* § 211 (to file copies of all contracts and agreements with other carriers); *id.* § 214 (to seek permission of construction of any new line or extension of any line).

175 *Cable Modem Order* ¶ 5.

176 *Id.* ¶ 4; *see* 47 U.S.C. § 230(b)(2) ("It is the policy of the United States . . . to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, *unfettered by Federal or State regulation*.") (emphasis added).

177 *Cable Modem Order* ¶ 5.

178 *Wireline Broadband Order* ¶ 3 (explaining that a "lighter regulatory touch . . . will promote the availability of competitive broadband Internet access services to consumers, via multiple platforms, while ensuring adequate incentives are in place to encourage the deployment and innovation of broadband platforms").

*Order*.[180] The Commission would face a heavy burden providing good reasons for why, after purposely and explicitly engendering such massive reliance interests on the existing regulatory regime, the Commission should reverse course now.

Abandoning the Commission's long-held position on the nature of broadband Internet access service would be all the more difficult in light of the factual nature of that determination. The proper classification of broadband Internet access service hinges on "whether the transmission component of [the service] is sufficiently integrated with the finished service to . . . describe the two as a single, integrated offering."[181] That determination, the Supreme Court has explained, turns on "the factual particulars of how Internet technology works and how it is provided."[182] And the reality is that the particulars of how broadband Internet access service is provided have not materially changed since the Commission found in 2002 that it was offered as "a single, integrated service that enables the subscriber to utilize Internet access service through [the] provider's facilities and to realize the benefits of a comprehensive service offering,"[183] or since it re-analyzed broadband Internet access services provided over other platforms and reaffirmed the relevant findings in 2005,[184] 2006,[185] and 2007.[186]

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179 *BPL Order* ¶ 2 ("[A] minimal regulatory environment for BPL-enabled Internet access service . . . promotes our goal of ubiquitous availability of broadband to all Americans.").

180 *Wireless Broadband Order* ¶ 27 ("Through this classification, we provide the regulatory certainty needed to help spur growth and deployment of these services.").

181 *Brand X*, 545 U.S. at 990.

182 *Id.* at 991.

183 *Cable Modem Order* ¶ 38.

184 *Wireline Broadband Order* ¶ 9 ("Wireline broadband Internet access service, like cable modem service, is a functionally integrated, finished service that inextricably intertwines information-processing capabilities with data transmission such that the consumer always uses them as a unitary service.").

Broadband Internet access service continues to be offered to customers as a comprehensive service offering, including very visible information-service capabilities such as web browsing and email,[187] but importantly also less visible but vital capabilities such as Domain Name System ("DNS") and Dynamic Host Configuration Protocol ("DHCP") functionality, as well as integrated security features including spam filtering and distributed denial-of-service ("DDoS") protection. Proponents of reclassification argue that today many broadband customers rely on third-parties for functions for which customers used to rely on their broadband providers, like Google's email service, Gmail.[188] But the rise in popularity of some of these third-party services cannot bear the weight Title II proponents would have it carry.

As an initial matter, despite the popularity of some of these services, large numbers of Comcast customers still use the email and web-browsing services that Comcast provides.

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185 *BPL Order* ¶ 14 ("We conclude, consistent with the Commission's finding in the *Wireline Broadband Internet Access Services Order*, that the use of th[e] telecommunications transmission component as part of a facilities-based provider's offering of BPL-enabled Internet access service to end users . . . is part and parcel of the Internet access service's information service capabilities.").

186 *Wireless Broadband Order* ¶ 26 ("Like cable modem service, wireline broadband Internet access service, and BPL-enabled Internet access service, wireless broadband Internet access service offers a single, integrated service to end users, Internet access, that inextricably combines the transmission of data with computer processing, information provision, and computer interactivity, for the purpose of enabling end users to run a variety of applications.").

187 *See Universal Service Report* ¶¶ 75-76 (describing in detail how both functions constitute "information services").

188 *See* Letter from Tejas N. Narechania and Tim Wu, Columbia University, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, at 16-17 (Apr. 14, 2014) ("Narechania & Wu Ex Parte Letter") ("[T]oday, separate email services, such as Gmail and Outlook.com (formerly Hotmail), dominate those that are affiliated with broadband service."); Brian Fung, *The Decades-Old Idea That Could Break the Net Neutrality Logjam*, Wash. Post, Apr. 21, 2014, http://www.washingtonpost.com/blogs/the-switch/wp/2014/04/21/the-decades-old-idea-that-could-break-the-net-neutrality-logjam/ ("The old days of looking out at the world through your ISP's Web portal are over.").

Moreover, not all third-party services are created equal. While many customers may look to other email providers, the same is not true of all other functions included in a comprehensive offer of broadband Internet access. Comcast customers, for example, overwhelmingly rely on *Comcast's* DNS and DHCP functionality. In fact, these services are inextricably intertwined with nearly every use of the integrated transmission service that Comcast provides. Every request to transport data from an end user to an edge provider and back through a domain name—like "netflix.com," "gmail.com," or "facebook.com"—relies on DHCP to supply the end user's originating IP address and DNS to translate the domain name that the end user enters or clicks on into the edge provider's destination IP address. Reclassification proponents argue that DNS capabilities should not matter because DNS lookup is "no more than a functional step carried out in service of [a] transmission."[189] But that argument was advanced by the *dissent* in *Brand X*,[190] and it was specifically rejected by the *Brand X* majority.[191]

In any event, customer reliance on third-party applications is nothing new. The Commission recognized the possibility in the *Cable Modem Order* itself, but concluded that it did not change the nature of the *offering*: "We find that cable modem service . . . is an information service . . . regardless of whether subscribers use all of the functions provided as part of the service, such as e-mail or web-hosting, and regardless of whether every cable modem service provider offers each function that could be included in the service."[192] The same is true

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189 Narechania & Wu Ex Parte Letter at 18.

190 *See Brand X*, 545 U.S. at 1012-13 (Scalia, J., dissenting) ("DNS . . . is scarcely more than routing information, which is expressly excluded from the definition of 'information service.'").

191 *See id.* at 999 & n.3 (majority opinion) ("[T]he definition of information service does not exclude 'routing information.'").

192 *Cable Modem Order* ¶ 38; *see also id.* ¶ 25 ("Whether the subscriber chooses to utilize functions offered by his cable modem service provider or obtain them from another source [e.g.,

today. The "factual particulars" of broadband Internet access service, today no less than when the Commission first classified it, establish that broadband providers offer a single, integrated information service—with "no separate offering of telecommunications service."[193]

### D. The Commission Should Not Attempt to Identify a Distinct Telecommunications Service to Edge Providers or Rely on Title II as Backstop Authority.

Recognizing the serious obstacles to abandoning the Commission's classification of broadband Internet access service, some have suggested that the Commission should attempt to invoke Title II in other ways. The NPRM seeks comments on two alternative reclassification approaches: (1) that the Commission could distinguish between the service broadband providers offer to their customers and the transmission capability they furnish to edge providers, classifying only the latter as a telecommunications service subject to common carrier regulation under Title II;[194] and (2) that the Commission could rely on Section 706 for the open Internet rules but invoke Title II as "backstop authority" in case a court later holds that Section 706 is

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content from Fox News or email from Microsoft's Hotmail], these functions currently are all included in the standard cable modem service offering.").

[193] *Id.* ¶ 7. The NPRM suggests in passing that, even if broadband providers do not currently offer a separate telecommunications service, the Commission might compel them to do so. *See* NPRM ¶ 150. That would, of course, be inconsistent with the Commission's long-held view that "[s]uch radical surgery is not required." *Cable Modem Order* ¶ 43. More fundamentally, the NPRM identifies no source of authority for imposing such a requirement, and, as the D.C. Circuit has explained, the Commission "may not impose common carrier status upon any given entity on the basis of the desired policy goal the Commission seeks to advance." *Sw. Bell*, 19 F.3d at 1481. Such a command "must come specifically from Congress." *FCC v. Midwest Video Corp.*, 440 U.S. 689, 709 (1979).

[194] *See* NPRM ¶ 152 (citing Mozilla, Petition to Recognize Remote Delivery Services in Terminating Access Networks and Classify Such Services as Telecommunications Services Under Title II of the Communications Act, GN Docket Nos. 09-91, 14-28, at ii, 10-13 (May 5, 2014) ("Mozilla Petition") and Narechania & Wu Ex Parte Letter).

insufficient to sustain the rules.[195] Neither approach is viable, and neither avoids the pitfalls of broader reclassification theories.

### 1. *Broadband Providers Do Not Offer a Distinct Telecommunications Service to Edge Providers.*

Certain commenters argue that, although broadband Internet access as furnished to end users is an information service under existing law, the Commission should reclassify the transmission functionality available to edge providers as a distinct telecommunications service.[196] Their arguments misconstrue both Commission precedent and the *Verizon* decision and, in any event, cannot be reconciled with the integrated nature of broadband Internet access service.

As an initial matter, the claim that the transmission of edge providers' content—what Mozilla calls a "remote delivery service,"[197] and what Professors Narechania and Wu call a "response transaction" or "'sender-side' traffic"[198]—falls "outside the category of services previously designated by the Commission"[199] is plainly false. To the contrary, the Commission made clear in the *Cable Modem Order* and in its subsequent classification decisions that what the Commission classified as an information service was the "single, integrated service that enables

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[195] NPRM ¶ 150 (quoting Letter from Rep. Henry Waxman, Ranking Member, Committee on Energy and Commerce, to Thomas Wheeler, Chairman, FCC, at 2 (May 14, 2014)), http://democrats.energycommerce.house.gov/sites/default/files/documents/Wheeler-Title-II-Backup-Option-2014-5-14.pdf).

[196] *See* Mozilla Petition at ii-iii; Narechania & Wu Ex Parte Letter at 1-2.

[197] Mozilla Petition at 7.

[198] Narechania & Wu Ex Parte Letter at 13-14.

[199] Mozilla Petition at 9; *see also* Narechania & Wu Ex Parte Letter at 13 (asserting that "[c]lassifying such 'sender-side' traffic as a telecommunications service is, perhaps surprisingly, consistent with the *Cable Modem Order*").

the subscriber to utilize Internet access service"—that is "to transmit data communications *to and from* the rest of the Internet."[200] For the Commission now to carve out and reclassify a portion of that service as a telecommunication service that is being provided to edge providers would undoubtedly require repudiating that precedent, just as broader reclassification theories would.[201] By the same token, the Commission's classification of broadband Internet access as an *interstate* information service rested on its "end-to-end analysis" of Internet traffic, which is premised on the understanding that packets flowing among an end user's location, the broadband provider, and remote servers are all part of an integrated communications stream.[202] That jurisdictional analysis would no longer be tenable—with profound implications for the Internet ecosystem—if "call" and "response" transmissions were severed and treated as entirely distinct services.

Just as these advocates misread Commission precedent, they misconstrue the *Verizon* decision. Far from suggesting that broadband Internet access providers can be characterized as offering a common carrier "telecommunications service" (as distinct from "telecommunications") to edge providers, the court emphasized that "[t]he question is *not* whether, absent the [*2010*] *Open Internet Order*, broadband providers would or did act as common carriers with respect to edge providers."[203] Rather, the question before the court was

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200 *Cable Modem Order* ¶¶ 17, 38 (emphasis added); *see also Wireline Broadband Order* ¶ 39 ("[E]ach platform provides the user with the ability *to send and receive* information at very high speed, and to access the applications and services available through the Internet.") (emphasis added).

201 *See Verizon*, 740 F.3d at 650, 653 (finding it "obvious" that obligating broadband providers to "act as common carriers with respect to edge providers" was inconsistent with the *Cable Modem Order*).

202 *Cable Modem Order* ¶ 59.

203 *Verizon*, 740 F.3d at 653 (emphasis added).

whether the Commission could lawfully *compel* broadband providers to offer service as common carriers. And based on the court's core holding that the *2010 Open Internet Order* impermissibly imposed such a duty,[204] there can be little doubt that the court understood broadband providers were not independently acting in such a capacity. After all, if broadband providers were offering a telecommunications service to edge providers, they would be deemed common carriers and subject to the full panoply of Title II obligations as a matter of law, and the court would have had no basis to invalidate the no-blocking and nondiscrimination rules.

In any event, these reclassification theories cannot be squared with technical realities. While Professors Narechania and Wu contend that the service a broadband provider furnishes to an end user consists only of transmitting requests (or "calls") for data from the end user to the edge providers, and that the transmission of a "response" from the edge provider back to the end users is wholly separate, those characterizations are incorrect.[205] Modern broadband communications cannot be neatly segregated into "calls" and "responses"; rather, even relatively simple operations like downloading a webpage can entail a significant number of interactions among the website, the end user, and third parties that provide, for example, authentication, analytics, advertising, or other services. For example, when streaming a video from an edge provider, there is a constant two-way communication between the edge provider and the user's

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204 *See id.*

205 Narechania & Wu Ex Parte Letter at 13. Mozilla's petition implicitly recognizes the technical shortcomings of the Narechania/Wu proposal, as it concedes that the ostensibly distinct "call" and "response" transmissions "do not correspond to separate physical network segments, or separate directions of traffic flow, or any other 'hard' technical distinctions." Mozilla Petition at 8. Rather, in Mozilla's view, a broadband provider's service to end users and service to edge providers should be seen as "logically and legally distinguishable," even if not "physically separable." *Id.* at 7.

device that ensures that the packets with the information and content the edge provider is attempting to deliver are being delivered and assembled as the edge provider intended.

Accordingly, broadband providers offer a multifaceted ability to interact with the myriad services and sources of content the Internet has to offer, as the Commission has long recognized.[206] Comcast's Xfinity Internet service, for example, empowers its users to "[c]hat, surf, [and] stream HD movies and TV shows and games online."[207] Every one of those activities requires Comcast not to just transmit the end user's "calls" for data to edge providers, but to actually deliver that data in return as part of a seamless end user experience. Particularly where end users participate in dynamic real-time activities online, such as gaming, the constant flow of packets among the user, the broadband provider, and various remote servers belies the simplistic and artificial effort to segregate Internet transmissions into distinct "call-and-response" transmissions. Indeed, Xfinity's tiers of service, like those of other providers, are primarily defined by the speed at which the service delivers edge providers' responses (i.e., download speed), not the end user's request, further underscoring that the supposedly distinct "response" functionality is part and parcel of the retail Internet access service.[208]

Moreover, in striving to identify a "telecommunications service" to every edge provider—not just to some hypothetical edge provider that accepts an offer to purchase some type of telecommunications capability for a fee—Mozilla brushes aside the undisputed fact that broadband providers have no direct relationship with the vast majority of edge providers today. As Mozilla acknowledges, broadband providers transmit edge providers' data as a result of their

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[206] *See, e.g.*, *Cable Modem Order* ¶¶ 17, 38; *Wireline Broadband Order* ¶ 39.

[207] *Xfinity Internet*, Comcast, http://www.comcast.com/internet-service.html (last visited July 9, 2014).

[208] *Id.* (offering Internet packages at four different download speeds).

business relationships with end users and with their interconnection partners, not based on privity (with respect to the vast majority of edge providers).[209] Neither isolated disagreements between some broadband providers and their interconnection partners,[210] nor a broadband provider's internal network management,[211] can change that fact.

Even if the Commission could identify—technologically or logically—a separate service that is actually "offered" to edge providers, it could not legally classify that service as a telecommunications service any more than it could reclassify the service to end users. A "telecommunications service" under the Communications Act is an "offering of telecommunications for a fee directly to the public."[212] But, with the exception of a handful of interconnection agreements that are outside the scope of these proceedings,[213] broadband providers do not "offer" anything "directly" to edge providers. Broadband providers certainly do not offer edge providers any such service "for a fee," as the statutory definition of "telecommunications service" requires. Indeed, that is precisely what many proponents of reclassification seem to believe Title II would prevent.

Notably, if the Commission were to isolate and extract a "telecommunications service" from the integrated information service that broadband providers currently offer, as proposed, the decision may have much broader effects than direct reclassification. Once the Commission

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209 Mozilla Petition at 3-4.

210 *Id.* at 4-5.

211 *Id.* at 7.

212 47 U.S.C. § 153(53).

213 NPRM ¶ 59. Even if the Commission were to consider these individualized agreements, moreover, they do not constitute an offer "directly to the public, or to such classes of users as to be effectively available directly to the public." 47 U.S.C. § 153(53).

begins artificially divorcing transmission functions from integrated information processing, there is no logical basis for limiting such surgery to retail broadband Internet access service. The same reasoning would warrant isolating the transmission components utilized by other actors in the Internet ecosystem—content delivery networks, transit providers, and certain edge providers that own or lease facilities—and classifying such components as "telecommunications services" as well. In the end, the supposedly "minimal"[214] action proposed by Mozilla and Professors Narechania and Wu could have sweeping and unpredictable consequences, as it may well lead to the imposition of heavy-handed Title II regulation on large swaths of the Internet ecosystem.[215] Such an outcome could not possibly be squared with Congress's mandate "*to preserve the vibrant and competitive free market* that presently exists for the Internet . . . *unfettered by Federal or State regulation*."[216] Nor would it serve the Commission's goals of encouraging increased investment and innovation.

2. *The Commission Cannot Rely on Title II as a Backstop Authority for the Open Internet Rules.*

Nor can the Commission avoid the harms of reclassification by relying on Title II only on a "contingent" basis. Some have argued that the Commission could issue a contingent reclassification decision that would be given effect only if a court were to conclude that the Commission lacked sufficient authority to promulgate the open Internet rules under

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214 Mozilla Petition at 12.

215 *See* Letter from Robert W. Quinn, SVP, AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, at 5 (May 9, 2014) (detailing the array of unintended consequences that could flow from Title II reclassification and how many players in the Internet ecosystem might become subject to common carrier regulation).

216 47 U.S.C. § 230(b)(2).

Section 706.[217] But for all the reasons Title II is unavailable as primary authority, it is unavailable as a backstop. The facts and the law do not support reclassification, and the policy is misguided. If the Commission concludes that the ample authority provided by Section 706 is insufficient to protect the open Internet, the solution is to request that authority from Congress, not to overreach under a different provision.

Moreover, an order that reclassified broadband Internet access services as a "telecommunications service" only if a court were to conclude Title II was necessary to adopt the open Internet rules would be internally inconsistent. As detailed above, the classification of broadband Internet access service must rest on the "factual particulars" of the offered service. Broadband providers either offer a single, integrated information service, or they offer a distinct telecommunications service that is subject to common carrier regulation under Title II. The Commission cannot rationally purport to find both at the same time, depending on how a court might subsequently interpret the Commission's legal authority. In other words, the proper legal basis for regulating broadband Internet access service depends on the functional nature of the service; the Commission cannot first decide the legal basis for its rules in a vacuum and then come up with a characterization of the facts that fits that legal theory.[218]

The Commission similarly should reject proposals to adopt an order reclassifying a component of broadband Internet access service as a telecommunications service and forbearing

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217 *See* NPRM ¶ 150.

218 *See* Brief for the Federal Petitioners at 23, *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967 (2005), http://www.justice.gov/osg/briefs/2004/3mer/2mer/2004-0277.mer.aa.pdf (stating that "the question whether a particular service constitutes a 'telecommunications service' under the Communications Act *must be* resolved by reference to the nature of the provider's 'offering . . . to the public,' and thus the classification 'turns on the nature of the *functions* that the end user is offered.'") (quoting 47 U.S.C. § 153(53) (formerly 47 U.S.C. § 153(46)) (emphasis added).

from any no-blocking and nondiscrimination requirements under Title II while any rules adopted under Section 706 remain in place. It is reclassification itself that poses the legal and policy difficulties described above, not asserting Title II authority as the basis for the open Internet rules. Reclassification alone would impose a bevy of common carrier duties on broadband providers, deterring network investment and innovation and fostering tremendous uncertainty. And a decision to forbear from portions of Title II would have the same shortcomings if contingent on a ruling regarding the validity of the open Internet rules as would any non-contingent forbearance decision.

## VI. THE COMMISSION SHOULD ADOPT FAIR AND EFFICIENT ENFORCEMENT MECHANISMS.

The NPRM raises a number of constructive proposals regarding enforcement of the new open Internet rules, and Comcast welcomes the opportunity to begin a dialogue on how best to establish fair and efficient enforcement mechanisms going forward. Comcast agrees with the Commission that any new enforcement procedures must "provide legal certainty, so that broadband providers, end users and edge providers alike can better plan their activities in light of clear Commission guidance," and at the same time should allow for sufficient "flexibility to consider the totality of the facts in an environment of dynamic innovation."[219] The Commission also is correct in tentatively concluding that the best way to balance these goals while also ensuring "effective access to dispute resolution[]" would be to rely primarily on the same three enforcement mechanisms that it has used to enforce the 2010 open Internet rules—self-initiated investigations, informal complaints, and formal complaints.[220]

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219 NPRM ¶ 163.

220 *Id.*

In developing these enforcement mechanisms, however, the Commission should take concrete steps to ensure their transparency and fairness. As an initial matter, it is vital that the Commission provide broadband providers that are the subject of any investigations or complaints with sufficient information as to the alleged conduct being investigated, the alleged target of such conduct, and the time period over which such conduct allegedly occurred. Without this information, broadband providers would be limited in their ability to respond adequately to such inquiries—thus preventing broadband providers from defending themselves effectively, and potentially depriving the Commission of critical information that could inform its case-by-case analysis. While Comcast does not suggest that the Commission cannot take anonymous complaints into account as it attempts to monitor any emerging problems,[221] broadband providers should not be called upon to respond to complaints that lack full information as to the circumstances being complained of and the complainant involved, and plainly should not be subject to administrative penalties without an adequate opportunity to respond.

While the NPRM notes concerns about possible "retaliation" in the event of a complaint, such concerns are misplaced.[222] The Commission processes tens of thousands of non-anonymous complaints of all kinds each year by forwarding them to telephone, cable, satellite, and wireless companies. The NPRM cites no evidence that this well-established procedural mechanism has led to "retaliation" of any sort against subscribers. Indeed, any adverse action by a broadband provider against an individual or entity that files a complaint with the Commission would be self-defeating, in light of the loss of goodwill and competitive harm that inevitably would result from such conduct. The Commission has appropriately declined to adopt proposals

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221 *See id.* ¶ 172 (asking whether the Commission should "permit individuals to report possible noncompliance with our Open Internet rules anonymously").

222 *Id.*

in other contexts that would have allowed anonymous complaints based on unsubstantiated retaliation concerns, such as in its 2011 order establishing a complaint-based regime for the enforcement of new rules under the Twenty-First Century Communications and Video Accessibility Act of 2010.[223] The Commission should reject similar proposals here.

The Commission also should take this opportunity to explore additional procedural mechanisms that would increase the legal certainty surrounding its rules. Given the dynamic nature of the Internet ecosystem, the Commission should consider possible avenues for providing authoritative guidance to parties considering such new services or arrangements, in order to ensure that the development of innovative and socially beneficial offerings is not stymied by the threat of adverse enforcement action. As the NPRM acknowledges, one possible mechanism for providing clarity to parties would be the issuance of declaratory rulings, either in response to specific petitions or on the Commission's own motion.[224] Comcast also remains open to other potential mechanisms for providing guidance—such as a business-review-letter process, non-binding staff opinions, or enforcement advisories.[225] However, if the Commission pursues these alternative mechanisms, it should ensure that such mechanisms provide consistency and clarity in the enforcement of the rules, not contradictory guidance and confusion.

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223 *See Implementation of Sections 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd. 14557 ¶ 250 (2011) (rejecting proposal to permit anonymous complaints based on "concern[s] about retaliation"). While the Commission did permit individuals in that proceeding to "anonymously apprise the Commission of possible unlawful conduct" that might "trigger an investigation by the Commission on its own initiative," the Commission made clear that "supplying such information is not tantamount to filing an informal complaint" that would *automatically* trigger certain procedures. *Id.*

224 47 C.F.R. § 1.2(a); *see also* NPRM ¶ 165 (raising the possibility of issuing "declaratory rulings" to provide certainty regarding the Commission's rules).

225 *See* NPRM ¶ 165.

Additionally, the Commission should seek the input of technical advisory groups, such as the OIAC, the Broadband Internet Technical Advisory Group ("BITAG"), the Internet Engineering Task Force ("IETF"), and the North American Network Operators Group ("NANOG"), to assist the Commission in developing a set of industry best-practices that could serve as presumptive safe harbors in enforcement proceedings.[226] Comcast has long supported proposals to develop a government-led "co-regulatory" framework under which the Commission would leverage the expertise of one or more third-party groups in providing guidance to broadband providers and other marketplace participants.[227] As Comcast has explained in the past, such an approach has a variety of benefits, including the development of norms that reflect maximum stakeholder input and thereby reinforce the collaborative and symbiotic nature of the Internet ecosystem, and the increased likelihood that Internet openness standards keep pace with evolving marketplace practices and conduct.[228] The Commission thus should carefully examine how to incorporate the contributions of OIAC, BITAG, IETF, NANOG, and potentially other organizations and institutions into its policymaking and regulatory efforts in this area.

## VII. CONCLUSION

For the foregoing reasons, the Commission should adopt rules consistent with the discussion above to protect and preserve the open Internet. The Commission should not adopt rules that are more intrusive than those it adopted in 2010, and in all events, should not reclassify

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226 *Id.* ¶ 176.

227 *See, e.g.*, Reply Comments of Comcast Corp., GN Docket No. 09-191, at 5 (Apr. 26, 2010).

228 *See id.* at 9 (citing Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. Davis L. Rev. 529, 569-72 (Dec. 2009)).

broadband Internet access service, or any component thereof, as a Title II telecommunications service.

Respectfully submitted,

*/s/ Kathryn A. Zachem*
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# EDITED TRANSCRIPT

## CMCSA - Q4 2015 Comcast Corp Earnings Call

EVENT DATE/TIME: FEBRUARY 03, 2016 / 1:30PM GMT

**OVERVIEW:**

Co. reported that 4Q15 adjusted revenue grew 7.6% YoverY and adjusted EPS came in at $0.81.



[illegible]

## CORPORATE PARTICIPANTS

**Jason Armstrong** *Comcast Corporation - SVP, IR*

**Brian Roberts** *Comcast Corporation - Chairman & CEO*

**Mike Cavanagh** *Comcast Corporation - Senior EVP & CFO*

**Neil Smit** *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

**Steve Burke** *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

## CONFERENCE CALL PARTICIPANTS

**Craig Moffett** *MoffettNathanson - Analyst*

**Jessica Reif-Cohen** *Bsnk of America Merrill Lynch - Analyst*

**Ben Swinburne** *Morgan Stanley - Analyst*

**John Hodulik** *UBS - Analyst*

**Vijay Jayant** *Evercore ISI - Analyst*

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**Brett Feldman** *Goldman Sachs - Analyst*

**Anthony DiClemente** *Nomura Securities - Analyst*

**Marci Ryvicker** *Wells Fargo Securities - Analyst*

**Bryan Kraft** *Deutsche Bank - Analyst*

**Mike McCormack** *Jefferies & Co. - Analyst*

## PRESENTATION

**Operator**

Good morning, ladies and gentlemen and welcome to Comcast's fourth-quarter and full-year 2015 earnings conference call. At this time, all participants are in a listen-only mode. Please note that this conference call is being recorded. I will now turn the call over to Senior Vice President, Investor Relations, Mr. Jason Armstrong. Please go ahead, Mr. Armstrong.

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**Jason Armstrong** - *Comcast Corporation - SVP, IR*

Thank you, operator and welcome, everyone. Joining me on this morning's call are Brian Roberts, Mike Cavanagh, Steve Burke and Neil Smit. Brian and Mike will make formal remarks and Steve and Neil will also be available for Q&A.

As always, let me now refer you to slide number 2, which contains our Safe Harbor disclaimer and remind you that this conference call may include forward-looking statements subject to certain risks and uncertainties.

In addition, in this call, we will refer to certain non-GAAP financial measures. Please refer to our 8-K for the reconciliation of non-GAAP financial measures to GAAP. With that, let me turn the call to Brian Roberts for his comments. Brian.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

Thanks, Jason and good morning, everyone and thank you for joining us today. 2015 was a terrific year for Comcast NBCUniversal and I couldn't be more pleased with the strong operational performance and financial results that we delivered both for the fourth quarter and for the full year. Honestly, 2015 was not without its challenges, but instead of letting those challenges become real distractions, our Company pivoted and executed extremely well, particularly in the second half of the year. I am so proud of our resilience and leadership team for creating the momentum that is now driving us forward in 2016. Neil Smit and Dave Watson and everyone at Comcast Cable is heroic in my mind for not only staying focused, but generating the best yearly video subscriber results that we've had in nine years and the best broadband subscriber results that we've had in eight years.

We ended on a high note as our fourth-quarter video net additions were our strongest quarterly results since the first quarter of 2007. At the same time, we expertly balanced these great customer metrics with solid financial performance. At NBCUniversal, Steve and his team exceeded expectations once again. We set new box office records, achieved number one ratings in broadcast from morning to primetime to late night, continued the outstanding progress in our theme parks and sustained healthy profits at cable networks. Altogether Comcast NBCUniversal made incredible strategic, operational and financial progress in 2015 and did this through a collaborative culture where our businesses are focused on strengthening themselves and each other.

Overall, we grew revenue 8.3% in 2015 and operating cash flow by 7.7%. We generated close to $9 billion in free cash flow and increased cash return to shareholders by over 40%. After reviewing our performance and outlook with our Board, we are announcing today our decision to raise our dividend by 10%, marking the eighth consecutive annual increase. We also increased our stock repurchase authorization to $10 billion and we expect to repurchase $5 billion of stock in 2016.

Comcast NBCUniversal is indeed a special company. This is a time of exciting change in media and technology and we're uniquely positioned. We have a diversified portfolio of businesses working well together and the best suite of products, content and experiences that we've ever had.

So with that, let me talk about some of our specific achievements in 2015 and a few of the things that we're looking forward to in 2016 and beyond. Starting with NBCUniversal, we've now fully doubled the operating cash flow since we announced the acquisition in 2009. In our TV business, we maintained our number one ranking in broadcast primetime and saw continued success in The Voice and Blacklist paired nicely with some new breakout hits, including Blindspot. In addition, we build on the strength of our Chicago franchise with our new show, Chicago Med.

Sunday Night Football remained TV's number one primetime show for the fifth year, grew viewership by 6% and completed the highest rated season in its history. And as I mentioned, we exit 2015 with strength across all parts of the day with the Today Show, Nightly News and Late Night all number one in their respective categories. NBC Sports Network had its most-watched year ever driven by NASCAR's debut and the continued growth of English Premier League and NHL. USA's Mr. Robot just won the Golden Globe and the Critics' Choice Award for the best drama on television, a terrific accomplishment. Congratulations to Bonnie Hammer and her team.

Film had the best year in its history. Jurassic World, Furious 7, Minions and Fifty Shades of Grey, along with other titles, were hugely successful. With $6 billion in worldwide box office receipts, two-thirds of which was international, and a strong and growing list of franchises, Universal Pictures is in a great position for ongoing success.

And finally, theme parks had another outstanding year. We again grew revenues and operating cash flow double digits through our proven formula of new attractions complemented by additional hotel room capacity. From Harry Potter to Transformers and Fast and Furious, our team at Universal Parks and Resorts has been on a fantastic run and there's plenty of growth on the horizon with our recent acquisition of a 51% stake in the park in Osaka, Japan, a new Harry Potter attraction opening in Hollywood, a new waterpark being built in Orlando, a brand-new park being designed for Beijing and our focus on increasing hotel room capacity.

At cable, I feel we stand out in the industry, delivering a healthy balance between solid improvements in subscriber metrics coupled with very strong financial performance. In 2015, we added 666,000 customer relationships and that's an 86% improvement versus last year. And at the same time, we increased revenue per customer relationship a healthy 4.2% and grew operating cash flow 5.6%.



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In 2015, we made improving customer service our main focus. I'm really pleased that as we sit here today, we are seeing great progress. In fact, we achieved significant improvements across the key metrics we use to track customer satisfaction with some of our best customer metrics in years. We're going after each of the areas that have the most impact on the customer's experience.

In 2015, we also continued to take our new products to scale. Our voice remote is the latest example with 4 million activated since our launch just eight months ago. The result of these investments is showing up in our subscriber trends where we're seeing notable improvements, particularly in reduced churn across all product categories.

Business Services under Bill Stemper has now exceeded a $5 billion revenue run rate while maintaining a growth of 20%, which is remarkable. We recently launched into the enterprise segment and have some good early traction in this market to go along with the robust share gains in small and medium-sized businesses.

Overall, our progress during 2015 sets up incredibly well to be successful in 2016 and beyond. In cable, we are aligned around a few critical top priorities. The first is to continue our progress in transforming the customer experience, and as we've seen, our customers are responding to our efforts in a resounding way and we will keep pushing hard.

Second, we will focus on driving share growth through even better products, faster speeds and additional customer segmentation. And finally, technology leadership will remain at the forefront as we enhance X1 and drive it deeper into our customer base, roll out DOCSIS 3.1 to deliver gigabit speeds at scale and continue to develop solutions for more targeted advertising.

At NBCUniversal, we feel great about our position and the range of opportunities ahead of us. We are proud to bring the 2016 Olympics in Rio to the American people, delivering the most comprehensive and technologically advanced Olympics in history.

We are also excited to open a new Harry Potter attraction in Hollywood, add the Secret Life of Pets to Illumination's growing list of animated film and this week's exciting announcement that NBC will now be the home to five Thursday night NFL games.

We continue to be entrepreneurial and look for ways to invest and grow, like our investments in Vox and BuzzFeed and our partnership with Atairos, Michael Angelakis' new venture, which recently launched with a talented team who are scouring the globe for smart investments.

So on a final note, I'm excited about all the opportunities that lie ahead and believe we will approach them with the same level of operational excellence and financial discipline that has served us so well for more than five decades. Mike, over to you.

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**Mike Cavanagh** - *Comcast Corporation - Senior EVP & CFO*

Thanks, Brian and good morning, everybody. Since Brian covered the terrific full-year results, let's go straight to the fourth quarter on slide 5. Adjusted revenue for the fourth quarter increased 7.6% and operating cash flow increased 4%. As a reminder, the adjustments this quarter primarily reflect the exclusion of the partial quarter results of our acquisition of Universal Studios Japan.

The overall growth in operating cash flow was primarily driven by high-speed data, video and Business Services at cable, and film and parks at NBCUniversal, which we'll go into in greater detail on the slides to come. Adjusted earnings per share for the fourth quarter was $0.81, a 5.2% increase compared to the fourth quarter of 2014. And free cash flow during the quarter decreased 6.3% to $1.6 billion and free cash flow per share of $0.64 declined 1.5% reflecting growth in operating cash flow and lower cash taxes, offset by higher capital expenditures and increased working capital. For the full year, we generated $8.9 billion of free cash flow, a 9.4% increase over last year's results and free cash flow per share of $3.55, a 13.8% increase.

Now let's review the results of our businesses in more detail starting with Cable Communications on slide 6. Cable Communications delivered a solid fourth quarter. Revenues increased 5.9% to $12 billion as we added 281,000 customer relationships, a 58% improvement compared to last year's fourth quarter, driven by growth in our two-product and three-product customers and reduction in churn across all products with video and high-speed data each improving churn for 23 consecutive months.



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Total revenue per customer relationship reached $145 per month, a 3.5% increase that reflects the successful execution of our strategy that is focused on retaining customers, growing customer relationships and driving our value-added bundling strategy.

Taking a closer look at our video business, fourth-quarter revenue increased 4.4%, reflecting rate adjustments and higher take rates of advanced services. We ended the year with very strong video customer growth, adding 89,000 customers in the fourth quarter. This is our best quarterly result in eight years, driven primarily by another quarter of improved churn. Our churn results reflect improved customer support, better market segmentation and customer recognition of what we believe is the best video product on the market. We continue to make great progress rolling out X1 to new and existing customers, adding 1.1 million customers in the quarter, a 73% increase compared to last year. X1 customers now represent about 30% of our total video customer base.

In addition, we continue to expand our TV Everywhere and On Demand choices. We now have 75,000 shows On Demand, 700 full season stacked series, which is up 50% from a year ago and 98 live streaming channels available outside the home.

Lastly, we're doing a better job segmenting the market, providing offers with more choice and appeal to new audiences that address multiple segments of the market. For example, we have increased our penetration of Hispanic households with targeted bicultural products and offers.

The strong momentum in our high-speed data business continued. Revenue increased 9.8% during the quarter, making it again the leading contributor to overall cable revenue growth, driven by an impressive increase in our customer base, as well as rate adjustments and an increasing number of customers taking higher-speed services. We added 460,000 data customers during the quarter and 1.4 million during the full year with 77% of our customers receiving speeds of 50 megabits per second or greater. We have now added over 1 million high-speed data customers for 10 years in a row and we see significant room for growth ahead. About 74% of our residential high-speed data customers now have one of our wireless gateways, which are also fueling our impressive growth in Wi-Fi hotspots that now number more than 13 million.

Voice revenues declined by 1.7% in the fourth quarter as customer additions were offset by a modest decline in ARPU. In the fourth quarter, we increased net customer additions by 139,000, a 13% increase versus a year ago. Business Services was once again a large contributor to cable revenue growth with revenue increasing 18.9% to $1.3 billion. We have three engines of growth in Business Services each at a different stage of development -- small business, which has healthy market penetration and generates the majority of our revenue; mid-sized business where our market penetration is still less than 10%, but is growing at a higher rate; and our recently announced enterprise division that targets Fortune 1000 companies and is gaining traction with more than 20 large enterprise customers and multiple eight-figure deals already signed. Business Services has strong positive momentum and continues to represent a large and attractive growth opportunity for the Company.

Finally, cable advertising revenue declined 9.3% due to lower political revenue. Excluding political, our core cable advertising revenue increased 2.8% during the fourth quarter.

Turning to slide 7, fourth-quarter Cable Communications operating cash flow increased 4.6% to $4.9 billion resulting in a margin of 40.9% compared to 41.4% in the fourth quarter of 2014 driven by higher expenses primarily related to the investments we are making to improve the customer experience and higher programming costs. Fourth-quarter programming expense growth slowed to 4.7% reflecting the timing of programming renewals while the full year increased 7.1%.

As I said at a recent conference, the rate of programming expense growth will increase in 2016. We expect approximately 10% growth in programming costs for the year driven by several contract renewals beginning in the first quarter, as well as increases in retransmission consent fees and higher sports programming costs.

In negotiating programming deals, we continue to value expanded content rights for our On Demand and TV Everywhere platforms. We are adding more content, out-of-home rights, stacking rights and back seasons ensuring we have the most compelling and competitive video product on the market. Non-programming expenses increased 8.1% for the quarter and 6.4% for the year. This growth reflects increased spending to improve the customer experience as we've added technicians and service personnel to strengthen our dispatch teams and operations and invested in training, tools and technology. Metrics, including on-time appointments, call pickup time and new customer onboarding success rates are all trending in the right direction.



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Finally, our outlook for 2016 cable operating margin is that it will be flat to down 50 basis points compared to 40.8% in 2015. We expect programming and other expense growth will be offset through modest rate adjustments, growth in high-margin businesses like high-speed data and Business Services and cost efficiency improvements resulting from our X1 and customer experience initiatives, as well as general cost control efforts.

Now let's move on to NBCUniversal's results. On slide 8, you can see NBCUniversal delivered solid results in the fourth quarter as adjusted revenue increased 10.5% and operating cash flow increased 4.7% driven by strong results at film and the parks. Cable networks revenue increased 3.4% and operating cash flow declined 1.9% to $894 million. Distribution revenue increased 6.8% and was positively impacted by higher affiliate fees associated with NASCAR on our NBC Sports Network during the quarter.

Advertising revenue declined a modest 0.3% as the positive contribution from NASCAR advertising and increased pricing from a strong scatter market were more than offset by ratings declines at some of our networks. The decline in operating cash flow reflects the inclusion of NASCAR rights fees in the quarter that weren't present in last year's fourth quarter.

Broadcast revenue increased 7% and operating cash flow declined 5.6% to $217 million. Advertising revenue increased 7% driven by solid ratings in primetime and strong ratings growth at NFL Sports and Telemundo, as well as a strong scatter market. This higher demand in the scatter market has continued into the first quarter. Content licensing increased 35% primarily driven by straight to SVOD series produced by our studios like Master of None and Unbreakable Kimmy Schmidt, as well as an increase in production at our international studio.

Last, retransmission revenue increased nearly 40% to $136 million and totaled $535 million for the full year. We expect retransmission revenue to increase to $800 million in 2016. Total expenses increased 8% driven by the launch of mid-season shows.

Film revenue increased 25.8% and operating cash flow increased 84.6% to $143 million. Home entertainment revenue increased 75% driven by the strong performances of Minions and Jurassic World, partially offset by a 37.5% decline in theatrical revenue and higher operating costs during the quarter. This was the most profitable year in Universal's history with full-year operating cash flow increasing 74% to $1.2 billion. While our 201 slate is not as large and will be a difficult comparison to 2015, we're excited about our strategic slate of core franchises, sequels and animated film

Theme parks adjusted revenue increased 15.5% and operating cash flow increased 12.3%. Both our Orlando and Hollywood parks delivered higher attendance and healthy per capita spending growth, partially fueled by a record Halloween Horror Nights at both parks. Even more promising, despite having lapped the opening of Harry Potter Diagon Alley two quarters ago, Orlando continued to deliver healthy growth. In 2016, we look forward to the opening of Harry Potter in Hollywood and delivering on our plans to integrate Universal Studios Japan into our already strong parks portfolio.

Now let's move to slide 9 to review our consolidated and segment capital expenditures. Consolidated capital expenditures increased 18.6% to $2.6 billion in the fourth quarter and 14.5% to $8.5 billion for the full year. At Cable Communications, capital expenditures increased 10.2% to $2.1 billion for the fourth quarter and 14.3% to $7 billion for the year. This growth reflects higher spending on our customer premises equipment, including X1 and wireless gateways, increased investment in network infrastructure to increase network capacity, as well as the continued investment to expand Business Services. In 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%.

At NBCUniversal, fourth-quarter CapEx increased 65.2% to $557 million and full year increased 13.5% to $1.4 billion. Increased investment at theme parks was the primary driver of the quarterly and yearly increases and in the fourth quarter, we acquired land adjacent to one of our theme parks for $130 million.

In 2016, NBCUniversal's capital investment plan is expected to increase approximately 10%, reflecting the consolidation of Universal Studios Japan and continued investment in theme parks. Investments in our theme parks are clearly generating strong returns as they drive increased attendance and per capita spending.

I'll now finish on slide 10 with capital returns. In 2015, we returned $9.2 billion to shareholders composed of $2.4 billion in dividends and $6.75 billion in share repurchases. As you can see on the left side of the slide, Comcast has a great track record of consistently returning capital to



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shareholders. The compound annual growth rate in our dividend from 2009 to 2015 was 24.4% versus 10% for the S&P 500. Looking ahead, it is a high priority for us to continue this record of great total capital returns. This will be achieved by balancing three elements. First, the healthy annual return of capital to shareholders, which, for 2016, is the eighth consecutive annual increase in the dividend to $1.10 per share together with a plan to buy back $5 billion of stock over the course of the year.

The second element to balance is investment in our business to profitably grow the long-term earnings capacity of the Company. This includes a significant CapEx investment that I covered on the last slide. It also includes the deployment of capital to enhance our existing businesses through relatively modest business development efforts such as the Vox and BuzzFeed digital investments and the Japan park deal that we did in 2015. And lastly, it includes exploring contiguous growth opportunities as we were doing in both a variety of ways, including through Michael Angelakis' new fund.

As we set our capital return plan for the year, we earmark some capital for the whole basket of these types of situations, but we consider each situation on its own financial merits. And since I know it's on many of your minds, we will be filing to participate in the upcoming forward spectrum auction, but I also want to be clear that the $5 billion in planned 2016 buybacks will not be reduced in the event that we acquire some spectrum in the auction.

The third and final element of our balanced capital plan is the very important maintenance of a strong balance sheet to protect the Company in times of economic and market stress and position us to potentially capitalize on opportunities to create value in such times such as we did with the NBCU transaction. As will begin what has thus far been a very volatile 2016, we are well-positioned with our leverage at around 2 times.

With that, I'm done with the slides. I hope everyone has a good sense for how pleased we are with the fourth-quarter and full-year 2015 results, as well as our momentum as we head into 2016. Now I will turn it back to Jason to lead the Q&A.

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**Jason Armstrong** - *Comcast Corporation - SVP, IR*

Thanks, Mike. Brent, let's open up the call for questions, please.

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## QUESTIONS AND ANSWERS

**Operator**

Thank you. We will now begin the question-and-answer session. (Operator Instructions). Craig Moffett, MoffettNathanson.

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**Craig Moffett** - *MoffettNathanson - Analyst*

Good morning and thanks. So Mike, one quick clarification first and then a question for Neil. Mike, you just said a moment ago that your share repurchases wouldn't be conditional on participation in the auction. If you participate in the auction, but don't find the prices attractive enough and end up not buying in the auction, would that suggest that you might actually increase your share repurchases?

And then for Neil, you just announced yesterday your first markets for DOCSIS 3.1. I was wondering if you could give us any color on whether you plan to offer that as a standard product or as a premium product going forward and if you've got anything that you can talk about with respect to how you might price it for consumers.

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**Mike Cavanagh** - *Comcast Corporation - Senior EVP & CFO*

So you hit it right on the auction. We just said that we're going to take a paddle in the auction, which means we're going to evaluate, consider and may purchase, but only if we think the price is right after we do our evaluation of what's available. As far as what we do in the buyback, if we don't





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buy, we will just wait to see how -- that'll be deep in the year and if there's a change of view on what we think our capacity is, at that stage, we'll come back and update you then.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning DOCSIS 3.1, as you know, we announced five cities yesterday and we haven't priced the rollout yet, but the great thing about DOCSIS 3.1, it's a very efficient way to deliver gigabit speeds and we'll be rolling it out on a widespread basis over the course of the next few years.

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**Craig Moffett** - *MoffettNathanson - Analyst*

Great. Thanks, Neil.

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**Operator**

Jessica Reif-Cohen, Bank of America.

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**Jessica Reif-Cohen** - *Bsnk of America Merrill Lynch - Analyst*

Thank you. I guess a couple things. First, on the FCC initiative, the set-top box initiative, could you give us your views -- given the importance of the set-top box, not just rental fees, but also data analytics, how do you see that progressing?

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Well, I think it's premature to comment on this since a proposal has not even been seen yet. We believe that generally speaking in a dynamic environment that's rapidly changing, technology mandates just don't work very well, but we'll continue to -- we look forward to seeing the proposal and we'll work with the Chairman and his office to come up with what's best for the customers and the consumers.

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**Jessica Reif-Cohen** - *Bsnk of America Merrill Lynch - Analyst*

And then on the video bundle, you had great video numbers and broadband, but the video numbers tell a really different story than what we've seen in the market, post the media meltdown since August. Can you give us your view from both sides of the Company on how you see the video bundle evolving over the next three to five years?

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Well, we feel very good about the video numbers. They are the best in nine years, the best quarter in eight years. I think part of it is X1, which is a real game-changer. 60% of our subs got X1 in the net new adds and new connects. We have a great TV Everywhere proposal where 34% of our customers are using some form of TV Everywhere and the viewing hours on dotcom and mobile combined are up about 20%, so they are watching more. I think we're segmenting the market better, getting the best customers and getting them to stay longer. And we're improving the customer experience. We're developing new channels, stores, MDUs, the On Campus product we're segmenting better. So we feel good about the video numbers and the progress.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

I think churn is the one thing that I would add to that and all that adds up with each of the products having a decrease in churn. I don't know if, Steve, on the NBCUniversal side, we --.

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

I think if you have great channels with great products like the Olympics or the NFL, or Mr. Robot on USA, your channels are going to stay in the bundle and it's going to continue to be a very good business for a very long time.

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**Jessica Reif-Cohen** - *Bsnk of America Merrill Lynch - Analyst*

Can I just follow up on NBC, the land acquisition? Given the IRRs on theme parks, which are really impressive, could you talk about the usage of the land and timing?

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

Well, I think it's a little early for that. We just closed on the deal this quarter. We got 475 acres, so we have a lot of land to work with and we have some ideas, but we don't have firm plans at this point.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

One of the great things about universal theme parks and we've seen this now in different geographies, there's a long lead time, a lot of smart planning, understanding what attractions work, but it all starts by having the ability to do that and so this land, we think, is really a wonderful strategic acquisition and it's long term down the road, I think.

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**Operator**

Ben Swinburne, Morgan Stanley.

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**Ben Swinburne** - *Morgan Stanley - Analyst*

Thanks. I have a question back on wireless and then some maybe housekeeping for Mike. Brian, I don't know if you'd comment, but you are obviously planning to at least participate in the auction. You have a large Wi-Fi footprint out there. You have the MVNO. Can you talk a little bit about where your head is at on wireless broadly? Like where is all this headed? Have you figured that out yet, or is it still very much a dynamic situation?

And Mike, I don't know if you'd help us as we think about that free cash flow number. You said $9 billion for 2015 and we think about that for 2016. I don't know if you want to help us on things like cash taxes, working cap and maybe the intangibles, which are numbers that factor in to how we think about I guess this year. Thank you, both.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

I think you put your finger on it. We have a lot of assets in the Company and, Neil, feel free to join on this answer, but really all we're doing today is saying, we'll, as Mike called it, take a paddle in the auction to see if there's an opportunity for the Company to be rewarded in that auction with something that we think has strategic value. And in the past, that has proved to be not only a moneymaker, but given us more strategic flexibility and we want to know if that's the case this time.



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Beyond that, I don't think it's any more than that and it's a free option, if you will, to get a paddle and see what the values are and how much capacity. It's a very complicated auction, as you know. It's not clear exactly what's for sale and exactly yet and all that has to be determined, but you have to make this decision now and so we're making it.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Right. I would just add we're filing to retain the option to participate in the forward auctions, which we expect to occur sometime in late spring or early summer and we have these what we believe are very valuable assets in the mobile space, 28 million customer relationships, 13.3 million hotspots -- Wi-Fi hotspots. So they are assets that we want to leverage and we're testing and learning.

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**Mike Cavanagh** - *Comcast Corporation - Senior EVP & CFO*

On free cash flow, I think we covered a little bit the guidance we give or the outlook we give for the momentum we've got in the businesses and CapEx, which I hit. The other parts of free cash flow, we'll see some headwinds as we usually do in an Olympics year. It's one of our best properties, obviously and we're going to make money on it, but, on a cash basis, we will advance funds to the Olympic Committee during the year, so it will be a year-over-year negative on the cash flow side to the tune of maybe $0.5 billion. And the intangible, the software it follows suit with CapEx in cable.

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**Ben Swinburne** - *Morgan Stanley - Analyst*

Okay, thank you.

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**Operator**

John Hodulik, UBS.

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**John Hodulik** - *UBS - Analyst*

A couple quick questions on the video side, maybe for Neil. First of all, it looks like, Neil, you lost about 35,000 subs. A lot of improvement over last year. At the same time, a lot of the drivers sound like we're just starting to see these things come to fruition. There's a lot more runway to go. Is it reasonable to assume that you're going to grow subs next year, first of all?

And then second of all, the improvement this quarter came with a nice stepup in ARPU as well. So are you finding that, given all the value you're adding to the bundle with all the stacking rights and TV Everywhere options, are you finding it easier to get price increases through as people are recognizing the value of the product and it continues to improve? Just trying to get a sense of how we should look at that going forward as well. Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

I think I'd look at it through two lenses. One is we have what we believe is the best product out there in X1 and that's helping to drive ARPU because you are getting more VOD views, 40% more VOD views, you are getting lower churn. You are getting more DVR -- 50% more DVR usage or subs and you're getting additional outlets. So all that drives ARPU. That's positive.

I think the other things we're doing in the business in segmenting and driving channel performance and bundling effectively and targeting customers is improving the throughput of the subs and then we're retaining them for longer and a lot of that is better customer experience, targeting better subs and getting them the right package. We're segmenting with different offers for different customers. On Campus is an example;



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Internet Plus is an example; Stream is an example of a product that we're targeting at a specific segment. So we're giving them the product they want at the right price and we're retaining and we're servicing them well and retaining them longer.

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**John Hodulik** - *UBS - Analyst*

Got it. Thanks.

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**Operator**

Vijay Jayant, Evercore ISI.

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**Vijay Jayant** - *Evercore ISI - Analyst*

Thanks. Also for Neil, any color you can give us where you are on your trajectory with some of the segmented skinny products and how much runway do we have there, at least very broadly to your carried minimums? And second, on an IP-only product, I know you have a low-end proposition in the market, some of your peers have talked about rolling that out in the next year. Is that something you think could be a good strategy going forward? Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning the skinny bundles, they are actually a very small percentage of our overall video customer base and we do feel we have room with the programmers and the penetration rates. In the fourth quarter, 75% of [the year over year improvement in] (corrected by company after the call) our video adds were at the higher-end packages. So I don't want to overstate the significance of skinny bundles. The Stream product we just rolled out in a few markets in Boston and Chicago. It's probably too early to say what it will turn into over time, but we feel good about the usage and good about the product. It's a good value proposition for the customer and we'll continue to roll it out to other markets.

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**Vijay Jayant** - *Evercore ISI - Analyst*

Great. Thank you.

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**Operator**

Jason Bazinet, Citi.

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**Jason Bazinet** - *Citi - Analyst*

I have a question for Mr. Roberts. Given your past success in M&A, the lean balance sheet that you have, the more muted, maybe, buyback relative to your cash flow, a lot of investors in meetings that we're in put on the radar screen more transformative M&A in wireless, in the Internet space, European cable. Do you think that's a misguided notion, or is that something that investors should think about in terms of the realm of possibilities for the next year?

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

Well, thanks for the broad way you asked the question and I will give you an answer that I think covers a lot of territory. It's always amazing to us, sometimes almost humorous, but none of this is ever humorous, what we read about ourselves in every possible M&A scenario that gets invented. And in many cases, it's literally that, just invented. And we're always trying to remain focused on some core principles.

First of all, really like the company we have right now and I think we've said that consistently and nothing has changed in that view. If anything, I think we feel better about our mix of assets, NBCUniversal, doubling the cash flow in the five years since we bought it. I think we bought it right, but we've operated it even better. And so I sit there and look at those scenarios and many others that have been suggested and there's nothing we feel we have to do. At the same time, Mike Cavanagh and the team that he is building are always looking to see if there's ways we can grow shareholder value and look for new opportunities as the markets evolve.

But sitting here today, our plan of record in 2016 is to execute on a business plan, stay focused and I don't feel the need that we need to go and change the face of our Company. I think we're in a wonderful, unique position at the cross-section of two industries and we're leading the way in both.

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**Jason Bazinet** - *Citi - Analyst*

Thank you very much.

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**Operator**

Brett Feldman, Goldman Sachs.

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**Brett Feldman** - *Goldman Sachs - Analyst*

Thanks. Earlier when Mike was talking about programming costs for 2016, he noted that one of the reasons why the rate of programming cost is going up is that you're getting more rights and you talked about examples of that such as stacking. So two follow-up questions on that. The first is does your expanded rights package in some of these new agreements allow you more flexibility to put together different channel programs? Meaning you're paying a bit more and maybe you could put together skinnier bundles on a broader basis as a result of that.

And then, in general, how close are you to getting the expanded rights across all of your programming agreements with the concept of the question being, once you get to the point where you feel comfortable with your stacking rights and your TV Everywhere rights and anything else across most of your agreements, is that a point at which the rate of programming costs growth might be a bit slower than what we're going to see this year? Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Well, most of the difference between Q4 and what we're projecting for 2015 is just timing of when contracts renew or terminate. So that's point one. We do feel that we get a wide set of rights, including stacking rates, as you mentioned, in and out of home rights, in some cases, digital rights. So we've increased our rights and it does give us more flexibility in terms of how we package. Each contract is a little bit different, but we -- as you can see from our different offerings, I mentioned Internet Plus, Stream, Watchable. We're innovating in the packaging area to get customers a package that's appropriate to them and whether it's streamed or delivered in a linear fashion, we're getting increasing rights and more flexibility. And we work together with the programmers to define the best value.

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**Brett Feldman** - *Goldman Sachs - Analyst*

And then just with regards to the second part, do you feel like you've done a lot of that work, or do you think it's something that's going to be ongoing for a period of time?

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

I think it's going to be ongoing. I think the video marketplace is very dynamic now. There's a lot of competition and I think the programmers recognize this as do the distributors and we work together to -- we trial things all the time and we're working in both the programming packaging space, as well as the advanced advertising space to deliver more value via more targeted advertising. So it's an ongoing conversation.

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**Brett Feldman** - *Goldman Sachs - Analyst*

Great. Thanks for the color.

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**Operator**

Anthony DiClemente, Nomura.

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**Anthony DiClemente** - *Nomura Securities - Analyst*

Thanks for taking my questions. I have two for Steve. Steve, can you just share with us please the strategic thinking on licensing the five Thursday night football games and how that NFL contract will work its way into the NBCU financials this year?

And then, secondly, the distribution revenue growth at the cable networks is 6.8% in the quarter. Just wondering if you can give us -- kind of break down that number in terms of what was the affiliate rate increase per sub and then what's the subscriber volume underneath that number and is that a sustainable type of growth rate going forward into 2016? Thank you.

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

Let me answer the second question first. We had a slight decline in the number of subscribers that was overmatched by a series of rate increases. It's going to be lumpy quarter-by-quarter and year-by-year on the affiliate side, but -- and this is probably on the low end of what you can see in the future -- but it will be lumpy.

On the NFL, the number one show on television is Sunday Night Football and is a very, very important part of our business. Football is profitable for us now. It will be profitable for us after the Thursday night deal and the ability to have these 24 football games, which will be 24 of the highest rated nights of the year, is very, very valuable for a marketer that wants to reach a broad audience. In fact, getting more valuable all the time as the world continues to fragment. So we're very happy that we were selected. The NFL has put their faith in our team and our broadcast and we're delighted about it. It's really the best programming, most powerful programming on television and we got it at a very fair rate.

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**Anthony DiClemente** - *Nomura Securities - Analyst*

Thanks very much.

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**Operator**

Marci Ryvicker, Wells Fargo.



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**Marci Ryvicker** - *Wells Fargo Securities - Analyst*

Thanks. I have two questions. The first one is for Neil. We know about the tough comp in equipment charges as it relates to ARPU for 2016 verses 2015. But can you talk about maybe other rate increases in cable and how it might compare to 2015 in terms of magnitude and timing?

And then the second question is for Steve. It was mentioned that scatter remains strong in Q1 and we're starting to read about a slowdown in auto, but it sounds like you are not feeling any of this yet. I guess is that a correct statement, and is there anything anecdotal about auto specifically that you are hearing? Thanks.

**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning rates and equipment, we'll continue with the accelerated X1 rollout. We're putting out 40,000 boxes a day, which, if you do the rough math, it'll get us in the range of 50% of the footprint covered by the end of the year. In terms of capital intensity, we said it would be around 15%, so I think that trend will continue. We are investing behind things we know are good investments like X1 and I think that's the basic story. We are investing behind Business Services, behind Wi-Fi advanced routers, DOCSIS 3.1 and these are all things that I think you can see from the sub numbers in the financial results, we're balancing well the investment, as well as the return.

**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

So I think the scatter market is as strong as it's been any time in recent memory and when we went through the upfront, we were wondering -- everybody was wondering -- is more money going to digital and is that depressing the upfront or are advertisers just waiting. And it now appears given that scatter has been strong now so consistently that a lot of advertisers were waiting and placing their money later. I don't think there's anything to worry about in terms of the automotive side of the scatter market. I think the whole market is very strong. Automotive should be ve strong. And the good news is we're now in February and we're getting closer and closer to the upfront. So I think there are reasons to be optimis about the trajectory for the upfront process.

**Marci Ryvicker** - *Wells Fargo Securities - Analyst*

Great. Thank you.

**Operator**

Bryan Kraft, Deutsche Bank.

**Bryan Kraft** - *Deutsche Bank - Analyst*

I have a two-part question on dynamic ad insertion. Comcast has been one of the biggest proponents of a targeted dynamic ad insertion model going back to really before you owned NBCU. Can you talk about NBCUniversal's strategy for reaching households beyond the Canoe partners, beyond those big cable companies? And also, secondly, Canoe placed about 11 billion impressions last year, so it was almost double 2014, but still a pretty small percentage of TV ad impressions in your footprint. Can you help us understand at this point what the impediments are to really scaling the platform more on the On Demand side and also can you talk about what it would take to extend the dynamic ad insertion platform to linear viewing as well? Thank you.



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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Steve, why don't I start and then hand it over to you if you have any additional comments. We believe there is a real opportunity in the linear space to do some of the things that the digital space does so well such as measurements and targeting and we have done a few acquisitions, FreeWheel and Visible World, that fit into building that platform that delivers from targeted advertising both from the demand side, as well as the sales side, making it easier for the customers to deliver their ads.

We have Visible World, which delivers the targeting system. We have set-top box data, which can power it and we think we've -- we're still building the platform, but we're delivering value as it is to a number of programmers. I think that concerning Canoe, it's an integral part of delivering the dynamic ad insertion and I think we're -- one of the other things we're working on is what's the right ad load in VOD and can we improve the ad targeting and delivery of that system. Steve, do you want to add anything?

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**Steve Burke** - *Comcast Corporation - Senior EVP Comcast Corp, CEO, NBCUniversal*

I think broadly what advertisers are talking about in almost every single discussion is how to use the data that they are accustomed to getting from when they place a digital buy, how to get that with a television buy. And if anything, I think the pendulum is swinging a little bit back toward traditional television advertising, putting a 30-second spot on television. Obviously, the Nirvana is to have nationwide addressability. I think that's years away and difficult to cobble together for all the obvious reasons.

But, in the interim, we have a whole variety of products that we have right now in the market that take advantage of set-top box data and other information overlaid on top of our shows and existing ratings data so that we can go to advertisers and say we have more eyeballs than anybody else in America, than any other company in America and we can inform your purchases of those eyeballs, we think, as well or better than anyone else. So it's not like we're waiting for addressability, but obviously addressability is a final end state, which I think is going to make television advertising that much more valuable.

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**Bryan Kraft** - *Deutsche Bank - Analyst*

Great, thank you.

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**Operator**

Mike McCormack, Jefferies.

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**Mike McCormack** - *Jefferies & Co. - Analyst*

Neil, maybe just a quick comment on very strong broadband adds, what you are seeing out there. Was it a reduction in churn, better gross adds, a combination of the two? Any particular markets where you had more success than normal? And then maybe just the follow-up on Wi-Fi hotspots and handoff. Can you just give us an update on what you're seeing from a customer experience standpoint on handoff technology and quality of service? Thanks.

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**Neil Smit** - *Comcast Corporation - Senior EVP Comcast Corp., President & CEO, Comcast Cable*

Concerning the HSD numbers, I think that it was strong delivery across the board. Almost every market had indexed higher on connects, but the biggest driver was disconnects or churn and that was across the board in the business, not just HSD. So I think there's still room for growth. 70% of America has broadband and there's room for growth within the sector and we feel we've got the best, fastest Wi-Fi in the household and we can deliver a great experience. We are rolling out DOCSIS 3.1 and I think it's going to be a good business for us going forward.



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Concerning the Wi-Fi hotspots, people are connecting who use it about five times a day and the average session is over 25 minutes. So we're seeing consistent usage. We build out the public spots based on the usage trends we see and I think concerning the handoff between Wi-Fi and cellular, there is some technology out there. The question is whether you'd need to do the handoff or not and how seamless it would be, but we are looking at technology in that space as well.

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**Brian Roberts** - *Comcast Corporation - Chairman & CEO*

Let me just add to that that one of the things I think we did really well over the last few years was have our technology team, led by Tony Werner and others, really see around the bend, see Wi-Fi, make an investment so our definition of broadband is totally different today than it was five years ago for what you get as a consumer and I think that goes back into whether we can do something creative in the future, whether that's involving spectrum or Wi-Fi or some of the existing relationships we've got.

So as I sum up, I think about the fact that 2015, amazing year. I think these numbers across the board -- I thank all our colleagues -- stand out in industry because it's not just great subscriber numbers, but it's also strong financial, cash flow and growth. Doubling the cash flow at NBC since the acquisition is a real milestone that we're pleased with and I think we're better together and that both sides of the Company are more informed. We have a collaborative culture, not only strengthening each other, but strengthening ourselves and together I think that makes Comcast NBCUniversal very unique.

And as we thought about return of shareholder capital, we increased it 40% in 2015. We are reinvesting in the business first and foremost, things like Japan and Vox and BuzzFeed. Our dividend has increased since 2009 on an almost 25% compounded growth rate, 10% for the S&P 500. So we think we continue to return capital, but we also want to use the growth that we've got to play offense with things like X1 and the kind of things we've been talking about in the call. And I think we're doing that well and mostly giving customers what they want and that cultural shift, which really, Neil, you started in the second half of the year is paying dividends. So thank you for your support. We look forward to a great 2016.

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**Jason Armstrong** - *Comcast Corporation - SVP, IR*

Thanks, Brian and thanks, everyone, for joining us today. Brent, back to you.

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**Operator**

Thank you. We have no further questions at this time. There will be a replay available of today's call starting at 11:30 AM Eastern Time. It will run through Wednesday, February 10 at midnight Eastern Time. The dial-in number is 855-859-2056 and the conference ID number is 9896818. A recording of the conference call will also be available on the Company's website beginning at 11:30 AM Eastern Time. This concludes today's teleconference. Thank you for participating. You may all disconnect.

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

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| In the Matter of | ) | |
| | ) | |
| Protecting and Promoting the Open Internet | ) | GN Docket No. 14-28 |
| | ) | |
| Framework for Broadband Internet Service | ) | GN Docket No. 10-127 |

# COMMENTS OF TIME WARNER CABLE INC.


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July 15, 2014

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## COMMENTS OF TIME WARNER CABLE INC.

Time Warner Cable Inc. ("TWC") hereby submits its comments in response to the Notice of Proposed Rulemaking ("NPRM") and Public Notice in the above-captioned dockets.[1]

## INTRODUCTION AND SUMMARY

The NPRM's central goal—"protecting and promoting Internet openness"[2]—enjoys near-universal support. While there have been differences in opinion concerning the most effective (and lawful) means of preserving the open Internet, there has never been any disagreement about the importance of doing so. In particular, TWC and other broadband Internet access service providers not only have been consistent champions of the open Internet—they built it in the first place. Indeed, broadband Internet access providers, despite being portrayed by some advocates as posing a threat to the open Internet, are primarily responsible for its emergence as a robust and essential platform for innovation, economic growth, and free expression.

The private sector has fueled the proliferation of broadband services throughout most areas of the nation. Leading the way have been cable operators, such as TWC, which offered broadband Internet access as an alternative to dial-up long before telephone companies offered

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1 *Protecting and Promoting the Open Internet*, Notice of Proposed Rulemaking, GN Docket No. 14-28 (rel. May 15, 2014) ("NPRM"); *see also Wireline Competition Bureau Seeks to Refresh the Record in the 2010 Proceeding on Title II and Other Potential Legal Frameworks for Broadband Internet Access Service; Pleading Cycle Established*, Public Notice, GN Docket No. 10-127, DA 14-748 (rel. May 30, 2014).

2 NPRM ¶ 4.

DSL to end users. And the emergence of broadband Internet access services, in turn, opened the door for a host of other online innovators. Broadband providers have continued to pour billions of dollars into expanding and enhancing their networks and services, all in the interest of meeting the evolving needs and expectations of consumers. As a matter of competitive necessity, broadband providers continue to have a compelling interest in ensuring that consumers can use this platform to gain unfettered access to services, applications, and content online.

TWC's experience is illustrative. TWC has long been an innovator in the broadband arena, establishing a remarkably successful track record in the provision of broadband-based services to residential and enterprise customers for nearly two decades. With its Road Runner offering, TWC was one of the first service providers to launch a broadband Internet access service, in 1996. Thereafter, TWC has continued to invest heavily in its broadband networks, becoming one of the country's leading providers of broadband Internet access with approximately 11.6 million subscribers across its footprint. Driven by the vigorous and growing competition it faces with respect to all of its services, TWC has maintained a commitment to empowering consumers by giving them choice and control over their communications experience. TWC's broadband subscribers can access any application, service, or content of their choosing and can select from among an array of service tiers offering a wide range of maximum download and upload speeds at different price points.[3] And despite concerns raised by some advocacy groups that broadband providers are poised to introduce so-called "fast lanes,"

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[3] TWC's service tiers generally offer speeds from up to 2 Mbps downstream and up to 1 Mbps upstream (through its Everyday Low Price offerings) to up to 50, 75, or 100 Mbps downstream and up to 5 Mbps upstream (through its Ultimate offerings). In select areas (starting with New York City and Los Angeles), pursuant to its Maxx initiative, TWC recently began offering maximum speeds of up to 300 Mbps downstream and up to 20 Mbps upstream, and TWC will continue to deploy such enhanced capabilities more broadly.

TWC has not sought to prioritize any class of Internet traffic at the expense of another. Rather than divide the Internet into a world of "haves" and "have nots," TWC's business interests and corporate values spur it to give customers unfettered access to online content and services.[4]

The sustained, massive investment that allowed TWC and others to build today's broadband networks would not have been possible were it not for the environment of minimal regulation that prevailed during most of the past several decades. In light of that experience, TWC continues to believe that the Commission could preserve the Internet's openness by maintaining vigilance and acting only in response to demonstrated problems, and that overbroad regulation—especially in its most extreme form, fashioned under Title II—would pose particular risks to the Internet's vitality that far outweigh any benefits.

Nevertheless, TWC appreciates that there remains widespread support, particularly in the wake of the D.C. Circuit's *Verizon* decision,[5] for adopting certain baseline protections to ensure that all participants in the Internet ecosystem continue to thrive. Consistent with that consensus, TWC supports the Commission's existing transparency rules, which create a strong foundation for consumers to make informed choices among broadband providers and service levels. TWC also believes that reinstatement of a "no blocking" rule will create a helpful regulatory backstop, provided it is applied evenhandedly and construed in a manner that does not unduly constrain the flexibility of broadband providers. And a new rule that would enable the Commission to screen any business arrangements between broadband access providers and edge providers for "commercial reasonableness," if properly tailored to the realities of the broadband marketplace, could bolster stakeholders' confidence that the virtuous circle that drives the Internet's success

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4 As discussed below, it is far more likely that content owners would seek payment from broadband providers, rather than the other way around. *See infra* at 23.

5 *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

will remain in force. Moreover, in connection with TWC's pending merger with Comcast, the open Internet conditions that already apply to Comcast will be extended to all of the TWC systems as well.[6]

In short, TWC urges the Commission to proceed in a manner that will best achieve the NPRM's stated goals without causing marketplace distortions or discouraging the investment that is essential to the open Internet's continued growth. To that end, TWC focuses these comments on three key recommendations.

*First and foremost*, rather than rely on the heavy-handed Title II approach favored by some advocates, the Commission should adopt new rules pursuant to its broad authority under Section 706 of the Telecommunications Act of 1996, consistent with the D.C. Circuit's guidance in *Verizon*. Reclassifying any part of broadband Internet access as a telecommunications service under Title II simply is not a viable alternative to the court-sanctioned roadmap, from either a legal or a policy perspective. As TWC previously has explained and reiterates below, effectuating such a sea-change would require the Commission to overcome a series of legal hurdles that likely are insurmountable, particularly in light of pertinent record evidence regarding the factual particulars of how broadband Internet access service is offered and broadband providers' long-term, investment-backed reliance on the Commission's prior rulings. Moreover, the specter of Title II regulation would risk undermining the private investment that has made the Internet such an extraordinary success and that remains necessary to fulfill the core objectives of the *National Broadband Plan*.[7] Even if the Commission could effectively exercise its

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6 *See* Applications and Public Interest Statement, MB Docket No. 14-57, at 3, 59, 163-64 (filed Apr. 8, 2014).

7 Federal Communications Commission, *Connecting America: A National*

forbearance authority to mitigate some of the problems, the prospect of more intrusive regulation (including prescriptive rate and service-quality regulation) would undercut incentives to expand and enhance broadband networks. And such serious harms would not even be counterbalanced by any meaningful benefits, as Title II would not expand the Commission's authority with respect to the no-blocking and commercial reasonableness rules at issue. In contrast, not only does Section 706 give the Commission ample authority to adopt the proposed safeguards, but it will enable the Commission to do so in a far more certain and stable manner that avoids the profound risks that would flow from upending parties' reliance on well-settled statutory classifications.

*Second*, consistent with the NPRM's interest in ensuring that purchasers of broadband Internet access have unfettered access to online content and services, the Commission should address the entire Internet ecosystem in a technologically and competitively neutral manner, rather than singling out providers of fixed broadband Internet access for unique restrictions. This more holistic approach to preserving Internet openness would be an important correction to the Commission's previous attempt to regulate in this area. As TWC and others have observed, while there continues to be no evidence that wireline broadband Internet access service providers are actually acting in furtherance of purported incentives to restrict openness, several large edge providers have not only the ability to restrict access to online content and services but also troubling track records of doing so. Thus, the new rules should apply evenhandedly to edge providers that engage in transmission by wire or radio (as almost all large edge providers today

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*Broadband Plan for Our Future* at 136 (rel. Mar. 26, 2010) ("National Broadband Plan") (recognizing that meeting just one of the Plan's goals—extending terrestrial broadband infrastructure to seven million unserved households—would cost $24 billion in 2010 present value).

do). Indeed, any regulatory regime that focuses solely on restricting entities that are promoting openness while exempting entities that have shown a willingness to thwart it would be irrational.

For similar reasons, the Commission should apply the same rules to fixed and mobile broadband providers. There is no basis for categorically exempting mobile broadband providers from any aspect of the open Internet rules, particularly given the significant enhancements to mobile platforms and the increased competition between fixed and mobile broadband providers since the *2010 Open Internet Order*. Any relevant technological differences should be addressed in assessing the reasonableness of network management practices or commercial arrangements, not in establishing legal duties in the first instance.

While all entities capable of blocking or degrading access to online content and services should be subject to a common set of rules, the Commission should not extend its regulations beyond Internet access. In particular, there is no basis (and certainly not in this proceeding) to regulate specialized services or traffic-exchange arrangements (such as peering, transit, and content delivery network ("CDN") arrangements), as those contexts do not implicate the concerns underlying the NPRM.

*Third*, the Commission should not "enhance" existing disclosure requirements in a way that increases burdens on providers without yielding meaningful benefits. There is no evidence that current disclosures are inadequate, nor is there any reason to believe that the additional requirements proposed in the NPRM would yield meaningful information for consumers. And although the rules should remain focused on informing end users, the enhanced disclosure rules in question would not meaningfully benefit edge providers or transit providers, either. If anything, the Commission should focus on extending existing disclosure obligations upstream to edge, transit, and other providers that may create congestion or other network-related problems.

## DISCUSSION

### I. THE COMMISSION SHOULD EXERCISE ITS AUTHORITY UNDER SECTION 706 RATHER THAN REVISIT AND REVERSE ITS BROADBAND CLASSIFICATION DETERMINATIONS

The Commission issued the NPRM in response to the D.C. Circuit's *Verizon* decision, in which the court "remand[ed] the case to the Commission for further proceedings consistent with [its] opinion."[8] The only jurisdictional option identified in the NPRM that could reasonably be deemed "consistent" with the court's guidance is reliance on the Commission's authority under Section 706. The Commission should follow the blueprint provided by the *Verizon* court and refrain from inviting the various harms associated with a radical reclassification of broadband Internet access service pursuant to Title II.

#### A. Section 706 Provides Ample Authority to Adopt Open Internet Protections.

In *Verizon*, the D.C. Circuit confirmed that the Commission has sufficient authority pursuant to Sections 706(a) and (b) to adopt the safeguards discussed in the NPRM and also set forth guidance on how the Commission could do so lawfully. Section 706 directs the Commission to take action to "encourage the deployment of broadband telecommunications capability."[9] Because the court agreed with the Commission that Internet openness fosters a "virtuous circle" of investment and innovation in broadband networks and services, it found that protecting openness through enforceable rules is within the Commission's authority under Section 706.[10] In particular, the court upheld the transparency rules adopted in the *2010 Open Internet Order*, which as noted above provide a solid foundation for preserving the open

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8 *Verizon*, 740 F.3d at 659.

9 *Id.* at 634.

10 *Id.* at 644. For the same reasons, Section 706 authorizes the Commission to extend open Internet protections to edge providers, given that blocking or unreasonable discrimination by such entities poses an even more direct threat to openness. *See infra* at 23.

Internet;[11] it explained how the Commission could reinstate its no-blocking rule;[12] and it provided guidance that will enable the Commission to ensure "commercially reasonable" arrangements between broadband providers and edge providers.[13]

Despite upholding the Commission's general authority over broadband Internet access and suggesting means to adopt new safeguards to prevent blocking and unreasonable discrimination, the court reaffirmed that the Commission cannot act in a "manner that contravenes any specific prohibition contained in the Communications Act."[14] As a result, the court held that the Commission's "still binding decision" to classify Internet service providers ("ISPs") as providers of "information services" and not "telecommunications services" prohibits regulating broadband providers as common carriers.[15]

The NPRM appropriately proposes that the Commission follow the *Verizon* "blueprint" in this proceeding,[16] and TWC strongly urges it to do so. The *Verizon* decision provides a clear path to adopt legally sustainable open Internet protections that will achieve the Commission's policy goals. It also eliminates the jurisdictional uncertainty that complicated previous efforts to develop open Internet protections. As discussed below, the last thing the Commission should do is to sacrifice this newly achieved and broadly beneficial certainty to pursue a destabilizing reclassification theory that would create significant legal risks and profound policy harms.

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11 *Id.* at 659.

12 *See id.* at 658-59.

13 *See id.* at 657.

14 *Id.* at 649.

15 *Id.* at 650.

16 NPRM ¶ 4.

### B. The Commission Should Reject the Various Proposals to Reclassify a Component of Broadband Internet Access as a Title II Telecommunications Service.

The Commission has consistently found that all transmission elements involved in the provision of broadband Internet access are part of a single, integrated information service. And that remains true today. Accordingly, there is no sound basis for reclassifying any "telecommunications" component as a stand-alone "telecommunications service"—to the contrary, doing so would invite substantial legal challenges and would prove counterproductive from a policy standpoint.

#### *1. Reclassification of the Telecommunications Component Used to Provide Broadband Internet Access Would Be Legally Unsound.*

Despite acknowledging that the *Verizon* decision offers a judicially sanctioned roadmap adopting the proposed open Internet safeguards, the NPRM suggests that the Commission nevertheless should "seriously consider" reclassifying the telecommunications component of broadband Internet access as a telecommunications service as a basis for imposing those rules.[17] But even apart from the absence of any need to pursue that risky and destabilizing path, Title II simply is not a viable alternative to Section 706, and the Commission already has an extensive record detailing why. If anything, the case against reclassification is even stronger today than when the Commission last examined the issue. TWC's previous submissions have set forth the serious problems with this approach in detail, and TWC incorporates those arguments by reference and summarizes them below.[18]

First, the Commission cannot simply abandon the factual findings underlying its long-standing classification decisions for policy-driven reasons. The Supreme Court made clear in

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17 NPRM ¶ 4.

18 *See generally* Comments of Time Warner Cable Inc., GN Docket No. 10-127 (filed July 15, 2010) ("TWC Title II Reclassification Comments").

*Brand X* that "[t]he entire question" in classifying broadband Internet access service "turns not on the language of the Act, but on the *factual particulars* of how Internet technology works and how it is provided."[19] In other words, the Commission's task in classifying broadband Internet access is to undertake a factual analysis of what functions are actually offered to consumers, not to determine what classification would maximize the agency's regulatory authority.[20] The Commission has analyzed broadband services based on the distinction it recognized between "basic" and "enhanced" services more than three decades ago in the *Computer Inquiry* proceedings,[21] which Congress subsequently ratified in the Telecommunications Act of 1996 (now referring to those categories as "telecommunications services" and "information services").[22] Applying that rubric, the Commission has consistently found that broadband Internet access services, regardless of the technology platform over which they are provided, entail the *use* of telecommunications, rather than a stand-alone, retail *offering* of

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19 *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 991 (2005) (emphasis added).

20 *See, e.g.*, Brief for Petitioners Federal Communications Commission and the United States of America at 23; *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967 (2005) (Nos. 04-277 and 04-281), 2004 U.S. Briefs 277 at *23 (stating that "the question whether a particular service constitutes a 'telecommunications service' under the Communications Act *must be* resolved by reference to the nature of the provider's 'offering . . . to the public,' and thus the classification 'turns on the nature of the functions that the end user is offered.'") (quoting 47 U.S.C. § 153(46)) (emphasis added). In any event, as explained below, Title II would not justify the expansive regulations its proponents seem to have in mind. *See infra* at 14-16.

21 *See* TWC Title II Reclassification Comments at 14 (citing *Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)*, Final Decision, 77 F.C.C.2d 384 ¶ 5 (1980)).

22 47 U.S.C. §§ 153(24), 153(53) (defining "information service" and "telecommunications service" based on the particular functions offered to end users).

telecommunications, because the telecommunications and information-processing elements are inextricably combined in the service furnished to end users.[23]

Nothing about the "factual particulars" of how broadband Internet access is offered has changed. Cable operators have never offered the telecommunications component of broadband Internet access as a common carrier telecommunications service, and features such as Domain Name System ("DNS") resolution and security capabilities remain core components of the ISP service offered to end users. Today, just as in years past, TWC's broadband Internet subscribers rely on the advanced tools that TWC provides to access the Internet and to find and retrieve content. And while TWC's service has continued to improve, there has been no material change in the capabilities offered to its subscribers. Subscribers retrieve the information they seek because the ISP's DNS server delivers information-processing capabilities rather than mere

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23 *See Cable Modem Order* ¶ 38 (holding that, while "cable modem service provides the[se] [information-processing] capabilities . . . 'via telecommunications,'" that telecommunications component is not "separable from the data-processing capabilities of the service"); *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 ¶ 9 (2005) ("*Wireline Broadband Order*") ("Wireline broadband Internet access service, like cable modem service, is a functionally integrated, finished service that inextricably intertwines information-processing capabilities with data transmission such that the consumer always uses them as a unitary service."); *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, 22 FCC Rcd 5901 ¶ 26 (2007) ("Like cable modem service, wireline broadband Internet access service, and BPL-enabled Internet access service, wireless broadband Internet access service offers a single, integrated service to end users, Internet access, that inextricably combines the transmission of data with computer processing, information provision, and computer interactivity, for the purpose of enabling end users to run a variety of applications."); *United Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband Over Power Line Internet Access Service as an Information Service*, Memorandum Opinion and Order, 21 FCC Rcd 13281 ¶ 1 (2006) (addressing the classification of "Broadband over Power Line" or "BPL" services and finding that "the transmission component underlying BPL-enabled Internet access service is 'telecommunications,' and that the offering of this telecommunications transmission component as part of a functionally integrated, finished BPL-enabled Internet access service offering is not a 'telecommunications service'").

transmission. Even when subscribers know the content they are seeking, they do not (and could not) know the end points of their communications, as these are a function of the service's core information-processing capabilities. The routing of each Internet transaction, therefore, is not "between or among points *specified by the user*," but is rather a circuitous and unpredictable journey to retrieve content from a virtual address in an unknown location.[24] As TWC has explained before, it is unimportant that DNS functions are sometimes provided by third parties, as the statute asks only what broadband Internet access providers actually *offer* end users, and not what they *could* offer, or what *others* may simultaneously offer.[25]

The same is true for other information-processing capabilities, such as dynamic host configuration protocol ("DHCP"). TWC uses DHCP to assign IP addresses to its subscribers each time they connect to the Internet, a process without which subscribers would be unable to communicate with other IP-based servers and devices. Once connected, subscribers use countless third-party services and applications, but TWC also provides highly valued tools such as security screening, spam protection, anti-virus and anti-botnet technologies, pop-up blockers, parental controls, online email and file storage, and a customizable home page for each user—and all of these features involve "generating, acquiring, storing, transforming, processing, retrieving [and/or] utilizing" information.[26] In short, the technical realities that led the Commission to classify broadband Internet access as an information service have not changed.

The Commission would face a high hurdle in trying to justify a reversal of these findings. While the Commission as a general matter can change course to pursue a new policy direction

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[24] 47 U.S.C. § 153(50) (emphasis added).

[25] *See* TWC Title II Reclassification Comments at 25.

[26] 47 U.S.C. § 153(24) (definition of "information service"); Time Warner Cable High Speed Internet Plans and Packages, *available at* http://www.timewarnercable.com/en/internet/internet-service-plans.html.

where it can provide a cogent rationale for doing so, it must "provide a more detailed justification than what would suffice for a new policy created on a blank slate" when "its new policy rests upon factual findings that contradict those which underlay its prior policy; or when its prior policy has engendered serious reliance interests that must be taken into account."[27] Both factors are present here. Any reclassification effort would require contradicting the Commission's consistent factual findings. And, as noted above, TWC and other broadband providers invested many billions of dollars in reliance on the Commission's consistent finding that broadband Internet access does not include a distinct telecommunications service offering that subjects them to common carrier regulation, and that reliance has continued—if not increased—since the Commission last compiled a record on this question.[28]

As the foregoing analysis shows, TWC and similarly situated broadband providers are not *voluntarily* offering a telecommunications service to end users today; nor can the Commission *compel* them to do so based on policy preferences. To the contrary, the D.C. Circuit has made clear that the Commission cannot "impose common carrier status upon any given entity on the basis of the desired policy goal the Commission seeks to advance."[29] The

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27 *FCC v. Fox Television Stations*, 556 U.S. 502, 515 (2009).

28 Moreover, any perception that limitations imposed by the D.C. Circuit represent a "problem" to be "solved" cannot provide a sound basis for reclassifying broadband Internet access services; if the facts do not align with the Commission's statutory authority, even where it wishes to provide "safeguards desirable or necessary to protect the public interest, that is a problem for Congress, and not the [agency] or the courts, to address." *Board of Governors of Fed. Reserve Sys. v. Dimension Fin. Corp.*, 474 U.S. 361, 374 (1986).

29 *Southwestern Bell Tel. Co. v. FCC*, 19 F.3d 1475, 1481 (D.C. Cir. 1994); *see also Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC*, 525 F.2d 630, 644 (D.C. Cir. 1976) (holding that the Commission does not have unfettered discretion to impose common-carrier status "depending upon the regulatory goals it seeks to achieve"). In any event, as explained further below, Title II would not materially expand the Commission's authority to

Commission has recognized that extracting the telecommunications component of broadband Internet access and forcing providers to offer it on a stand-alone basis would constitute "radical surgery."[30] At a minimum, the Commission would be required to satisfy a stringent public interest test requiring a showing of market power to justify such an outcome.[31] The Commission has not suggested (much less demonstrated) that any broadband Internet access service provider has market power,[32] let alone the ability to charge "monopoly rents."[33] Absent such a substantial showing and weighed against more than ten years of countervailing Commission decisions, the Commission plainly has no basis for upending the classification of broadband Internet access as an integrated information service.

2. *Reclassification Would Be Ineffectual and Profoundly Unwise from a Policy Standpoint.*

From a policy perspective, pursuing reclassification of broadband Internet access would fail to achieve proponents' objectives and would result in substantial public interest harms. The impetus for reclassification proposals appears to be a desire to support a flat ban on paid prioritization arrangements or similar two-sided market deals between broadband access providers and edge providers. But Title II would not support a categorical ban on such practices any more than Section 706 would. Critically, Title II expressly *permits* service providers to treat

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prohibit so-called "fast lanes" as compared to Section 706, making the supposed policy justification for reclassification illusory. *See infra* at 14-15.

30 *Cable Modem Order* ¶ 43.

31 *See Virgin Islands Tele. Corp. v. FCC*, 198 F.3d 921, 925 (D.C. Cir. 1999) (requiring "sufficient market power to warrant regulatory treatment as a common carrier").

32 *See* NPRM ¶ 49 (disclaiming a market-power theory as the justification for proposed open Internet rules).

33 *AT&T Submarine Sys., Inc.*, 13 FCC Rcd 21585, 21589 (1998).

customers differently as long as such "discrimination" is not "unreasonable."[34] The Commission recognized this limitation in the NPRM that preceded the *2010 Open Internet Order*, as it distinguished between a proposal to adopt an "unqualified prohibition[] on discrimination" and the "general prohibition on '*unjust or unreasonable* discrimination' by common carriers in section 202(a) of the Act."[35] And a long line of Commission precedent confirms that differential treatment (including the imposition of different prices or other terms and conditions) is reasonable where there is a "neutral, rational basis underlying [the] apparently disparate [terms]."[36] Accordingly, after examining alleged preferences or discrimination, courts and the Commission have often found that practices at issue were "reasonable" and thus permissible.[37]

Against this backdrop, it is highly unlikely that Title II would support a flat ban on an entire category of potential business arrangements, such as paid prioritization. As a threshold matter, the provision of a prioritized delivery service might not be considered sufficiently "like" standard broadband transmission to support a discrimination claim at all.[38] Just as "an apple does not have to be priced the same as an orange" in order for the sale of either to be reasonable, broadband Internet access service providers can, and routinely do, provide business-class

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34 47 U.S.C. § 202(a); *see also id.* § 201(b) (requiring "just and reasonable" practices).

35 *Preserving the Open Internet; Broadband Industry Practice*, Notice of Proposed Rulemaking, 24 FCC Rcd 13064 ¶ 109 (2009) (emphasis in original).

36 *Nat'l Ass'n of Regulatory Utility Comm'rs v. FCC*, 737 F.2d 1095, 1133 (D.C. Cir. 1984).

37 *See, e.g.*, *Orloff v. FCC*, 352 F.3d 415 (D.C. Cir. 2003) (upholding carriers' ability to offer differential discounts to retail customers); *Ameritech Operating Cos. Revisions to Tariff FCC No. 2*, Order, DA 94-1121 (CCB 1994) (upholding reasonableness of rate differentials based on cost considerations).

38 *See, e.g.*, *Ad Hoc Telecomms. Comm'n v. FCC*, 680 F.2d 790, 795 (D.C. Cir. 1982) (applying "functional equivalency" test to determine the "likeness" of two service offerings, which asks "whether the services in question are 'different in any material functional respect'"); *Am. Broad. Co., Inc. v. FCC*, 663 F.2d 138-39 (D.C. Cir. 1980) (noting that the issue of "likeness" is fact-specific and decided on a case-by-case basis).

services at different speeds and rates than residential consumer services, given that the two categories are not "like" services and thus can reasonably be offered on different terms.[39] In any event, it would not be rational for the Commission simply to declare all potential arrangements unreasonable, ignoring critical differences among them. For example, while the Commission might well determine that it would be unreasonable for a broadband provider to enter into an exclusive prioritization arrangement that would confer unique (and anticompetitive) benefits on an affiliated content provider, that analysis would by no means support the conclusion that a *non-exclusive* arrangement with an *unaffiliated* third-party—such as a prioritization arrangement intended to ensure the reliability of a telemedicine application—is unreasonable. Rather, the nature of the applicable nondiscrimination standard (as well as the similar "just and reasonable" standard set forth in Section 201(b)) requires a contextual, case-specific analysis.[40]

Even apart from the flawed premise underlying calls for Title II reclassification, proponents ignore the thicket of unintended consequences it would produce. Most significantly, the prospect of imposing public utility regulation on cable broadband services for the first time would discourage the substantial investment in broadband networks and services that the Commission seeks to foster, and that Section 706 directs the Commission to support. As noted above, broadband providers have invested hundreds of billions of dollars to expand and enhance their networks in the 12 years since the *Cable Modem Order* made the regulatory status of those

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39 *Competitive Telecomms. Ass'n v. FCC*, 998 F.2d 1058, 1064 (D.C. Cir. 1993).

40 Moreover, the Commission should be wary of too greatly restricting the ability of ISPs to continue to innovate in ways that could help facilitate the ability of startups to better compete against entrenched edge providers. For example, only the largest edge providers have the resources to build CDNs and other infrastructure that no true startup can even begin to match. In such circumstances, preserving the ability of ISPs to continue to innovate and develop new services could actually help serve to level the competitive playing field, rather than to exacerbate existing gaps between Internet haves and have nots.

networks clear. Network owners relied on the Commission's steadfast assurances that its fact-based classification was fully aligned with the Commission's interest in maintaining a light regulatory touch.[41] Abandoning the settled classification rulings would signal a radical change, of course, that would have a devastating impact on investment and innovation, and thus would be starkly at odds with the core objectives that gave rise to this proceeding, as well as the goals at the heart of the National Broadband Plan.[42] The uncertainty associated with Title II regulation also would impact many edge providers, some of whom could be ensnared within the broad scope of the enlarging regulatory regime. While TWC encourages the Commission to apply any new rules in a technologically neutral fashion to all facilities-based service providers, edge providers—like broadband Internet access service providers—might well find it more difficult to attract capital investment under a threat of Title II regulation, and thus might be impeded from innovating.[43] Making matters worse, pursuing Title II reclassification would make it far more likely that the Commission's order would spur protracted legal challenges, thus miring all stakeholders in debilitating uncertainty.

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41 *See, e.g.*, *Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd 11501 ¶ 46 (1998) (finding that regulating broadband Internet access providers as common carriers could "seriously curtail the regulatory freedom that . . . was important to the healthy and competitive development of the enhanced-services industry"); *Cable Modem Order* ¶ 5 (seeking to "remove regulatory uncertainty that in itself may discourage investment and innovation" and "limit unnecessary and unduly burdensome regulatory costs"); *Wireline Broadband Order* ¶ 1 (establishing a "minimal regulatory environment for wireline broadband Internet access services to benefit American consumers and promote innovative and efficient communications").

42 *See National Broadband Plan* at 18.

43 *See, e.g.*, Letter of Robert W. Quinn, Jr., AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, at 6 (filed May 9, 2014) (explaining how Title II reclassification could result in the application of common carrier rules to many edge providers, as "the logic behind reclassification would dictate that . . . [e]very entity that provides an over-the-top communications capability, whether it's voice, text, or video, becomes either a facilities-based provider or a reseller (or both) of a telecommunications service").

Finally, forbearance would not provide a viable means of mitigating these harms. While forbearance would be preferable to the implementation of the complete Title II regime, the promise of relief is illusory. As TWC has discussed previously,[44] in order to forbear from implementing a regulation the Commission must show that its application (1) is not necessary to ensure just and nondiscriminatory rates, (2) is not necessary to protect consumers, and (3) is inconsistent with the public interest.[45] While this statutory standard can be met by showing, among other things, that the marketplace for broadband Internet access service is highly competitive, such a demonstration would likely stand in stark contrast to any Commission determination seeking to justify the imposition of common carrier obligations on broadband providers. Therefore, it is unclear how the Commission could presume for the purposes of this proceeding that the broadband marketplace had failed, while thereafter supporting forbearance. Moreover, the Commission would be hard pressed to show why certain provisions of Title II are suddenly necessary while at the same time rejecting other provisions as decisively unnecessary.

Even if such justifications could be identified, there would remain substantial uncertainty about the required level of geographic granularity of the forbearance analysis.[46] The Commission's prior rulings granting forbearance requests likewise would leave broadband providers in a state of uncertainty and doubt as to whether blanket national forbearance could be justified as a legal matter.[47] And forbearance rulings would be subject to modification by future Commissions, posing the constant threat that full Title II regulations would be applied. For these

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44 *See* TWC Title II Reclassification Comments at 61.

45 47 U.S.C. § 160(a).

46 NPRM ¶ 154.

47 *See Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, Memorandum Opinion and Order, WC Docket No. 09-135 (rel. June 22, 2010).

reasons, the Commission has previously recognized that its "forbearance authority is not in this context an effective means of removing regulatory uncertainty" and likely would only contribute to the uncertainty presented by reclassification.[48]

Even the most earnest supporters of Title II paired with forbearance cannot provide any comfort that a reviewing court would uphold any forbearance decisions by the Commission. Nor could they guarantee that state regulators would be amenable to granting forbearance from their own burdensome regimes applicable to "telecommunications carriers" (including potentially taxes that the Commission could not preempt).[49] Even with forbearance from some of the more onerous requirements of Title II, reclassification would likely result in a patchwork of state regulations and heightened fees for broadband providers, which would deter further network deployment and innovations and increase costs for consumers.

### 3. *The Partial Reclassification Proposals Set Forth in the NPRM Are Equally Flawed.*

In an apparent effort to sidestep the Commission's prior classification rulings, some parties argue that the Commission should reclassify *half* of the transmission functionality employed in providing broadband Internet access—specifically, the transmission of information between remote servers and end users, or a so-called "remote delivery service"[50] or "response

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48 Petition for Writ of Certiorari, U.S. Dept. of Justice and FCC, *FCC v. Brand X Internet Servs.*, No. 04-277, at 28 (Aug. 27, 2004).

49 *See* TWC Title II Reclassification Comments at 68 (noting that a state's taxation power is arguably beyond the scope of the Commission's ability to preempt).

50 *See* Mozilla, Petition to Recognize Remote Delivery Services in Terminating Access Networks and Classify Such Services as Telecommunications Services Under Title II of the Communications Act, GN Docket Nos. 09-91, 14-28, WC Docket No. 07-52, at 7 (filed May 5, 2014) ("Mozilla Petition").

transaction."[51] Those proposals mischaracterize the relevant precedent as well as the technical realities of how broadband Internet access is provided.

Contrary to the claim that the transmission of edge-provider traffic in response to end user requests falls "outside the category of services previously designated by the Commission,"[52] the Commission's classification of broadband Internet access service as an information service has always encompassed both the telecommunications functionality used to transmit end user requests for information and the transmission of information from remote servers in response. As the Commission explained in the *Cable Modem Order*: "Cable modem service typically includes many and sometimes all of the functions made available through dial-up Internet access service, including … the ability to *retrieve information from the Internet*, including access to the World Wide Web."[53] More than simply an intranet for subscribers of the service, by its very nature broadband Internet access service requires the ISP to connect with the broader Internet and ensure the "steady and accurate flow of information between the cable system" and the Internet.[54]

Although Professors Narechania and Wu argue that the Commission was referring in such passages primarily to the features offered by access providers to their subscribers (citing,

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51 Letter from Tejas Narechania and Tim Wu, Columbia University to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 14-28, at 13 (filed Apr. 14, 2014) ("Narechania & Wu *Ex Parte* Letter").

52 Mozilla Petition at 9; *see also* Narechania & Wu *Ex Parte* Letter at 13 (asserting that "[c]lassifying such 'sender-side' traffic as a telecommunications service is, perhaps surprisingly, consistent with the *Cable Modem Order*").

53 *Cable Modem Order* ¶ 10 (emphasis added); *see also id.* ¶ 17 ("Internet connectivity functions enable cable modem service subscribers to transmit data communications to and from the rest of the Internet."); *Wireline Broadband Order* ¶¶ 14, 39 (finding that "wireline broadband Internet access service" is "a single, integrated service" that "provides the user with the ability to *send and receive* information at very high speed, and to access the applications and services available through the Internet").

54 *Id.* ¶¶ 14, 17.

for example, newsgroups),[55] the Commission has always focused on the outward-facing possibilities of Internet access. "Click-through access" was and is a vital part of the broadband service classified by the Commission.[56] The Commission noted that, for example, "a subscriber to Comcast's cable modem service may bypass that company's web browser, proprietary content, and e-mail," and is "free to download and use" other sources of content.[57] The Commission even had the foresight to envision the "sophisticated 'real time' applications" that broadband Internet service could provide.[58] These applications, such as multi-player online gaming, require a constant stream of call-and-response transmissions, all of which are interdependent on each other and traverse the breadth of the global Internet. The Commission also spoke of network platforms becoming more "multi-purpose in nature and more application-based, rather than existing for a single, unitary, technologically specific purpose."[59] In short, the Commission from the outset has recognized that broadband Internet access service not only includes integrated transmission between the end user and the ISP, but also the ISP's delivery of Internet content from remote servers.

Moreover, such a determination was critical to the Commission's assertion of exclusive jurisdiction over Internet access services, which is premised on the *interstate* communication they enable. The Commission defined broadband Internet access service as an "interstate information service" based on an "end-to-end analysis" of Internet traffic, which regularly

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55 Narechania & Wu *Ex Parte* Letter at 8, 16.

56 *Cable Modem Order* ¶ 25.

57 *Id* ¶ 25.

58 *Id* ¶ 10.

59 *Wireline Broadband Order* ¶ 40.

traverses state and national boundaries.[60] The foundation for this jurisdictional analysis would disappear if the information service classification excluded points beyond the access provider's network, or at the very least, would require a fact-specific analysis for each Internet transaction. If the Commission was merely classifying the portion of broadband Internet access service that traveled between the subscriber and service provider, that connection would most often be intrastate. In a typical arrangement, subscriber network traffic travels via its local node, through fiber trunks, and to a headend, which is usually in the same state as the subscriber. Yet the Commission determined that Internet traffic is predominantly interstate, which can only be true when considered "end-to-end"—from the subscriber, via his or her service provider, to the content provider, and back again. This jurisdictional analysis undergirds the entirety of the Commission's past rulings on broadband Internet access service and further confirms the unified nature of the classified service.

Finally, just as the Commission cannot compel broadband providers to offer a telecommunications service to end users absent a finding of market power, the same restriction prevents the Commission from compelling the provision of common carrier services to edge providers. And even if the Commission could develop a market-power theory that would justify a compulsion to initiate such a common carrier offering (notwithstanding that the NPRM does not propose any such analysis), it would ultimately prove self-defeating to the extent the goal was to preclude the imposition of fees on edge providers. Far from prohibiting such fees, a telecommunications-service classification of any transmission provided to edge providers would

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60 *Cable Modem Order* ¶ 59.

*require* the imposition of a fee, as that is a necessary element of any telecommunications service.[61]

## II. ANY RULES SHOULD ENCOMPASS ALL POTENTIAL THREATS TO ONLINE ACCESS FOR PURCHASERS OF BROADBAND INTERNET ACCESS SERVICES

In adopting new rules under Section 706, the Commission should pay careful attention to the scope of those requirements. TWC submits that the Commission should apply any new open Internet requirements evenhandedly to access providers and edge providers alike, as well as to fixed and mobile broadband providers. But there is no basis to extend regulation to specialized services or traffic-exchange arrangements.

### A. The Commission Has Both the Authority and a Strong Policy Basis to Extend the Open Internet Rules to Other Entities That Can Thwart Access to Content and Services on the Internet.

The NPRM focuses singularly on the prospect that broadband Internet access providers will act as "gatekeepers" to the Internet by granting or denying access to content, services, and applications as they see fit.[62] But the NPRM fails to acknowledge that the real—and growing—threat to Internet openness continues to be posed by entities *other than* broadband Internet access providers, and instead merely declares without elaboration that while "other forms of discrimination in the Internet ecosystem may exist, … such conduct is beyond the scope of this proceeding."[63]

As with prior attempts to regulate in this area, the NPRM is thin on examples of actual harms caused by broadband Internet access providers—in fact, it even concedes that there have

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61 47 U.S.C. § 153(53) (defining a telecommunications service as the transmission of information of the user's choosing "for a fee")).

62 *See, e.g.*, NPRM ¶ 46.

63 NPRM ¶ 52, n.118.

been "relatively few" problems.[64] Instead, the NPRM relies on broadband providers' purported incentives to undermine Internet openness.[65] But in crediting the Commission's policies as the only force holding these alleged incentives in check,[66] the NPRM ignores the countervailing incentives that prevent broadband providers from impeding Internet openness in the ways the NPRM fears. Most notably, as Chairman Wheeler recently observed, the cable industry's "principal business . . . has become, and will continue to be, broadband."[67] The economic imperative to recover the substantial costs of building and operating broadband networks by attracting and retaining customers creates a significant *dis*incentive to acting in ways that would alienate consumers, and thereby reduce revenues. The NPRM overlooks the reality that large edge providers often have far more market leverage than a broadband ISP; as a result, there is little prospect that they would agree to enter into commercial arrangements that limit their ability to innovate and thrive.

In contrast, TWC has described in detail how entities other than broadband Internet access service providers—some of which are much larger (boasting much higher market capitalizations, far larger customer bases, and, very often, a global presence)—actually engage in practices that limit consumers' access to online content and services and can inflict real harms.[68] Perhaps the most notable incident occurred in connection with TWC's well-publicized retransmission consent dispute with CBS, during which CBS blocked TWC's broadband

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64 NPRM ¶ 40.

65 *See generally* NPRM ¶¶ 39-53.

66 NPRM ¶ 40.

67 Remarks of Chairman Tom Wheeler, 2014 NCTA Cable Show, at 3 (Apr. 30, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0430/DOC-326852A1.pdf.

68 *See generally* TWC 2010 Net Neutrality Comments at 73-94.

subscribers from accessing programming on CBS.com as a blatant means of obtaining leverage in retransmission consent negotiations.[69] Chairman Wheeler recently expressed "concern" about broadcasters' blocking access to online programming and agreed that such incidents represent an issue "that we should all worry about."[70] Relatedly, the Commission previously has recognized that the principles of Internet openness apply equally to other participants in the broadband ecosystem.[71]

The NPRM's discussion of so-called "fast lanes" likewise reflects an overly myopic view of the sources of potential harm to consumers and to principles of openness. The NPRM focuses on the hypothetical prospect that broadband Internet access providers will pursue paid prioritization arrangements through which they would charge edge providers for access or prioritized access to end users.[72] But that concern is a red herring. To TWC's knowledge, no broadband provider has expressed any intention of prioritizing one class of Internet traffic at the expense of another. If anything, it is more likely that some content owners might well seek payment *from* broadband Internet access providers as a condition of delivering their content—

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69 That incident is described more fully in Letter from Matthew A. Brill, Counsel to Time Warner Cable Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 10-71 (filed Aug. 2, 2013).

70 Doug Halonen, *Wheeler "Concerned" Over Online Blackouts*, TVNewsCheck, May 20, 2014, *available at* http://www.tvnewscheck.com/article/76465/wheeler-concerned-over-online-blackouts.

71 *Internet Policy Statement* ¶ 4 (recognizing that the principles at stake were relevant not only for broadband Internet access providers, but also for "application and service providers, and content providers"); *Broadband Industry Practices NOI* ¶ 8 (seeking "a fuller understanding of broadband market participants today, including network platform providers, broadband Internet access service providers, other broadband transmission providers, Internet service providers, Internet backbone providers, content and application service providers, and others").

72 *See, e.g.*, NPRM ¶ 6.

paralleling the business model that already exists on MVPD platforms. The Commission should not turn a blind eye to actual marketplace dynamics in developing open Internet protections.

Given the NPRM's stated goals of ensuring that purchasers of broadband Internet access have unfettered access to online content and services, there is no sound reason to single out broadband Internet access providers and exclude other sources of harm from the scope of any rules. Indeed, if the mere existence of hypothesized "incentives" is sufficient to justify regulatory intervention (as the NPRM presupposes), other participants in the Internet ecosystem have demonstrated not only an incentive to limit access to freely available online content to enhance their commercial leverage, but a willingness to act on such incentives.

A regime that applies only to broadband Internet access providers would not only be ineffective but also potentially unlawful, as such underinclusiveness would threaten the rationality and thus legal viability of the rules. Particularly given the absence of any cogent explanation for the selectivity proposed by the NPRM, failing to address comparable practices by others in the Internet ecosystem would be arbitrary and capricious under the Administrative Procedure Act and would risk violating the Constitution. An agency acts arbitrarily and capriciously when it "applies different standards to similarly situated entities and fails to support this disparate treatment with a reasoned explanation and substantial evidence in the record."[73]

Finally, there is no legitimate argument that entities other than broadband Internet access providers are somehow outside the scope of the Commission's legal authority. The rationale for regulation endorsed by the D.C. Circuit in *Verizon*—that is, the "triple-cushion shot" theory that restrictions on broadband providers protect edge providers, which in turn drives demand, which in turn promotes competition and investment—applies more directly to regulation of edge

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[73] *Burlington N. & Santa Fe Ry. Co. v. Surface Transp. Bd.*, 403 F.3d 771, 777 (D.C. Cir. 2005).

providers that engage in blocking or discrimination that curtails access to online content and services. Most edge providers transmit information by wire or radio over owned or leased facilities in conveying information to and from transit providers and ISPs. Thus, the Commission has clear authority under Section 706 to adopt rules that prevent edge providers as well as ISPs from interfering with Internet openness.

### B. Any Rules Should Be Technologically Neutral and Apply to All Facilities-Based Broadband Providers.

For similar reasons, the Commission should not adopt different rules for mobile and fixed broadband providers, but should instead hold all facilities-based providers to the same standards. The NPRM itself notes that the few incidents reflecting potential violations of Internet openness principles have been localized in the wireless sector.[74] Yet, the Commission historically has sought to subject wireless broadband providers to less stringent requirements.

The rationale for that disparate treatment has always been questionable, and it is even more so now. As TWC and others have explained, mobile wireless providers are not uniquely situated, in that all broadband providers face capacity constraints and therefore must retain flexibility to manage traffic on their networks.[75] Meanwhile, competition between fixed and mobile broadband services continues to grow, with wireless services increasingly standing as a viable substitute—as the Commission has recognized.[76] Indeed, wireless providers have followed up their 3G deployments with upgrades to 4G LTE technology, offering speeds comparable to those available through many wireline broadband services with the additional

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74 NPRM ¶ 41.

75 *See, e.g.*, TWC 2010 Net Neutrality Comments at 68-69.

76 *Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700 ¶ 2 (2013).

benefits of mobility and national reach.[77] As depicted in TWC's and Comcast's application relating to their proposed merger, 4G services are available to virtually all consumers in the companies' combined footprint.[78] The Commission should not subject one class of competitors to more stringent rules than another.

In addition, within the wireless arena, Wi-Fi and licensed wireless services plainly should be treated the same. Unlicensed Wi-Fi services are increasingly viewed by consumers as an alternative as licensed wireless services, and they are typically accessed using the very same devices, thus eliminating any basis for differential treatment. Moreover, any other approach would be highly impractical. A single communication might hop between Wi-Fi and licensed networks, and the notion that a different set of rules would be temporarily triggered at each stop along the way would not be viable. Rather than arbitrarily delineating among various providers based on purported distinctions that are outdated at best, the Commission should develop a single set of rules that will apply evenly to all participants.

### C. The Commission Should Not Regulate Services that Do Not Implicate the Concerns Underlying the NPRM.

The considerations that should prompt the Commission to act to restrain edge providers and wireless broadband providers from disrupting consumers' unfettered access to services and content online counsel in favor of *excluding* services and arrangements that do *not* present the same policy concerns. In particular, the Commission should adopt the NPRM's proposals to

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77 *See, e.g.*, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Eighth Broadband Progress Report, 27 FCC Rcd 10342 ¶ 6 (2012).

78 *See* Applications and Public Interest Statement, MB Docket No. 14-57, at 52-53 (filed Apr. 8, 2014).

refrain from regulating "specialized services" as well as traffic-exchange arrangements, such as peering and CDN arrangements.[79]

The Commission has refrained from regulating "specialized" or "managed" services since it coined these terms, and the NPRM proposes that the Commission continue that approach while monitoring the development of these offerings.[80] TWC supports that recommendation. Fundamentally, because any specialized service will be offered independent of broadband Internet access, the open Internet rules do not and should not apply. TWC and others have described the benefits of a policy of vigilant restraint in connection with these services,[81] and nothing has changed to warrant regulatory intervention now. In fact, specialized services remain very much an emerging and amorphous concept, such that any theorizing about their potential effect on Internet openness would involve multiple layers of speculation. Accordingly, the Commission lacks any reasoned basis to determine that they pose a threat, let alone a threat that outweighs the potential benefits of such services. Indeed, as the Commission's Open Internet Advisory Committee has found, the ability to offer multiple services over the facilities used to deliver broadband Internet access has been an important spur to broadband investment.[82] Moreover, to the extent this category is deemed to include existing IP voice and video services, those services already are subject to extensive Commission regulations that independently safeguard consumers' interests.

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79 NPRM ¶¶ 59-60.

80 NPRM ¶ 60.

81 TWC Specialized Services Comments at 3-4; TWC 2010 Net Neutrality Reply Comments at 77.

82 Open Internet Advisory Committee, 2013 Annual Report 67 (Aug. 20, 2013).

The Commission likewise should adopt the NPRM's proposal that it refrain from regulating arrangements for network interconnection and traffic exchange.[83] The Commission has long refrained from regulating these economic arrangements, primarily because of the competitive environment in which they exist.[84] This proceeding hardly presents the right opportunity to change course, since, as with specialized services, arrangements for the exchange of Internet traffic between networks do not threaten the goal of ensuring that mass market consumers can access services and content online. Edge providers have significant discretion to route traffic using various of these arrangements to the networks of broadband Internet access providers.[85] As a result, the NPRM's professed concern about gatekeeper control does not exist in the context of peering, transit, and CDN arrangements. Seeking to regulate such arrangements now thus would disrupt this portion of the marketplace—and in unpredictable and likely counterproductive ways—absent any clear justification. Accordingly, Chairman Wheeler has properly recognized that any policy concerns relating to the economics of exchanging Internet traffic between networks are distinct from the open Internet concerns that apply to Internet access services, and thus should be examined, if at all, in a separate proceeding.[86]

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83 NPRM ¶ 59.

84 *See* Daniel A. Lyons, *The Perils of Mandatory Disclosure of Private Interconnection Agreements Between Internet Networks*, at 3 (2014) (describing the "complex and dynamic" interconnection market) (citing Christopher S. Yoo, THE DYNAMIC INTERNET: HOW TECHNOLOGY, USERS, AND BUSINESSES ARE TRANSFORMING THE NETWORK at 55 (2012)).

85 *See, e.g.*, Sandvine, *Choices: Video Providers, CDNs, Peers, ISPs...and You*, http://www.internetphenomena.com/2014/05/choices-video-providers-cdns-peers-isps-and-you/.

86 *See, e.g.*, Bryce Baschuk, *Wheeler: Peering Not a Net Neutrality Issue But FCC Spokesman Says It Will Be Watched*, Bloomberg BNA, Apr. 2, 2014, http://www.bna.com/wheeler-peering-not-n17179889335/.

## III. THE COMMISSION SHOULD PROCEED WITH CAUTION IN CONSIDERING EXPANDED DISCLOSURE OBLIGATIONS FOR BROADBAND PROVIDERS

TWC has long valued transparency for its subscribers. In addition to investing significant resources into complying with the existing disclosure requirements,[87] TWC has consistently provided clear and conspicuous disclosures to consumers regarding its acceptable use policies and the impact of its network management practices, as described in detail in this docket and others—and did so well before the Commission began to require such disclosures.[88] TWC thus supports the NPRM's goal of ensuring that "accurate" information about broadband networks is available.[89] But as a practical matter, some of the NPRM's proposals would veer from that objective and would simply burden broadband Internet access providers without making consumers or edge providers any more informed.

As a threshold matter, there is no reason to conclude that any changes in this area are necessary; rather, there is every reason to believe that the disclosure requirements now in place are working effectively. The NPRM presumes that neither the existing rule nor any voluntary disclosure practices are sufficient to inform consumers and other stakeholders, and it thus tentatively concludes that some sort of "enhancement" of the current disclosure obligations is

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87 TWC's network management disclosures, provided pursuant to the existing rules, are available at: http://help.twcable.com/description_of_network_management_practices.html (for residential and small business customer), http://help.twcable.com/description_of_network_management_practices_wireless.html (for wireless broadband Internet access services), and http://business.timewarnercable.com/legal/network-management-disclosure.html (for business class services).

88 *See, e.g.*, TWC 2010 Net Neutrality Comments at 98 (citing previous comments); TWC "Need for Speed" Comments at 3-6.

89 NPRM ¶ 66.

needed.[90] Yet, there is no basis for the NPRM's pessimism in this regard. The NPRM points to informal consumer complaints that *may* "suggest[]" that some consumers are not satisfied with the information available to them.[91] But if anything, the examples cited by the NPRM actually relate to the quality of the *service* provided, and have nothing to do with the quality of *information* available. The NPRM's speculation to the contrary hardly offers a sound basis for policymaking.

Moreover, even if there were some basis for concluding that current disclosure practices should be refined, some of the NPRM's proposals would fail to achieve the Commission's objectives. The most problematic of these may be the suggestion that broadband providers should be required to disclose specific data about network congestion—including its source, location, timing, speed, and duration—"regardless of its cause."[92] Although the NPRM aspires to implement such a requirement in a "practical manner," the impracticality of this proposal should be readily apparent. Indeed, the Commission already has compiled a substantial record demonstrating that substantial information concerning network congestion is beyond the knowledge of broadband Internet access providers, as any number of variables, in any variety of combinations, can cause network congestion.

If the Commission believes it important for consumers to have access to "meaningful" information about congestion and is inclined to expand or supplement the existing transparency rules, the logical solution is to require the entities that possess such information to disclose it. TWC has previously noted that there is no reason why broadband Internet access service

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90 NPRM ¶ 67.

91 NPRM ¶ 69.

92 NPRM ¶ 83.

providers should be held to a higher standard in terms of transparency.[93] For instance, edge providers and transit providers control how they route their traffic and can cause congestion that in turn degrades the consumer experience. Such practices create further problems for broadband Internet access providers like TWC, which must respond accordingly but must do so in an informational vacuum. Requiring such providers to disclose information about their routing practices would better enable TWC and others to manage traffic on their own networks and preserve the quality of the online experience for all stakeholders.

The Commission likewise should decline to require disclosures that are tailored to particular "subgroups."[94] The NPRM posits that various entities that participate in the exchange of Internet traffic—such as edge providers and CDNs—have "distinguishable needs for information" to which broadband Internet access providers should cater; it even suggests that these categories can be refined further based on economic considerations, noting that a start-up edge provider may require different information than a more established company.[95] But this proposal overlooks the fact that there is a well-developed commercial ecosystem in which ISPs exchange information with transit providers and CDNs. In any event, apart from loosely describing what some of these various subgroups may be, the NPRM offers no structure to the proposal. For instance, it does not define any category, let alone suggest what information each should have. Given these very faint outlines, broadband Internet access providers would be left to guess at what information these providers need and when they need it—forcing them to try to satisfy targets that are in constant motion. Moreover, the NPRM acknowledges that different

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93 TWC 2010 Net Neutrality Comments at 99-100.

94 NPRM ¶ 76.

95 NPRM ¶¶ 75-76.

companies wear different hats, injecting further confusion into when they may need to know what.[96]

For these reasons, the Commission should not presume that any "enhancements" of the current transparency rules as they apply to broadband Internet access service providers are needed; the Commission instead should consider expanding its rules to cover other relevant entities to the extent the record shows that additional information would be helpful to consumers.

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96 NPRM ¶ 76 (noting that Google and Amazon may act as content providers, CDNs, or cloud service providers).

## CONCLUSION

TWC supports the NPRM's core goal of "ensur[ing] that the open Internet remains open."[97] The Commission can best achieve that objective by relying on its Section 706 authority rather than a destabilizing Title II reclassification, and by appropriately tailoring the scope and content of its rules to the relevant policy interests at stake.

Respectfully submitted,

**TIME WARNER CABLE INC.**

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July 15, 2014

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[97] NPRM ¶ 2.

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# EDITED TRANSCRIPT

## VZ - Q4 2015 Verizon Communications Inc Earnings Call

EVENT DATE/TIME: JANUARY 21, 2016 / 1:30PM GMT

**OVERVIEW:**

Co. reported 4Q15 operating revenues of $34.3b and GAAP EPS of $1.32. Expects 2016 adjusted earnings to plateau at a level comparable to 2015 adjusted earnings.



[illegible]

## CORPORATE PARTICIPANTS

**Michael Stefanski** *Verizon Communications, Inc. - SVP, IR*

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## PRESENTATION

**Operator**

Good morning and welcome to the Verizon fourth-quarter 2015 earnings conference call. (Operator Instructions) Today's conference is bei recorded. If you have any objections, you may disconnect at this time.

It is now my pleasure to turn the call over to your host, Mr. Michael Stefanski, Senior Vice President, Investor Relations.

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**Michael Stefanski** - *Verizon Communications, Inc. - SVP, IR*

Thanks, Carlos. Good morning and welcome to our fourth-quarter earnings conference call. This is Mike Stefanski and I'm here with our Chief Financial Officer, Fran Shammo. Thank you for joining us this morning.

As a reminder, our earnings release, financial and operating information, the investor quarterly, and the presentation slides are available on the investor relations website. A replay and a transcript of this call will also be made available on our website.

Before we get started I would like to draw your attention to our Safe Harbor statement on slide 2. Information in this presentation contains statements about expected future events and financial results that are forward-looking and subject to risks and uncertainties. Discussion of factors that may affect future results is contained in the Verizon's filings with the SEC, which are available on our website.

This presentation contains certain non-GAAP financial measures. Reconciliations of these non-GAAP measures to the most directly comparable GAAP measures are included in the financial materials we have posted on our website. The quarterly growth rates disclosed in our presentation slides and during our formal remarks are on a year-over-year basis unless otherwise noted as sequential.

Before Fran goes through our results I would like to highlight a few items. For the fourth quarter of 2015 we reported earnings of $1.32 per share on a GAAP basis. These reported results include a few nonoperational items that I would like to highlight.



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Our year-end mark-to-market adjustment of pension and OPEB liabilities included a pretax $3.2 billion credit, which decreased our pension and OPEB liability. This adjustment, which was primarily non-cash, was caused by an increase in the discount rate, the adoption of new mortality assumption tables, and the execution of a new prescription drug contract during 2015. We also incurred pretax expenses of $613 million, primarily related to severance costs under our existing separation plans.

On an after-tax basis, these two items amounted to a net $1.6 billion or $0.40 per share. Additionally, we recognized a pretax gain of $254 million on a spectrum license transaction. On an after-tax basis, this gain amounted to $158 million or $0.04 per share.

Excluding the effect of these nonoperational items, adjusted earnings per share was $0.89 in the fourth quarter compared with $0.71 a year ago, or a growth of 25.4%. For the full-year adjusted earnings per share was $3.99 compared with $3.35 in 2014, an increase of 19.1%.

On a non-GAAP illustrative basis, if we assumed 100% Wireless ownership for all of 2014, the adjusted earnings-per-share growth rate was 16.7% year over year.

As a reminder, included in our Wireline results are the operations from the three states that we agreed to sell to Frontier, which we expect to close at the end of the first quarter of 2016. We recognized a benefit of $0.13 per share for the full year due to these assets being classified as held for sale. Additionally, the operations of AOL have been included in our consolidated results since third quarter of 2015. Prior period results do not include AOL.

With that, I will now turn the call over to Fran.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Mike. Good morning, everyone, and Happy New Year.

Entering 2016, we are confident in our three-tier strategy of leading at the network connectivity level in the markets we serve, developing new business models through global platforms in video and Internet of Things, and creating certain opportunities and applications and content for incremental monetization. Our execution model enables us to compete effectively in every market condition and build our capabilities for future growth and profitability as an innovator in the digital-first mobile world in 2016 and beyond.

As we reflect back on 2015, we demonstrated a balanced performance in a dynamic competitive environment. We delivered quality growth and strong financial performance in our operating segments, while improving our strategic position and returning value to our shareholders. Overall, our full-year adjusted earnings per share grew 19.1% and free cash flow increased to $18.8 billion excluding tower proceeds, which enabled us to invest and return value to our shareholders.

Fundamental execution on our strategies is the priority within our segments. In Wireless, we posted another quarter of quality connections growth and profitability, with sequential improvements in postpaid gross and net adds as well as net phone additions. Postpaid net adds totaled 1.5 million for the quarter and 4.5 million for the year, excluding wholesale and Internet of Things connections.

Net phone additions were 449,000 for the quarter and 1.1 million for the year. Customer retention was also a highlight, with postpaid churn of 0.96%, down 18 basis points for the quarter. For the year, churn was also 0.96%, which improved 8 basis points from prior year. Total Wireless revenue grew 4.6% for the year and our EBITDA margin expanded.

Our Wireline quarterly results were highlighted by Fios revenue and customer growth. Additional enterprise and wholesale revenues slightly improved sequentially while we reduced costs. Overall, our full-year Wireline segment EBITDA margin of 23.5% was up 30 basis points.

We remain committed to consistently investing in our networks for the future. Our 2015 investments have positioned us for growth and allow us to maintain our network leadership position, as consistently acknowledged by third parties.



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Wireless densification enables us to add capacity to manage the growing trends of video consumption and the demand required for the Internet of Things, as well as prepositioning us for the future 5G technology. We invested in AWS-3 spectrum during the year, acquiring spectrum covering 480 markets for a total value of $10.4 billion.

We continued to execute a disciplined capital allocation model with the priority to invest for the future. We are committed to returning value to shareholders and maintaining a strong balance sheet.

During 2015, we announced the divestiture of certain Wireline properties to Frontier and intend to use the proceeds to pay down debt. We monetized the majority of our remaining cell towers and we were able to return value to shareholders in the form of an accelerated share repurchase of $5 billion. We have returned more than $13.5 billion to shareholders during the year including dividends.

As we disclosed in September, our Board of Directors approved a 2.7% dividend increase, which raises our annualized dividend to $2.26 per share. This was the ninth consecutive year that our Board approved a dividend increase, affirming their confidence in the strength of our future cash flows. We remain committed to returning to our pre-Vodafone transaction credit-rating profile in the 2018 to 2019 timeframe.

So, overall, a strong, balanced 2015 which provides operating momentum and lays the foundation for the future. Now let's get into fourth-quarter and full-year performance in more detail, starting with our consolidated results on slide 5.

Total operating revenue in the fourth quarter was $34.3 billion, an increase of 3.2%, including revenues from AOL. We are pleased with AOL's performance in the fourth quarter, which does have some seasonality from advertisers.

For the full year, we added $4.5 billion to our top line, representing growth of 3.6%. Excluding AOL, which was not part of Verizon a year ago, our top-line growth was 0.5% for the fourth quarter. Excluding both AOL and prior-period revenues from the public sector business we sold in 2014, the comparable full-year revenue growth rate was 2.6%. This was below our revenue guidance due to lower wireless phone activations, primarily upgrades, and a less-than-projected take rate on our device installment payment program in the fourth quarter.

Historically, our consolidated revenues have been primarily driven by growth in both customers and consumption in wireless and Fios. The change in the Wireless commercial model from an equipment subsidy model to a device installment payment model increases the revenue sensitivity to Wireless equipment volumes. We continue to manage through the transition to the device installment model.

We remain committed to our Verizon Lean Six Sigma processes on improving the customer experience while increasing our overall operating and capital efficiencies. The focus on increasing efficiencies has enabled us to sustain a strong earnings profile as we manage through the revenue transformation in the Wireless and Wireline segments.

Consolidated adjusted EBITDA totaled $46.6 billion in 2015, an increase of 7.7%, and our adjusted EBITDA margin for the full year was 35.4%, which expanded 130 basis points from 2014. Let's turn now to cash flows and the balance sheet on slide 6.

In 2015, cash flows from operations totaled $38.9 billion. This total included just under $2.4 billion of proceeds related to the tower monetization transaction, which is nonrecurring. Free cash flow for the year, excluding the tower proceeds, totaled $18.8 billion.

We have been successful in selling selected device installment receivables in the private securitization market to finance the device payment program and manage working capital. In the fourth quarter we continued to sell device installment receivables and received about $2.7 billion in cash proceeds. For the full year 2015, we sold a total of $9.4 billion of device installment receivables, resulting in total net cash proceeds of $5.9 billion at year-end.

We expect to continue to sell these receivables in 2016. Given the success of the device payment program, high credit quality of our customer base, and retention history, we are exploring further diversification of funding sources.



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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.

Our balance sheet is strong and enables the financial flexibility to grow the business. We ended the year with $110.2 billion of gross debt, net debt of $105.7 billion, and a ratio of net debt to adjusted EBITDA of 2.3 times.

Now let's move into a review of the segments starting with Wireless on slide 7.

In the Wireless business, revenue growth, profitability, and cash flows are driven by our high-quality retail postpaid customer base. Total Wireless operating revenues grew 1.2% in the quarter to $23.7 billion. For the full year, operating revenues totaled $91.7 billion, representing growth of 4.6%.

Service revenue of $17.2 billion declined 5.6% for the quarter and declined 3.1% for the full year. Equipment revenue increased to $5.4 billion, up 28% for the fourth quarter, and grew 54.4% for the full year. Service revenue plus installment billings increased 1.4% in the fourth quarter and 2% for the full year.

We expect that service revenue growth will continue to be pressured as more of the customer base moves to unsubsidized service pricing and that equipment revenues will grow as the activation rate for device payment plans increases. The percentage of phone activations on installment plans increased to 67% in the fourth quarter, compared with about 58% in the third quarter and about 25% in the fourth quarter of last year.

The fourth-quarter take rate accelerated but was below our expectation of 70%, which contributed to equipment revenue growth that was lower than expected. We expect the first-quarter take rate for device installment to be above 70%.

During the quarter 7.6 million phones were activated on device installment payment plans. We have about 25 million device installment phone connections in total, representing approximately 29% of our postpaid phone base. Overall, more than 40% of our postpaid phone customers are on an unsubsidized service pricing.

In terms of profitability, we generated $9.1 billion of EBITDA in the quarter, an increase of 18.9%, and approximately $39 billion for the full year, an increase of 10.6%. Our EBITDA service margin increased to 52.9%, up from 42% for the fourth quarter. The more meaningful measurement is EBITDA as a percentage of total Wireless revenue, which expanded to 38.4%, up from 32.6% in the prior year. For the full year the EBITDA service margin increased to 55.3%, up from 48.5%, and our EBITDA margin on total Wireless revenue was 42.5%, up from 40.2% in 2014.

Now let's turn to slide 8 and take a closer look at Wireless connections growth.

We ended the year with 112.1 million total retail connections, excluding wholesale or Internet of Things connections. Our industry-leading postpaid connections base grew 4.4% to 106.5 million and our prepaid connections totaled 5.6 million. Postpaid gross additions improved sequentially to 4.6 million for the fourth quarter and to 16.4 million for the full year.

Our disciplined focus on customer retention resulted in improved postpaid churn of 0.96% in the quarter compared with 1.14% a year ago, an improvement of 18 basis points. We are very focused on improving the customer experience starting with the network, simplified pricing, and better execution in our distribution channels. We are seeing lower customer service call-in rates, which is an indication of improved customer satisfaction.

Our retail postpaid net additions of 1.5 million were high quality, with a sequential improvement in the number of 4G smartphone and total phone net adds. We added 906,000 new 4G smartphones in the quarter, which were partially offset by a net decline in 3G smartphones, resulting in 713,000 net new smartphones.



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Total postpaid phone net adds totaled 449,000, which included a net decline of basic phones. Tablet net adds totaled 960,000. Net prepaid devices declined by 157,000. Full-year net adds of 4.5 million included 3.3 million 4G smartphones and 3.5 million 4G tablets. The offset to these additions were net declines in basic phones, 3G smartphones, and non-tablet Internet devices.

Let's now take a look at 4G device activations and upgrades on slide 9.

Total postpaid device activations totaled 13.4 million in the quarter and 46.6 million for the full year. Similar to prior quarters, about 84% of these activations were phones, with tablets accounting for the majority of the other device activations. We ended the year with 73 million smartphones in total and our smartphone penetration increased to 84% of total phones. 4G devices now comprise more than 79% of our retail postpaid connections base.

Growth in 4G device adoption is driving increased data and video usage. Approximately 90% of our total data traffic is on the LTE network and overall traffic on LTE has increased by approximately 60% over the prior year. About 8.4% of our retail postpaid base upgraded to a new device in the fourth quarter, which is up sequentially but down from just under 10% in the fourth quarter of 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.

National studies recognize Verizon as the overall 4G LTE network performance leader, leading in categories of overall performance, network reliability, network speed, data performance, and call performance. These are the performance metrics that matter to the customer.

Improving the cost structure of our Wireless segment is a priority. In the fourth quarter, we restructured our wireless organization to improve our ability to address the changing needs of our customers faster and more efficiently. We will continue work on our operating model on an ongoing basis and are confident that we can improve efficiencies, as we have done in the past.

Let's move next to our Wireline segment, starting with a review of our consumer and mass markets revenue performance on slide 10.

In the consumer business, Fios remains the driver of revenue growth and now represents 80.4% of consumer revenue. In the fourth quarter consumer revenue grew 2.6% and for the full year grew 3.5%. Mass markets' revenue grew 1.5% in the fourth quarter and 2.4% for the full year. Small business, which is included in mass markets, experienced declines of 5.6% in the quarter and 4.6% for the full year.

The change in the consumer revenue growth trajectory continues as customers right-size their existing bundles and core voice services decline. The demand for Fios broadband only is also increasing, while we are continuing to see a decline in linear video demand. Customers value having a choice in selecting linear video packages.

We had another quarter with Custom TV representing about one-third of our Fios video sales. In the fourth quarter, Fios total revenue grew 6.8%, with consumer Fios revenue growing at 6.6%. This growth was driven primarily by broadband subscriber growth and increased penetration of Quantum.

The increasing importance of the Internet is evident as customers are requesting higher data speeds. At the end of the quarter, more than 70% of our consumer Fios Internet customers subscribed to data speeds of 50 megabits per second or higher and we have shifted our introductory offers to 50 megabits. We are also seeing an increasing number of customers opting for higher speeds.

As I highlighted earlier, Fios Internet subscriber growth remained strong in the fourth quarter. In broadband, we added 99,000 net Fios customers for the quarter and 418,000 for the year and now have a total of 7 million Fios Internet subscribers, representing 41.8% penetration. Overall, net broadband subscribers increased by 5,000 in the quarter.



THOMSON REUTERS

In linear video we are seeing slowing of market demand. We added 20,000 net customers in the quarter and 178,000 for the year and now have a total of 5.8 million Fios video subscribers, which represents 35.3% penetration. We are working closely with Frontier on the sale of our Wireline properties in Florida, Texas, and California and expect to close the transaction at the end of the first quarter of 2016.

Let's turn to slide 11 and cover enterprise and wholesale, as well as the Wireline segment in total.

In the enterprise space, secular and economic challenges remain, but we are seeing stabilization on a constant currency basis. In the fourth quarter, global enterprise revenue declined 3.3% and on a constant currency basis was down about 2.1%. For the full year, global enterprise revenue declined 5.2% and on a constant currency basis was down about 3.5%.

In our global wholesale business, revenues declined 0.2% in the fourth quarter and 3.4% for the full year. While this quarter improved due to seasonal impacts, we remain cautious on the wholesale business and believe that a 4% to 5% decline is more indicative of the underlying trend for the full year 2016.

Total operating revenues for the entire Wireline segment improved to a decline of 0.9% in the quarter and down 1.8% for the full year. The segment EBITDA margin was 24.2% for the quarter and 23.5% for the year, up 30 basis points for the quarter and the year.

As we have consistently stated, we are very focused on margins and improving the profitability of the Wireline segment. We are committed to reducing our cost structure while maintaining strong customer satisfaction. We have achieved savings from restructuring our network and service provisioning and are seeing improvements in productivity.

We continue to reengineer our work processes to improve efficiency and reduce costs, with some of the future savings depending on timing and the outcome of our current labor negotiations. As we close on the Frontier sale, we are confident that we will offset the stranded cost at a consolidated level and will report more details post transaction.

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. Let's move next to slide 12 for an overview of our three-tier strategy.

During 2015 we delivered strong results and further demonstrated our ability to compete effectively in a dynamic competitive environment as we worked through the transition of our Wireless base from a subsidized equipment model to a device installment payment model and ramped up new business models to generate incremental revenue growth into the future. Total revenue grew at 2.6% on a comparable basis and we delivered adjusted EBITDA margin of 35.4% for the year.

For 2015, adjusted earnings per share of $3.99 continued to grow at double-digit rates, even if you exclude the depreciation and amortization benefits we realized from the Frontier transaction. Cash flows from operations increased about 19.1% for the year, excluding tower proceeds, and free cash flow totaled $18.8 billion. We delivered more than $13.5 billion of value to our shareholders in the form of an accelerated share repurchase and dividends.

As I discussed in my opening, entering 2016 we are confident in our three-tier strategy. We are executing and delivering strong results today throughout our operating model by growing and serving our customers, while driving cost and capital efficiencies.

We are focused on building on our network strength and laying the foundation for global platforms and applications and content that appeal to all market demographics, especially the Millennials. We refreshed our brand image around the Better Matters campaign to increase awareness of our differentiated strategy around the overall customer experience and to appeal to growing markets.

At the network connectivity layer, we are investing in our 4G LTE network to provide the industry's highest reliability and position ourselves to capture the efficiencies and capabilities of its new features. We are expanding capacity through a number of optimization techniques, effectively managing our spectrum and further successfully densifying urban markets.



THOMSON REUTERS

We opportunistically purchased spectrum during the year to enhance our capacity and position us for the future. As we have done throughout our history, we evaluate spectrum opportunities in a disciplined manner, including the upcoming auction, secondary markets, and future spectrum bands that can be made available.

Leadership in 5G technology is another strategy to extend our premier network position. We are working with key partners to ensure the aggressive pace of innovation, standards development, and appropriate requirements for next generation of this wireless technology. We will begin pilots in several locations throughout the year.

Our networks enable us to grow our business through new ecosystems in video and the Internet of Things at the connectivity, platform, and solution layers. We are targeting the Millennial opportunity in Wireless video beyond connectivity. The acquisition of AOL and Millennial Media during the year added strong capabilities with global ad tech platforms and content to complement our digital formatting and content distribution assets.

AOL is scaling its consumer and advertiser base globally and it is positioned very well to take advantage of the strong secular growth trends in mobile and video as we saw in the fourth quarter. We will look to further enhance our media asset capabilities. AOL's global capabilities and partnerships are instrumental to our overall long-term global digital media strategy, which includes premium content, distribution, and advertising platforms across all screens.

We believe there is a significant opportunity in using the programmatic platform with the data from the Wireless customer base to connect consumers and advertisers in a very targeted and scaled way with relevant and engaging ad experiences, while protecting individual privacy. The go90 application that we launched in 2015 is one element of this broader video strategy that will allow us to capture and aggregate audience, deliver mobile-first content, and generate incremental revenue via advertising. As the application, which uses our video platform, evolves and gains attention, you can expect new and exciting content, features, and functionality like the NBA content we added this past quarter.

We are encouraged by the use of go90, not only on the Verizon network, but off of the Verizon network as well. During 2016 we expect to shar more results around both the go90 application and our video platform.

Earlier this week we launched FreeBee Data, a new sponsored data service. With FreeBee Data, Verizon Wireless subscribers can enjoy content on their mobile devices free of data charges and it helps businesses drive engagement and revenue by providing a powerful platform for sponsoring mobile content.

As we have been discussing over the past two quarters, we are offering Custom TV for linear customers to provide more video choice. We will continue to look to refresh our Fios TV offerings to take advantage of the secular trend of video bundles with options and more choices to address the increasing over-the-top video trend.

We are taking a leadership position in the Internet of Things. With our experience in networks, devices, platforms, and applications, we have created an ecosystem that will foster innovation and scale globally above the connectivity layer to enable incremental growth. Our network leadership positions us to capitalize on these new opportunities that require both a ubiquitous mobile experience and the capabilities of platforms above the connectivity layer.

We are focused on the telematics and transportation vertical and launched our direct-to-consumer product, hum, in the third quarter. We also announced our connected city strategy beginning with Savannah and introduced a suite of developer tools, ThingSpace, to accelerate innovative applications to come to market.

At the recent Consumer Electronics Show, the pipeline for mobile Internet of Things capabilities was very prominent. New revenue streams from the Internet of Things are growing, with revenues of approximately $200 million in the quarter and about $690 million for the full year, a year-over-year increase of 18%.

Let's move next to slide 13 for our 2016 priorities.



THOMSON REUTERS

Our strategy and priorities remain consistent for 2016. We will concentrate on growing our quality customer base in both Wireless and Fios and build upon customer loyalty by providing the best overall customer experience. We remain focused on network leadership and developing new ecosystems in video and the Internet of Things by leveraging our ubiquitous network in the United States and scaling our platforms globally.

We are also committed to returning value to our shareholders and maintaining a strong balance sheet in addition to returning to our pre-Vodafone transaction credit-rating profile by the 2018-2019 timeframe. As previously stated, Verizon expects full-year 2016 adjusted earnings to plateau at a level comparable to our strong full-year 2015 adjusted earnings, due to device installment payment model transition, completion of the Frontier transaction, and the ramping of new business models in video and Internet of Things.

Additionally, we are targeting the following for 2016: a consolidated adjusted EBITDA margin consistent with our full-year 2015 performance; 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; and a minimum pension funding requirement of approximately $550 million. In terms of income taxes, we expect our effective tax rate for financial reporting purposes to be in the range of 35% to 36%.

With that, I will turn the call back to Mike so we can get to your questions.

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**Michael Stefanski** - *Verizon Communications, Inc. - SVP, IR*

Fran, thank you. We also recognize that there might have been some delay in posting our materials to our website. The issue I think is resolved, so we appreciate your patience.

Carlos, if you can open us up now for questions.

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## QUESTIONS AND ANSWERS

**Operator**

(Operator Instructions) David Barden, Bank of America Merrill Lynch.

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**David Barden** - *BofA Merrill Lynch - Analyst*

Thanks. Thanks for taking the questions. Fran, just as a housekeeping item, with respect to the notion of a quote-unquote plateau, could you kind of band that for people? Are you trying to put a plus or minus 1% or 2% around the $3.99? Are you trying to say $3.99 or better for 2016? Just so the street can get a sense as to where the real midpoint there is?

Then, second, obviously we had an extension in bonus tax depreciation last year. It has been something you have been benefiting from. Could you kind of scope the size of the benefit you're going to get this year?

If I could, just one last one. You've talked about how cord-shaving has been important for the new customers coming into the Fios base. Could you talk about, if at all, you are seeing some kind of transition in the existing base to these skinnier bundles? Thanks.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, David. On earnings per share, we started this back I think midyear in 2015 when Lowell and I started to talk about the plateau level comparable to 2015 adjusted earnings. The way to think about this is we ended 2015 at $3.99. There's $0.13 of depreciation benefit because of the Frontier assets being held for sale, so that really is a level set of $3.86.



THOMSON REUTERS

When we talk about plateauing, we are referring to the $3.99. So when you think about this, you are going from $3.86 from a jump-off point to $3.99. The way I think about it is we are actually growing earnings in low single digits from 2015 to 2016 when you make that one-time adjustment. So we will grow through the benefit of the depreciation this year.

Some of the reasons for that, as I said on the last quarterly call, some of this is just math moving the Wireless transformation from the subsidy model to the device payment model. And, of course, the ramping of our new businesses, which I have been very clear, in the beginning these are like start-up businesses. And as with most startup businesses, you have very large losses in the beginning until you can grow the customer bases and start to generate the profitability.

Moving into the bonus depreciation, yes, we will get a substantial benefit next year, but I want to be clear that you should not anticipate that our tax -- cash tax payments will decrease in 2016. They will actually increase even with this benefit and the piece of that is because the profitability from a pretax income perspective will continue to increase. And we're also still eating through the reversal of prior-year bonus depreciations.

So from a cash tax perspective, you should expect our cash tax percentage to continue to increase closer to our effective tax rate. Now, not to the extent of the 35% to 36% guidance that I gave you, but it certainly will move from the low 20%s we realized in 2015 to the upper 20%s in 2016.

On the cord-shaving piece, as we said in our prepared remarks, we are starting to see more and more customers coming into Fios on a broadband-only basis, so just a single-play strictly with broadband. As far as our current base goes, we see a little bit of trending but not much. Most customers are depleting the voice side of the product and keeping the broadband and video side of the product at this point.

David, hopefully that answers your question. Let's move to the next one.

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**Operator**

Simon Flannery, Morgan Stanley.

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**Simon Flannery** - *Morgan Stanley - Analyst*

Thanks very much. Good morning, Fran. You touched briefly on the auction in your commentary. I know in the past you had made some of your interest contingent on some of the rules, which we have now. Maybe you could just think about how we should be thinking about sizing your potential participation, what you need here.

There has been a lot of stories about potential asset sales over the months, most recently about data centers. Perhaps you could just talk about your philosophy now that you've done the towers; you are doing the Frontier asset. Should we expect or are you considering doing other significant asset sales over the coming year or two? Thanks.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Simon. On the auction, let's just -- I'll keep this one short on the incentive auction because of a lot of rules around what I can and can't say at this point. But we will participate in the auction and I will leave it at that.

But thinking about spectrum overall, I think we have to think about the 600 megahertz which I've talked about previously and how that fits to our portfolio. We think ahead to 5G. As we said, we will be at the forefront and we are currently at the forefront globally talking about standards. We will be the first company to roll 5G out in the United States and we are currently preparing for those field trials.

The other thing I would say about 5G is we would hope that the FCC moves quickly to adopt the rules to facilitate 5G deployment. Think about 5G, it may not just be about mobility. It may be about other use cases; it's not just about mobility.



THOMSON REUTERS

Then when we think about the unlicensed opportunity, if you were at the Consumer Electronics Show these past two weeks, there were multiple manufacturers who were running side-by-side comparisons of unlicensed, if you will, LTE or unlicensed spectrum utilized by an LTE carrier right next to Wi-Fi. It absolutely shows no interference, which is some of the rhetoric out there, and it actually showed that the comparability is it improves the Wi-Fi performance by having a managed unlicensed within the LTE carrier. Again, this just goes to continuing to work with the FCC and having them see through the release and usage of unlicensed for the LTE carriers.

Then, of course, we will continue to utilize the secondary market as we do quarter in and quarter out, utilizing swaps, which we just completed this past quarter. We're working on another swap that we will complete in the first quarter. And also minimal buys in the marketplace with smaller holders. So that's how we think about the whole spectrum asset perspective.

On the sale of assets, as Lowell and I have continually stated, we will always look for opportunities. The data centers is an exploratory exercise to see if the asset is more valuable inside or outside the portfolio. I view that asset similar to the way we view towers. Is there a way to monetize this asset that contributes value to our shareholders and gives us the capability to move that capital into higher-returning assets for Verizon?

There is no decision that has been made. This is exploratory and as we explore, if the numbers come out like it did on towers, then we will execute on a transaction. If it doesn't, then we won't.

At this point, again, we will always look at opportunities to monetize the portfolio to the benefit of our shareholders. Thank you, Simon.

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**Operator**

John Hodulik, UBS.

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**John Hodulik** - *UBS - Analyst*

Thanks. Fran, I think the churn below 1% was obviously a bright spot for the quarter. Is that a level you think you can maintain as you look at into 2016 given the competitive environment?

Then you mentioned some continued pressure on the service revenues looking out. Can you talk a little bit about the components driving that and when you expect to see an inflection in that metric? Thanks.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Sure. Thanks, John. On the churn rate, if you recall, when we sat here a year ago and we entered 2015 we said a concentration of 2015 will be to protect our customer base. And that's exactly what we executed on throughout 2015 and the execution of that will continue in 2016. The focus will be customer satisfaction and satisfying our customer base so they stay with us.

I think that's proven through our very low churn rate this fourth quarter. Even with the rhetoric from some outsiders about how they are stealing customers, the churn rate does not reflect that. And port outs are down year over year.

We are doing what we said we do around the loyalty. Customer satisfaction comes in here around our simplicity and being simple with customers so they understand what they are getting. And this goes to our loyalty base.

On the service revenue side, I guess the thing I would say on this is that again this is really to math. Math of shifting from the subsidy model with higher service revenue to a device payment model where you get a break in service revenue but you pay full price for the handset model.

As we said, we are through 40% of our customers -- we are slightly higher than 40% -- who are now on that new pricing, so you have already seen the impact of that. As I said last call, we believe the inflection point will happen at 50%, which we believe we will attain midyear.



THOMSON REUTERS

Coming out of the fourth quarter, though, we did see a slowdown in the take rate of installment sales, but we do believe that that take rate will accelerate back up above 70% for the fourth quarter. And we're going to announce some differences here, a shortcoming that will drive some of that behavior towards that.

As you know, we continue to allow our current base customers who upgrade to select, whether they take device payment or subsidy, and what we saw in the fourth quarter was we had a higher percentage of our base stay on the subsidy model, which caused pressure on the P&L of Wireless because of the subsidy take. So having said that, John, I think as we go through the year we will be able to give you more clarity here.

But the other thing I would ask you to take a look at is the I-ARPA metric, which if you look at third quarter it went up by 0.2% and then the fourth quarter went up 0.9%. So you are already starting to see some of the underlying metrics starting to absorb some of the repricing. I will leave it at that for 2016, but I will come back to you as we break through the 50%.

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**Operator**

Phil Cusick, JPMorgan.

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**Phil Cusick** - *JPMorgan - Analyst*

Thanks. So Fran, first just following up on John's question. With the current asset mix, and not just in 2016 but beyond, is it still a business that can grow well above GDP? And how far do you think above?

Second, on Custom TV. You've said in the past that you are pushing toward your minimums on some of your contracts. How should we think about that potentially impacting Custom TV or do you think you could reopen some of those contracts to let that percent go higher?

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Phil. The answer to the question is, yes, absolutely. And I think we have to go back to -- and start at the beginning on the whole top-line growth story.

First and foremost, I think the foundation is our network, our strategy and densification, the use of fiber. Fiber is going to be critical with the densification, dark fiber.

92% of our cell sites are already fiber enabled; the other 8% are microwave which probably won't get fiber, so when you look at it almost 100% of our cell sites are fiber-enabled. And every small cell, 100% of every small cell we deployed is fiber-backed. This is in preparation of some of the future products and services that we are looking at in conjunction with both what Marni has under IoT, go90, but also for 5G.

If you look at customer satisfaction, this goes to a big component of the low churn and how we start to increase the value to the customer so that they are willing to pay us more for increased value. The quality base also goes to this.

So when you look at wireless, they grew 1.2% here in the fourth quarter. If you look at volume overall year over year, gross adds and upgrades were down by 1.9 million. So if you just do the backwards math on that, that's in excess of $1 billion of revenue that wasn't there this year that was there last year. When you look at it, the foundation of Verizon Wireless is still very strong and we believe that we can continue to grow the Verizon Wireless revenue streams.

On Wireline, Fios is still the foundation. It's now 80% of the overall Wireline revenue. When you look at what we're doing in broadband, the pervasiveness of broadband, no one can match our symmetry on the up and downloads, so that's something that we have against our competition.



THOMSON REUTERS

We are preparing for the over-the-top model. Custom TV is one of the things that I've said, yes, it has a limited life but you're going to see us refresh Custom TV and continue to do what consumers want, which is what they -- they want choice. They don't want to have to pay for bundles that they never use. Then, of course, stability of the enterprise business also adds to this.

Then you jump into our growth engines. If you look at AOL, AOL this quarter increased $300 million in revenue sequentially from the third quarter. It goes to the strength of the advertising model under AOL, which is why we bought them. Now some of that is seasonal, but we believe that they will continue to have strong growth into 2016.

Go90, which is still in its beginning stages, and I know we've seen some external reports on the number of downloads in excess of 2 million, but the key to us is not the downloads, the key is viewership. It's around content and we will continue to add content that is favorable to all generations of population.

Obviously we have a lot of content there for Millennials, but sports and music attain to a lot more than just Millennials, so we are attacking all viewership with this product. And we will have more to say about that probably midyear.

Internet of Things, if you walked around CES, it's all about the digital mobile world and we are in the best position to capitalize on that with our Smart Cities, Telematics, with the launch of hum. We started that in the fourth quarter and we've already seen that there are certain stores in the United States that can't keep the product within Verizon Wireless. They're continually selling out of the product. And this is a recurring revenue stream.

If you think about ThingSpace this is really the adjunct to the Consumer Electronics Show where we've opened up our platform. We now have over 4,200 developers working on that platform and that's just since October 29 of last year. So, yes, it was a transition year in 2015; it will be a transition year in 2016, but I am confident that with the strategies that we are taking that we will absolutely be a GDP growth company post 2016.

Custom TV, we talked about that. We will refresh that here in the short term to be in compliance with the contractual arrangements that we need to be in compliance with.

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**Phil Cusick** - *JPMorgan - Analyst*

Is there a hearing that needs to happen at some point this year or a trial?

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Relating to ESPN?

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**Phil Cusick** - *JPMorgan - Analyst*

Yes.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Look, this will go its course. They're a great partner of ours; we will continue to work with them and I'm not going to speak to the actual lawsuit.

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**Phil Cusick** - *JPMorgan - Analyst*

Thanks.



THOMSON REUTERS

**Operator**

Mike McCormack, Jefferies.

**Mike McCormack** - *Jefferies - Analyst*

Thanks. Fran, maybe just a quick follow-up on the I-ARPA question. How fast do you think equipment revenue starts to ramp up here? I guess just thinking about the percentage of those customers making payments versus those that are on non-subsidized plans. Is that gap --there's probably some retention built into that, but I assume that gap can close over time. Just your thoughts around that.

And then just a quick other question regarding towers. We've heard a couple of your competitors sort of downplaying future tower needs and trying to bypass some of that cost. Just trying to get a sense for what you think as far as your need for towers goes.

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

On the I-ARPA, keep in mind only 29% of our customers currently today are on a device payment plan, so they are actually taking the installment plan and paying us full price for the equipment. But 40% of our customers who fulfilled their subsidy contract have moved over to that pricing, so they are getting the discount. So we're absorbing that.

As I've said, once you get to that 50% you should see that inflection point start to occur and you are already starting to see some of that in the I-ARPA-type metric. It's hard for me to forecast exactly what will happen here but the forecast that I have is at 50% you start to see an inflection point. And we will talk more about that as we go through the quarters.

As far as towers go, look, we continue to build macro towers but at a much lower rate than historically. Our focus is really around small cells, densif antenna systems, in-building. But keep in mind that each of those small cells, in-building, and antenna systems all get fiber back to a main macrocell. So the macrocells still have an important role in how you deliver traffic into those small cells.

As far as building and creating new towers, that is at a much slower rate, but the importance of the tower is still there.

**Operator**

Brett Feldman, Goldman Sachs.

**Brett Feldman** - *Goldman Sachs - Analyst*

Thanks for taking the question. Fran, you had noted how churn and upgrades they were all lower year over year. It seems that across the sector activity levels have been lighter than we might've thought, whether it's churn or gross adds or upgrades.

Why do you think that is? Do you think that this is a temporary factor or do you think it's the new normal? Really I guess the question is: what do you think is going to happen in 2016?

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Brett. Look, 2014 was a unique year. You had a very different form factor come out from Apple, which drove a lot of traffic to that iconic device. You continue to have innovation from Samsung and LG, but we didn't have that huge change in the handset this year that we saw a year ago. So that I think affected some of the upgrade model.



THOMSON REUTERS

But when you look at it, we still did about 1.5 million more upgrades in the fourth quarter than we did in the third quarter. So the volume of upgrades still increased; it just wasn't what it was a year ago. If you remember, I said coming into this way back in the second quarter I said I did not anticipate that the fourth quarter this year would be a similar volume to the fourth quarter of last year.

But if you go back to the previous years, I think you'll see similar lower volume years. Then you have iconic devices come out and it stimulates some usage case there. So for 2016 it's too early to tell you, but I would think that we'll see similar trends that we did in 2015.

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**Brett Feldman** - *Goldman Sachs - Analyst*

Are you seeing any evidence that as customers move to installment plans they actually keep their devices longer?

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Well, for our base it's too early to tell because the first generation of them are just starting to mature, so until I get some real factual data on that it's hard for me to answer. My own personal opinion here is that, if you look at history, a third of your customer base upgrades every year. I don't see that changing regardless of what plan the customer is on.

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**Operator**

Mike Rollins, Citigroup.

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**Mike Rollins** - *Citigroup - Analyst*

Thanks for the opportunity. Two questions, if I could. First, Fran, if you could just talk about what Verizon was able to accomplish on cost cutting in 2015 and how investors should think about that relative size in 2016. And, second, as you look across your different business segments, are you seeing any changes in the macroeconomic backdrop or a risk of a recession? Thanks.

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**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Mike. On the cost-cutting, look, I think the last three to four years we've talked about this and we are an extremely disciplined corporation as far as costs go. With the launch of our Verizon Lean Six Sigma program three years ago, that continues to maintain momentum.

We took out almost 30 million calls down from a year ago, so there's a lot of progress being made on self-serve. There's a lot of progress being made within our logistics system. This year alone we generated working capital benefits from how we handle our phone inventory.

You saw the Wireless restructure this year was the first restructure we had really since the inception of Verizon Wireless. As we go into 2016, you saw us take that severance charge and I would tell you most of that severance charge was related to headcount that was already completed in the fourth quarter.

So entering into 2016, we continue on the path that we were on. We will continue to look at customer satisfaction, more self-serve options that reduce the amount of calls that we have to take from customers. There's still a lot of work to be done around our cost structure.

If you look at Wireline, as we came into this year Lowell and I said we would improve the profitability of Wireline. That came from all the cost reductions that John and his team achieved. So we will continue on that path and I feel good about that.

As far as overall economics, I am not really seeing much of anything in the consumer spaces that we drive. I look at what everybody else looks at and we will have to wait to see where 2016 comes out, but I'm certainly not going to predict any negativism there.



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**Operator**

Craig Moffett, MoffettNathanson.

**Craig Moffett** - *MoffettNathanson - Analyst*

Good morning, guys. Two questions, if I might. First, on go90, can you update us a little bit on what the early results are and what learnings you have had from go90? Just given your comments about the roughly flat year-over-year EPS and the impact that go90 might have on that, I think a lot of us have concluded that there is likely to be something significantly bigger coming this year with respect to marketing and content.

Can you at least give us a timeline for when we might see those kinds of developments on go90?

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Sure. Thanks, Craig. When I think about the whole portfolio, go90, Verizon Digital Media Services, and AOL, obviously we just launched all these products, so there's a startup. It was the first fourth quarter that we advertised these types of launches. You are going to see that continue through the four quarters of 2016, which was not there in 2015, so there will be pressure from these start-up companies.

Our learnings on go90 are very simple. We're looking at how many times individuals revisit the platform in one day and we're starting to see some positives there. People will come in multiple times during the day and that's important because that's what's viable to the advertising community.

The whole basis here is we have to ramp viewership. I will tell you internally we have surpassed what we thought we would have at this point in time. We have set higher targets for 2016 because we need to build the viewership in a much quicker fashion. I think what you are seeing here from AOL is a very strong fourth quarter. Now there is seasonality to that, but as I mentioned, I'm looking for them to grow substantially in 2016.

So I think when you put this together, I think the top line will start to reflect some of the things that we are looking for, but it will create bottom-line pressure. These will not -- especially go90, will not be a profitable product probably within a one- to two-year horizon right now. When we launched it we said two to three, but it's probably out two years before that will become a profit contributor to the enterprise; but it will certainly build on the top-line perspective. But right now we're focused on viewership, not necessarily the profitability of the product.

So I will stop there. As I said, we will come in with much more detail probably midyear and start to give you some viewership into exactly some of the results of go90 and AOL.

**Craig Moffett** - *MoffettNathanson - Analyst*

Fran, related to that question, if I could, on AOL, now that you've had AOL for a while there was some talk, and I think you directly spoke, to the possibility of a Yahoo or something like that. Are there other assets that now that you've had AOL for a while you think makes sense to expand that part of your business with?

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Look, I think we've been pretty open since we acquired AOL. We said that we would continue to add to that portfolio. We acquired Millennial, which we talked about. So, yes, there are things that we continue to look at for fill-ins, if you will.

The other that you brought up, it's intriguing, but there's really nothing to respond to at this point on that. So, look, we will continue to look at all of our options, as Lowell and I said. We will continue to look at opportunities externally and look at opportunities internally and if they make sense for the shareholder, then we will execute on those opportunities.



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**Operator**

Amir Rozwadowski, Barclays.

**Amir Rozwadowski** - *Barclays Capital - Analyst*

Thank you very much. Fran, you had mentioned that you continue to look to monetize your handset receivables. I think in your prepared remarks you had mentioned that you were looking at other alternatives. Perhaps you might be able to elaborate.

We've obviously seen your competitors look to other means and funding strategies to support their businesses. So any thoughts on the potential options you were considering would be most appreciated.

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Sure. Thank you, Amir. Just to refresh, we monetized or securitized $9.4 billion of receivables. We received gross cash of $7.2 billion. We obviously paid off some of those securitizations, so about a $5.9 billion net cash. So when you think about that, we absorbed about $3.5 billion within our working capital this year from the switch to the device payment model.

I will tell you that we have been talking to the rating agencies about different types of financing and I will probably leave it at that at this point. But we will be looking at potential public markets as well as private markets, but we will stay with the securitization model as well. So we're just looking at very different alternatives to support the program going forward, because we do believe it will continue to grow in 2016.

And more to say on that when we come to a conclusion on that one, Amir.

**Amir Rozwadowski** - *Barclays Capital - Analyst*

Then, if I may, just one follow-up. You folks seem to be taking the lead with discussing a number of new bandwidth-enhancing technologies and you had alluded to this on your prepared remarks around 5G developments and unlicensed spectrum.

How should we think about your ability to bolster the carriers' capacity moving forward utilizing these types of developments? And ultimately, do you believe there is a path to improving your capacity without actually having to broadly expand your spectrum portfolio at this point?

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

The answer to the question is yes. If you look at some of the small cell technology and also some of the technology that can be utilized at the cell site -- I know there's a fancy name for it, but I'm not the engineer here -- but it gives you the capability to be able to tilt antennas and turn antennas to where the capacity is.

So if you think about football game Sundays and college games, we have the capability to utilize our current resources to increase capacity without any spectrum capacity. There is a number of technologies that are coming. Obviously, when we launched 4G we said it would be 5 times more efficient than 3G. 5G is too early, but my suspicion is that we're going to see some similar benefits there from a capacity standpoint, which is one of the benefits of 5G.

So, yes, I think that if you look at spectrum, we are in a very, very good spectrum holdings, as we said with all my other comments around spectrum and how we utilize unlicensed along with what we bought in AWS and the repositioning of what we currently have on 3G over to 4G. So utilizing all of these items, we feel that we are in very, very good shape from a capacity standpoint.



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**Amir Rozwadowski** - *Barclays Capital - Analyst*

Thank you very much for the incremental color.

**Michael Stefanski** - *Verizon Communications, Inc. - SVP, IR*

Thank you for your questions. Before we end the call I will just turn it back to Fran for a few more remarks.

**Fran Shammo** - *Verizon Communications, Inc. - EVP & CFO*

Thanks, Mike. Look, 2015 was a year of significant change at Verizon. And even with all that change we delivered a strong financial year, continued to invest in growing our customer base, invested in our networks, developed and expanded new businesses, and returned value to our shareholders in the form of dividends and share repurchase.

2016, we will continue what we started in 2015. We will focus on execution and growth with our three-tier strategy and heritage. We will continue to build on a strong network and customer foundation. With our foundation we will compete effectively in this dynamic marketplace.

We will bring new products and services to market and continue to be the leader in the digital-first mobile world. We look forward to maintaining our positive momentum to create value for our customers and our shareholders, and I would like to thank you for joining Verizon today. Have a great day.

**Operator**

Ladies and gentlemen, this does conclude the conference call for today. Thank you for your participation and for using Verizon conference servic You may now disconnect.

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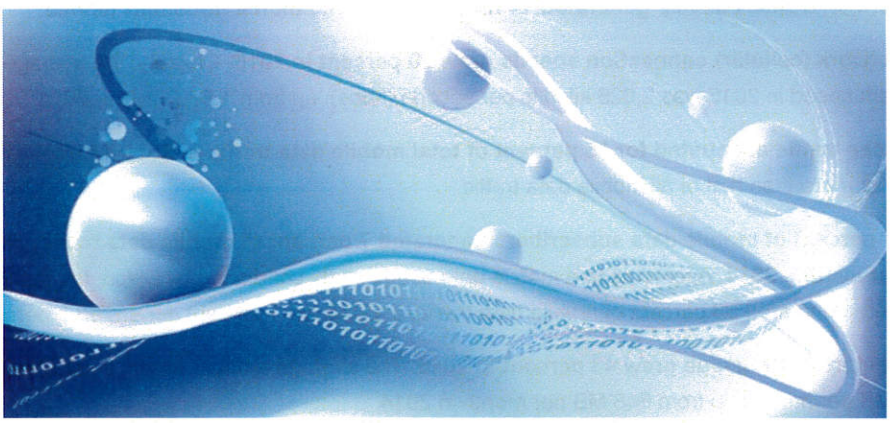
White Paper

# Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2015–2020



*February 3, 2016*

The Cisco® Visual Networking Index (VNI) Global Mobile Data Traffic Forecast Update is part of the comprehensive Cisco VNI Forecast, an ongoing initiative to track and forecast the impact of visual networking applications on global networks. This paper presents some of Cisco's major global mobile data traffic projections and growth trends.

## Executive Summary

### The Mobile Network in 2015

**Global mobile data traffic grew 74 percent in 2015**. Global mobile data traffic reached 3.7 exabytes per month at the end of 2015, up from 2.1 exabytes per month at the end of 2014.

**Mobile data traffic has grown 4,000-fold over the past 10 years and almost 400-million-fold over the past 15 years**. Mobile networks carried fewer than 10 gigabytes per month in 2000, and less than 1 petabyte per month in 2005. (One exabyte is equivalent to one billion gigabytes, and one thousand petabytes.)

**Fourth-generation (4G) traffic exceeded third-generation (3G) traffic for the first time in 2015**. Although 4G connections represented only 14 percent of mobile connections in 2015, they already account for 47 percent of mobile data traffic, while 3G connections represented 34 percent of mobile connections and 43 percent of the traffic. In 2015, a 4G connection generated six times more traffic on average than a non-4G connection.

**Mobile offload exceeded cellular traffic for the first time in 2015**. Fifty-one percent of total mobile data traffic was offloaded onto the fixed network through Wi-Fi or femtocell in 2015. In total, 3.9 exabytes of mobile data traffic were offloaded onto the fixed network each month.

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**More than half a billion (563 million) mobile devices and connections were added in 2015**. Smartphones accounted for most of that growth. Global mobile devices and connections in 2015 grew to 7.9 billion, up from 7.3 billion in 2014.

Globally, smart devices represented 36 percent of the total mobile devices and connections in 2015; they accounted for 89 percent of the mobile data traffic. (For the purposes of this study, "smart devices" refers to mobile connections that have advanced multimedia/computing capabilities with a minimum of 3G connectivity.) **In 2015, on an average, a smart device generated 14 times more traffic than a nonsmart device**.

**Mobile network (cellular) connection speeds grew 20 percent in 2015**. Globally, the average mobile network downstream speed in 2015 was 2,026 kilobits per second (kbps), up from 1,683 kbps in 2014.

**Mobile video traffic accounted for 55 percent of total mobile data traffic in 2015**. Mobile video traffic now accounts for more than half of all mobile data traffic.

**The top 1 percent of mobile data subscribers generated 7 percent of mobile data traffic, down from 18 percent in June 2014**. According to a mobile data usage study conducted by Cisco, the top 20 percent of mobile users generated 59 percent of mobile data traffic, and the top 1 percent generated 7 percent.

**Average smartphone usage grew 43 percent in 2015**. The average amount of traffic per smartphone in 2015 was 929 MB per month, up from 648 MB per month in 2014.

**Smartphones (including phablets) represented only 43 percent of total global handsets in use in 2015, but represented 97 percent of total global handset traffic**. In 2015, the typical smartphone generated 41 times more mobile data traffic (929 MB per month) than the typical basic-feature cell phone (which generated only 23 MB per month of mobile data traffic).

**Globally, 97 million wearable devices (a sub-segment of the machine-to-machine [M2M] category) in 2015 generated 15 petabytes of monthly traffic**.

**Per-user iOS mobile devices (smartphones and tablets) data usage marginally surpassed that of Android mobile devices data usage**. By the end of 2015, average iOS consumption exceeded average Android consumption in North America and Western Europe.

**In 2015, 34 percent of mobile devices were potentially IPv6-capable**. This estimate is based on network connection speed and OS capability.

**In 2015, the number of mobile-connected tablets increased 1.3-fold to 133 million, and each tablet generated 2.8 times more traffic than the average smartphone**. In 2015, mobile data traffic per tablet was 2,576 MB per month, compared to 929 MB per month per smartphone.

**There were 125 million PCs on the mobile network in 2015, and each PC generated 2.9 times more traffic than the average smartphone**. Mobile data traffic per PC was 2.7 GB per month in 2015.

**Average nonsmartphone usage increased to 23 MB per month in 2015, compared to 16 MB per month in 2014**. Basic handsets still make up the vast majority of handsets on the network (57 percent).

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## The Mobile Network Through 2020

**Mobile data traffic will reach the following milestones within the next 5 years**:

- Monthly global mobile data traffic will be 30.6 exabytes by 2020.
- The number of mobile-connected devices per capita will reach 1.5 by 2020.
- The average global mobile connection speed will surpass 3 Mbps by 2017.
- The total number of smartphones (including phablets) will be nearly 50 percent of global devices and connections by 2020.
- Because of increased usage on smartphones, smartphones will cross four-fifths of mobile data traffic by 2020.
- Monthly mobile tablet traffic will surpass 2.0 exabytes per month by 2020.
- 4G connections will have the highest share (40.5 percent) of total mobile connections by 2020.
- 4G traffic will be more than half of the total mobile traffic by 2016.
- More traffic was offloaded from cellular networks (on to Wi-Fi) than remained on cellular networks in 2015.
- Three-fourths (75 percent) of the world's mobile data traffic will be video by 2020.

**Global mobile data traffic will increase nearly eightfold between 2015 and 2020**. Mobile data traffic will grow at a compound annual growth rate (CAGR) of 53 percent from 2015 to 2020, reaching 30.6 exabytes per month by 2020.

**By 2020 there will be 1.5 mobile devices per capita**. There will be 11.6 billion mobile-connected devices by 2020, including M2M modules—exceeding the world's projected population at that time (7.8 billion).

**Mobile network connection speeds will increase more than threefold by 2020**. The average mobile network connection speed (2.0 Mbps in 2015) will reach nearly 6.5 megabits per second (Mbps) by 2020. By 2017, the average mobile network connection speed will surpass 2.0 Mbps.

**By 2020, 4G will be 40.5 percent of connections, but 72 percent of total traffic**. By 2020, a 4G connection will generate 3.3 times more traffic on average than a non-4G connection.

**By 2020, more than three-fifths of all devices connected to the mobile network will be "smart" devices**. Globally, 67 percent of mobile devices will be smart devices by 2020, up from 36 percent in 2015. The vast majority of mobile data traffic (98 percent) will originate from these smart devices by 2020, up from 89 percent in 2015.

**By 2020, 66 percent of all global mobile devices could potentially be capable of connecting to an IPv6 mobile network**. There will be 7.6 billion IPv6-capable devices by 2020.

**Three-fourths of the world's mobile data traffic will be video by 2020**. Mobile video will increase 11-fold between 2015 and 2020, accounting for 75 percent of total mobile data traffic by the end of the forecast period.

**By 2020, mobile-connected tablets will generate nearly eight times more traffic than generated in 2015**. The amount of mobile data traffic generated by tablets by 2020 (2.6 exabytes per month) will be 7.6 times higher than in 2015, a CAGR of 50 percent.

**The average smartphone will generate 4.4 GB of traffic per month by 2020, nearly a fivefold increase over the 2015 average of 929 MB per month**. By 2020, aggregate smartphone traffic will be 8.8 times greater than it is today, with a CAGR of 54 percent.

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**By 2015, more than half of all traffic from mobile-connected devices (almost 3.9 exabytes) will be offloaded to the fixed network by means of Wi-Fi devices and femtocells each month**. Without Wi-Fi and femtocell offload, total mobile data traffic would grow at a CAGR of 55 percent between 2015 and 2020, instead of the projected CAGR of 53 percent.

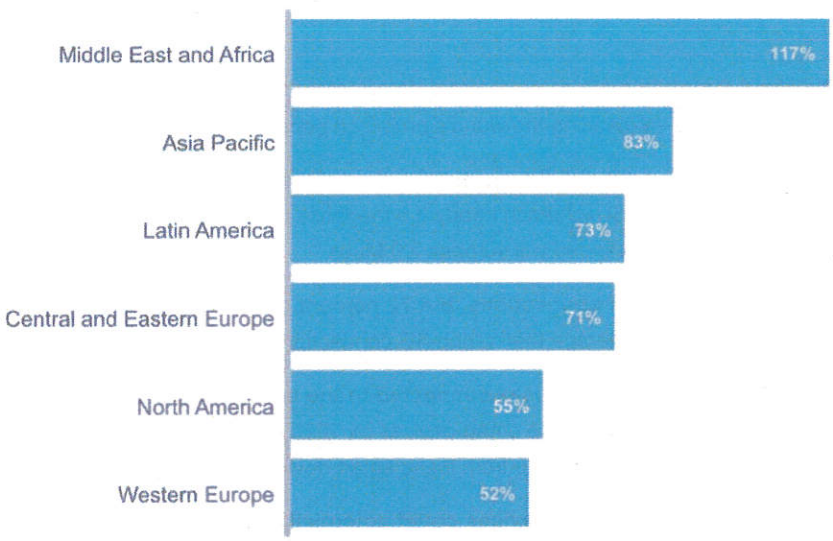
**The Middle East and Africa will have the strongest mobile data traffic growth of any region with a 71-percent CAGR**. This region will be followed by Asia Pacific at 54 percent and Central and Eastern Europe at 52 percent.

Appendix A summarizes the details and methodology of the VNI Mobile Forecast.

## 2015 Year in Review

Global mobile data traffic grew an estimated 74 percent in 2015. Growth rates varied widely by region, with Middle East and Africa having the highest growth rate (117 percent) followed by Asia Pacific (83 percent), Latin America (73 percent), and Central and Eastern Europe (71 percent). North America grew at an estimated 55 percent, a rebound from an unusually low growth rate of 26 percent in 2014. Western Europe trailed North America slightly at 52 percent growth in 2015 (refer to Figure 1). At the country level, Indonesia, China, and India led global growth at 129, 111, and 89 percent, respectively.

**Figure 1.** Mobile Data Traffic Growth in 2015




Source: Cisco VNI Mobile, 2016

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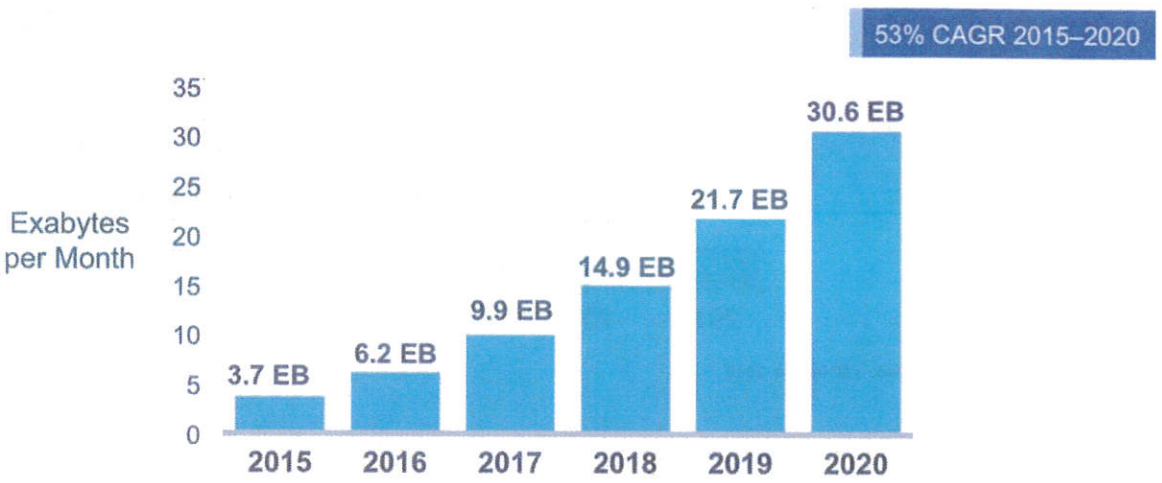
## Global Mobile Data Traffic, 2015 to 2020

Overall mobile data traffic is expected to grow to 30.6 exabytes per month by 2020, an eightfold increase over 2015. Mobile data traffic will grow at a CAGR of 53 percent from 2015 to 2020 (Figure 2).

**Figure 2.** Cisco Forecasts 30.6 Exabytes per Month of Mobile Data Traffic by 2020




Source: Cisco VNI Mobile, 2016

Asia Pacific will account for 45 percent of global mobile traffic by 2020, the largest share of traffic by any region by a substantial margin, as shown in Figure 3. North America, which had the second-largest traffic share in 2015, will have only the fourth-largest share by 2020, having been surpassed by Central and Eastern Europe and Middle East and Africa. Middle East and Africa will experience the highest CAGR of 71 percent, increasing nearly 15-fold over the forecast period. Asia Pacific will have the second-highest CAGR of 54 percent, increasing nearly 9-fold over the forecast period.

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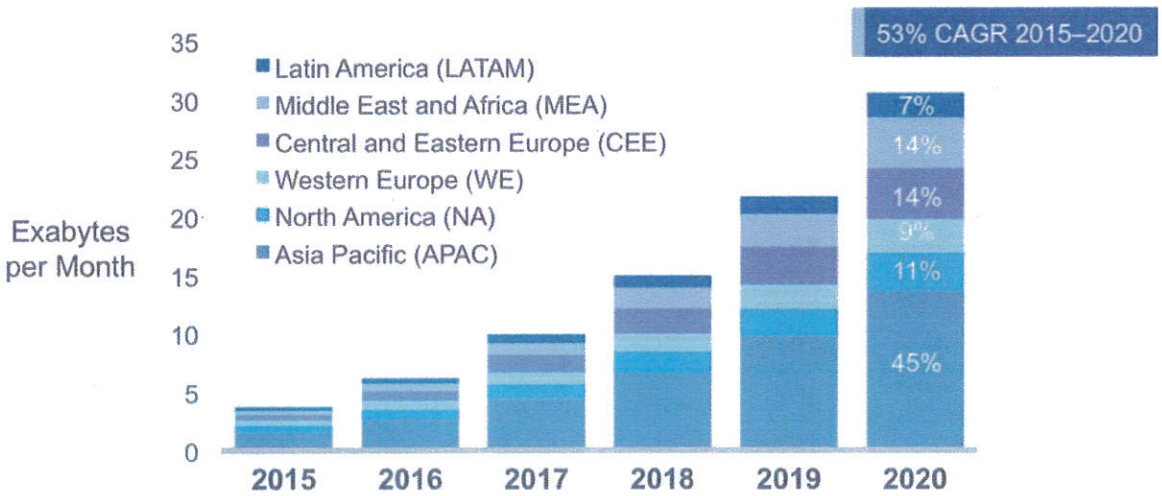
**Figure 3.** Global Mobile Data Traffic Forecast by Region




Source: Cisco VNI Mobile, 2016

## Top Global Mobile Networking Trends

The sections that follow identify 7 major trends contributing to the growth of mobile data traffic.

1. Adapting to Smarter Mobile Devices
2. Defining Cell Network Advances—2G, 3G, and 4G (5G Perspectives)
3. Measuring Mobile IoE Adoption—M2M and Emerging Wearables
4. Tracking Wi-Fi Growth
5. Profiling Mobile Applications Use and Bandwidth Consumption Patterns
6. Comparing Mobile Network Speed Improvements
7. Reviewing Tiered Pricing—Unlimited Data and Shared Plans

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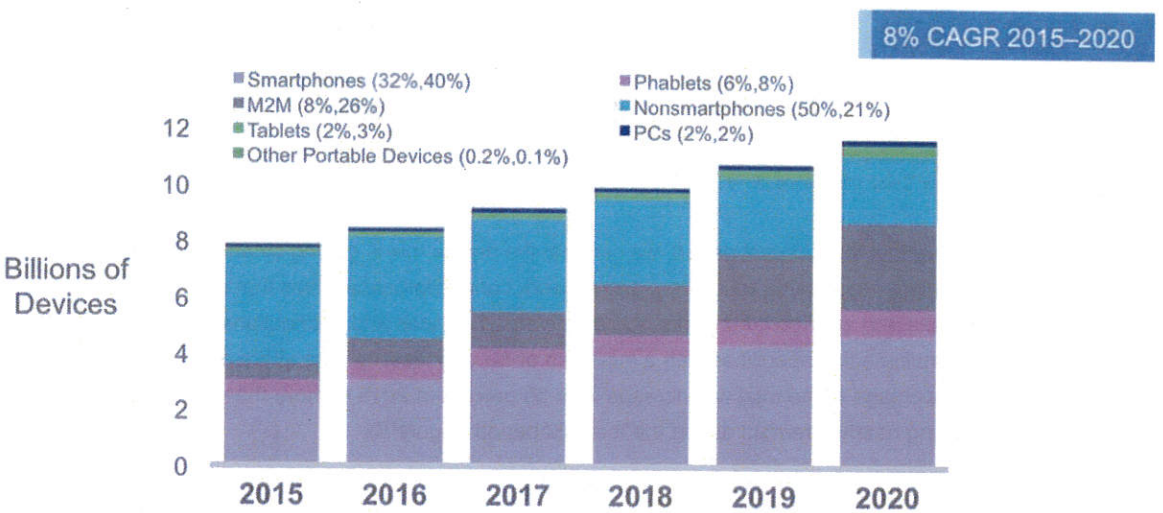
## Trend 1: Adapting to Smarter Mobile Devices

The increasing number of wireless devices that are accessing mobile networks worldwide is one of the primary contributors to global mobile traffic growth. Each year several new devices in different form factors and increased capabilities and intelligence are introduced in the market. This year we added phablets as a separate category to the device categories that we track. More than half a billion (563 million) mobile devices and connections were added in 2015. In 2015, global mobile devices and connections grew to 7.9 billion, up from 7.3 billion in 2014. Globally, mobile devices and connections will grow to 11.6 billion by 2020 at a CAGR of 8 percent (Figure 4). By 2020, there will be 8.2 billion handheld or personal mobile-ready devices and 3.2 billion M2M connections (e.g., GPS systems in cars, asset tracking systems in shipping and manufacturing sectors, or medical applications making patient records and health status more readily available, et al.). Regionally, North America and Western Europe are going to have the fastest growth in mobile devices and connections with 22 percent and 14 percent CAGR from 2015 to 2020, respectively.

**Figure 4.** Global Mobile Devices and Connections Growth




Figures in parentheses refer to 2015, 2020 device share.
Source: Cisco VNI Mobile, 2016

We see a rapid decline in the share of nonsmartphones from 50 percent in 2015 (3.9 billion) to 21 percent by 2020 (2.4 billion). The most noticeable growth is going to occur in M2M connections, followed by tablets. M2M mobile connections will reach more than a quarter (26 percent) of total devices and connections by 2020. The M2M category is going to grow at 38-percent CAGR from 2015 to 2020, and tablets are going to grow at 23-percent CAGR during the same period. Another significant trend is the growth of smartphones (including phablets) from 38-percent share of total devices and connections in 2015 to nearly 50 percent (48 percent) by 2020. Along with the overall growth in the number of mobile devices and connections, there is clearly a visible shift in the device mix. This year we see a reduction in laptops and a further slowdown in the growth of tablets because a new device category, phablets (included in our smartphone category), is gaining broader adoption.

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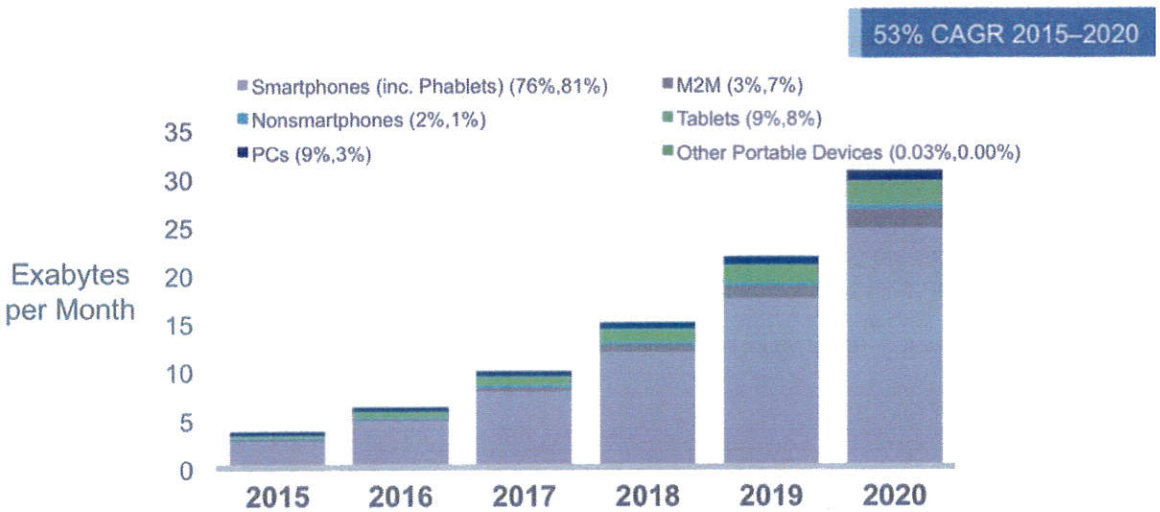
From a traffic perspective, smartphones and phablets will continue to dominate mobile traffic (81 percent) while M2M category will continue to gain share by 2020 (refer to Figure 5).

**Figure 5.** Global Mobile Traffic Growth by Device Type




Figures in parentheses refer to 2015, 2020 device share.
Source: Cisco VNI Mobile, 2016

Throughout the forecast period, we see that the device mix is getting smarter with an increasing number of devices with higher computing resources, and network connection capabilities that create a growing demand for more capable and intelligent networks. We define smart devices and connections as those having advanced computing and multimedia capabilities with a minimum of 3G connectivity. The share of smart devices and connections as a percentage of the total will increase from 36 percent in 2015 to more than two-thirds, at 67 percent, by 2020, growing nearly threefold during the forecast period (Figure 6).

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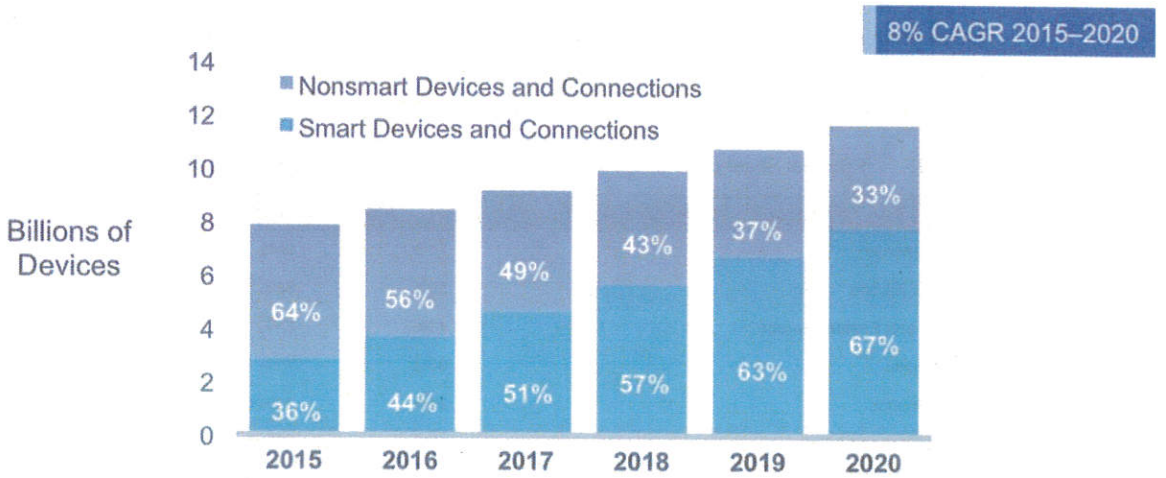
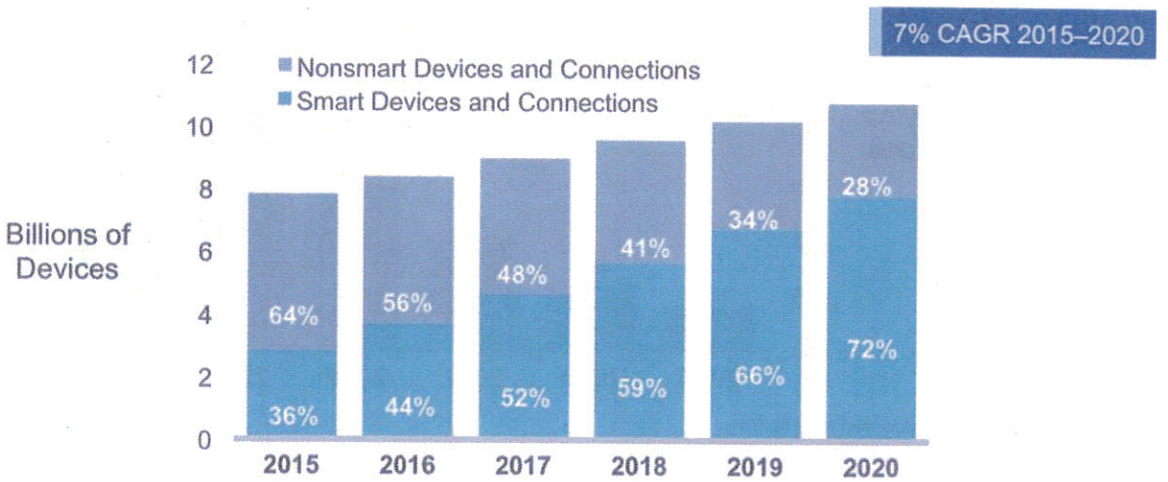
**Figure 6.** Global Growth of Smart Mobile Devices and Connections




Percentages refer to device and connections share.
Source: Cisco VNI Mobile, 2016

Low-Power Wide-Area (LPWA) connections are included in our analysis. This wireless network connectivity is meant specifically for M2M modules that require low bandwidth and wide geographic coverage. Because these modules have very low bandwidth requirements and tolerate high latencies, we do not include them in the smart devices and connections category. For some regions, such as North America where the growth of LPWA is expected to be high, their inclusion in the mix would skew the percentage for smart devices and connections, so for regional comparison we have taken them out of the mix. Figure 7 provides a comparable global smart-to-nonsmart devices and connections split, excluding LPWA.

**Figure 7.** Global Growth of Smart Mobile Devices and Connections (Excluding LPWA)




Percentages refer to device and connections share.
Source: Cisco VNI Mobile, 2016

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When we exclude LPWA M2M connections from the mix, the global percentage share of smart devices and connections is higher, at 72 percent by 2020.

Although this device mix conversion is a global phenomenon, some regions are ahead. By the end of 2020, North America will have 95 percent of its installed base converted to smart devices and connections, followed by Western Europe with 86 percent smart devices and connections (Table 1).

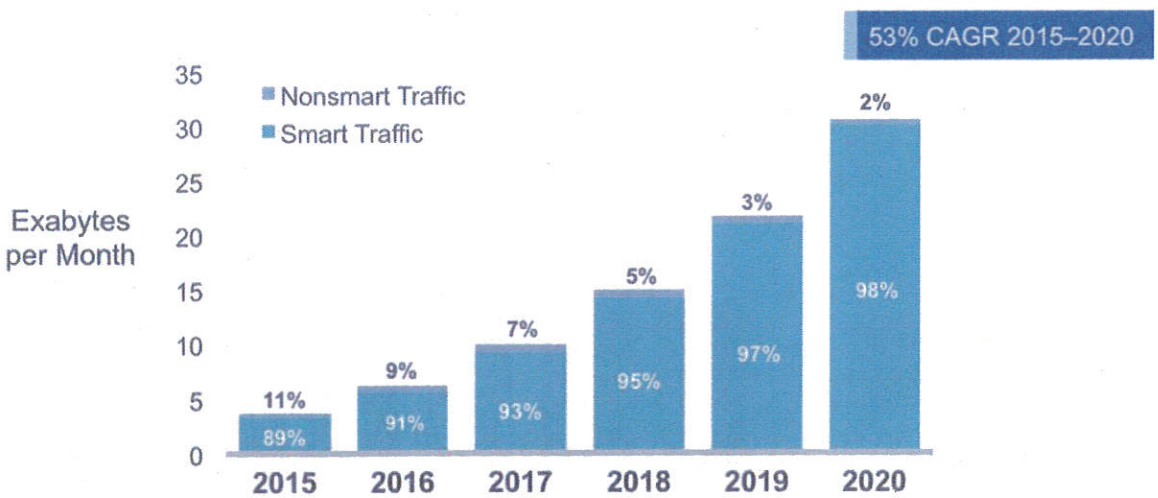
**Table 1.** Regional Share of Smart Devices and Connections (Percent of the Regional Total)

| Region | 2015 | 2020 |
|---|---|---|
| North America | 74% | 95% |
| Western Europe | 59% | 86% |
| Central and Eastern Europe | 43% | 84% |
| Asia Pacific | 35% | 72% |
| Latin America | 34% | 70% |
| Middle East and Africa | 12% | 52% |

Source: Cisco VNI Mobile, 2016

Figure 8 shows the impact of the growth of mobile smart devices and connections on global traffic. Globally, smart traffic is going to grow from 89 percent of the total global mobile traffic to 98 percent by 2020. This percentage is significantly higher than the ratio of smart devices and connections (67 percent by 2020), because on average a smart device generates much higher traffic than a nonsmart device. Globally, in 2015, a smart device generated 14 times more traffic than a nonsmart device, and by 2020 a smart device will generate nearly 23 times more traffic.

**Figure 8.** Effect of Smart Mobile Devices and Connections Growth on Traffic




Percentages refer to traffic share.
Source: Cisco VNI Mobile, 2016

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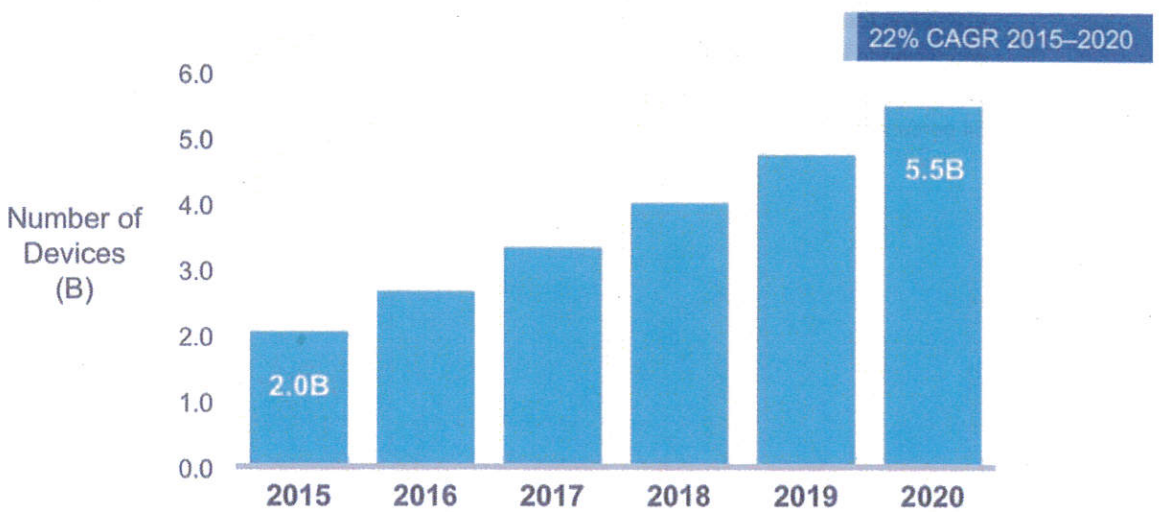
## IPv6

With the exponential proliferation of multiple smart devices becoming a reality, the need for each device having its own specific, unique address that it uses to communicate with other devices and the Internet and to define its location is becoming a necessity. IPv4 addresses, the current protocol devices use to communicate on the Internet, have exhausted the world over, and a very small number of IPv4 addresses remain just with the African Internet Registry. In addition to solving the IPv4 address depletion problem by providing more than enough addresses, the transition to the newer, better IPv6 protocol offers additional advantages where every device will have a globally routable public IP address on the Internet. Hence there is not just a need, but far more a necessity, to move to IPv6 with its 340 undecillion addresses that will make smart devices and the Internet of Everything (IoE) a reality.

The transition to IPv6, which helps connect and manage the proliferation of newer-generation devices that are contributing to mobile network usage and data traffic growth, is well underway. Continuing the Cisco VNI focus on IPv6, the Cisco VNI 2015–2020 Mobile Data Traffic Forecast provides an update on IPv6-capable mobile devices and connections and the potential for IPv6 mobile data traffic.

Focusing on the high-growth mobile-device segments of smartphones and tablets, the forecast projects that globally 92 percent of smartphones and tablets (5.5 billion) will be IPv6-capable by 2020 (up from 65 percent, or 2.0 billion smartphones and tablets in 2015; refer to Figure 9). This estimation is based on OS support of IPv6 (primarily Android and iOS) and the accelerated move to higher-speed mobile networks (3.5G or higher) capable of enabling IPv6. (This forecast is intended as a projection of the number of IPv6-capable mobile devices, not mobile devices with an IPv6 connection actively configured by the Internet service provider [ISP].)

**Figure 9.** Global IPv6-Capable Smartphones and Tablets




Source: Cisco VNI Mobile, 2016

For all mobile devices and connections, the forecasts project that, globally, 66 percent (7.6 billion) will be IPv6-capable by 2020, up from 34 percent (2.7 billion) in 2015 (refer to Figure 10). M2M emerges as a key segment of growth for IPv6-capable devices, reaching 1.5 billion by 2020, an 11-fold increase during the forecast period. With its capability to vastly scale IP addresses and manage complex networks, IPv6 is critical in supporting the IoE of today and in the future. (Refer to Table 8 in Appendix C for more device detail.)

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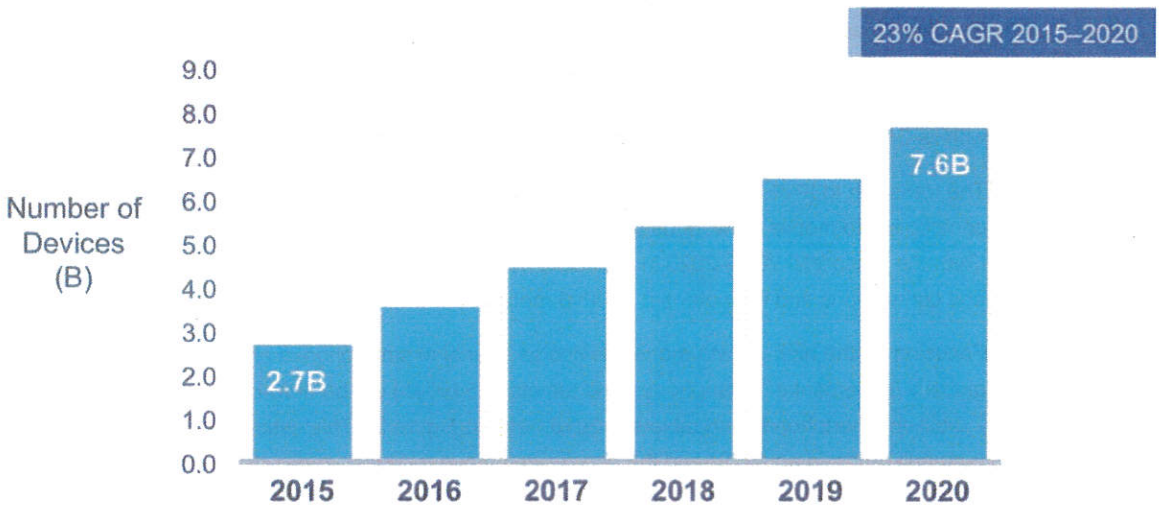
Regionally, Asia Pacific will lead throughout the forecast period with the highest number of IPv6-capable devices and connections, reaching 3.8 billion by 2020. Middle East and Africa will have the highest growth rates during the forecast period, at 35-percent CAGR. (Refer to Table 9 in Appendix C for more regional detail.)

**Figure 10.** Global IPv6-Capable Mobile Devices




Source: Cisco VNI Mobile, 2016

Considering the significant potential for mobile-device IPv6 connectivity, the Cisco VNI Mobile Forecast provides estimation for IPv6 network traffic based on a graduated percentage of IPv6-capable devices becoming actively connected to an IPv6 network. Looking to 2020, if approximately 60 percent of IPv6-capable devices are connected to an IPv6 network, the forecast estimates that, globally, IPv6 traffic will amount to 16.6 exabytes per month or 54 percent of total mobile data traffic, a 34-fold growth from 2015 to 2020 (Figure 11).

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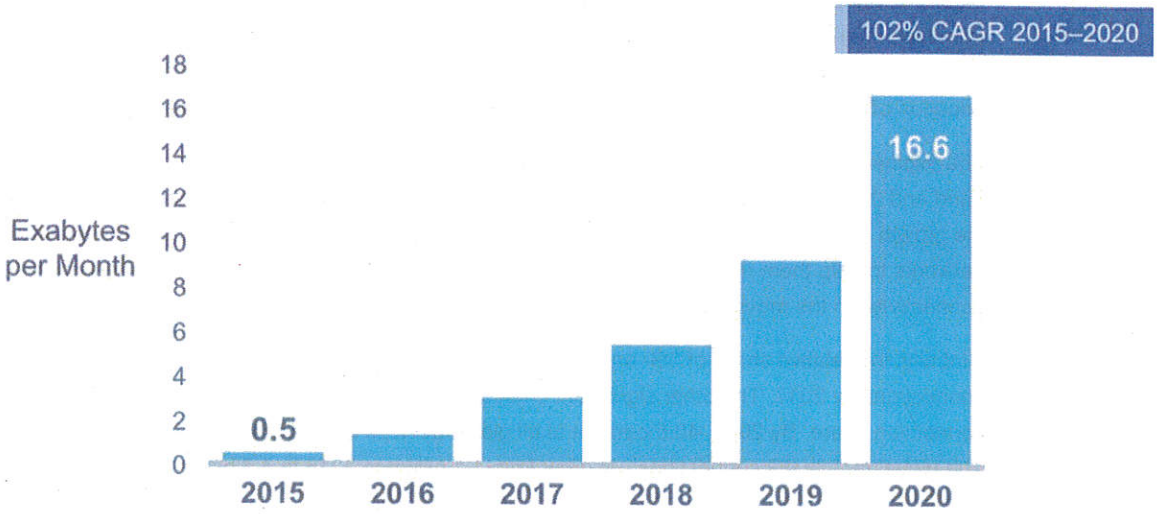
**Figure 11.** Projected IPv6 Mobile Data Traffic Forecast 2015–2020




Source: Cisco VNI Mobile, 2016

For additional views on the latest IPv6 deployment trends, visit the Cisco 6Lab site. The Cisco 6Lab analysis includes current statistics by country on IPv6 prefix deployment and IPv6 web-content availability, and estimations of IPv6 users. With the convergence of IPv6 device capability, content availability, and significant network deployment, the discussion of IPv6 has shifted focus from "what if" and "how soon will" to the "realization of the potential" that IPv6 has for service providers and end users alike.

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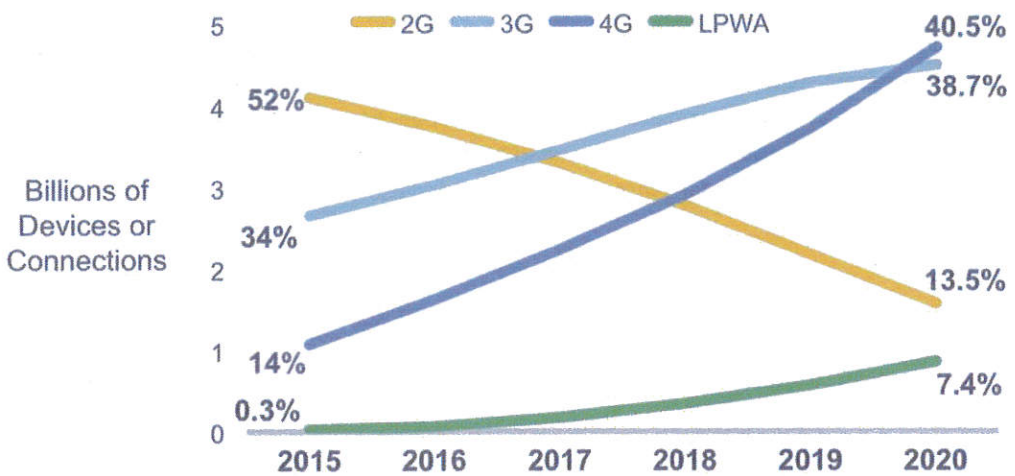
## Trend 2: Defining Cell Network Advances—2G, 3G, and 4G (5G Perspectives)

Mobile devices and connections are not only getting smarter in their computing capabilities but are also evolving from lower-generation network connectivity (2G) to higher-generation network connectivity (3G, 3.5G, and 4G or LTE). Combining device capabilities with faster, higher bandwidth and more intelligent networks leads to wide adoption of advanced multimedia applications that contribute to increased mobile and Wi-Fi traffic.

The explosion of mobile applications and phenomenal adoption of mobile connectivity by end users on the one hand and the need for optimized bandwidth management and network monetization on the other hand is fueling the growth of global 4G deployments and adoption. Service providers around the world are busy rolling out 4G networks to help them meet the growing end-user demand for more bandwidth, higher security, and faster connectivity on the move (Appendix B).

Globally, the relative share of 3G- and 3.5G-capable devices and connections will surpass 2G-capable devices and connections by 2017. The other significant crossover will occur in 2020, when 4G will surpass all other types of connection share. By 2020, 40.5 percent of all global devices and connections will be 4G-capable (Figure 12). The global mobile 4G connections will grow from 1.1 billion in 2015 to 4.7 billion by 2020 at a CAGR of 34 percent.

**Figure 12.** Global Mobile Devices and Connections by 2G, 3G, and 4G




Percentages refer to device and connections share.
Source: Cisco VNI Mobile, 2016

We are also including Low-Power Wide-Area (LPWA) connections in our analysis. This type of ultranarrowband wireless network connectivity is meant specifically for M2M modules that require low bandwidth and wide geographic coverage. It provides high coverage with low power consumption, module, and connectivity costs, thereby creating new M2M use cases for mobile network operators (MNOs) that cellular networks alone could not have addressed. Examples include utility meters in residential basements, gas or water meters that do not have power connection, street lights, and pet or personal asset trackers. The share of LPWA connections (all M2M) will grow from less than 1percent in 2015 to 7.4 percent by 2020, from 21.6 million in 2015 to 859 million by 2020.

The network evolution toward more advanced networks is happening both across the end-user device segment and within the M2M connections category, as shown in Figure 13 and Figure 14.

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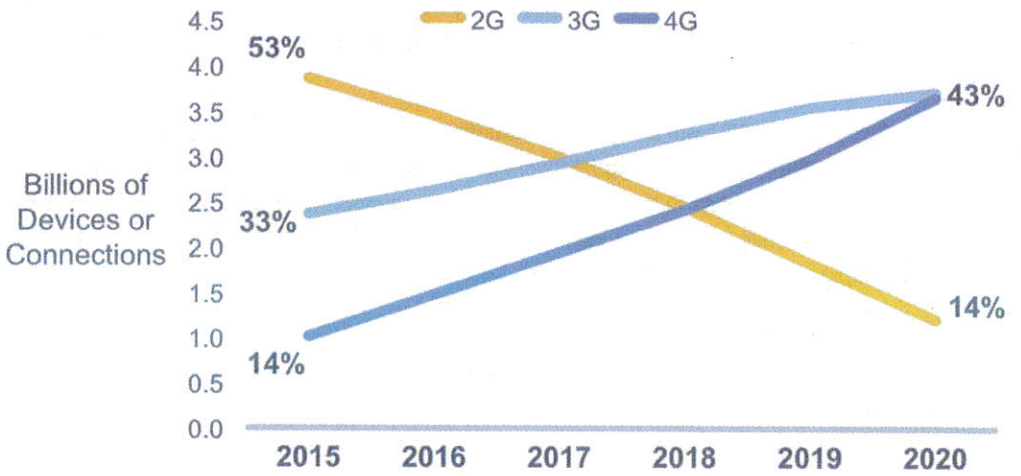
When the M2M category is excluded, the 4G growth becomes more apparent, with 43-percent device share by 2020.

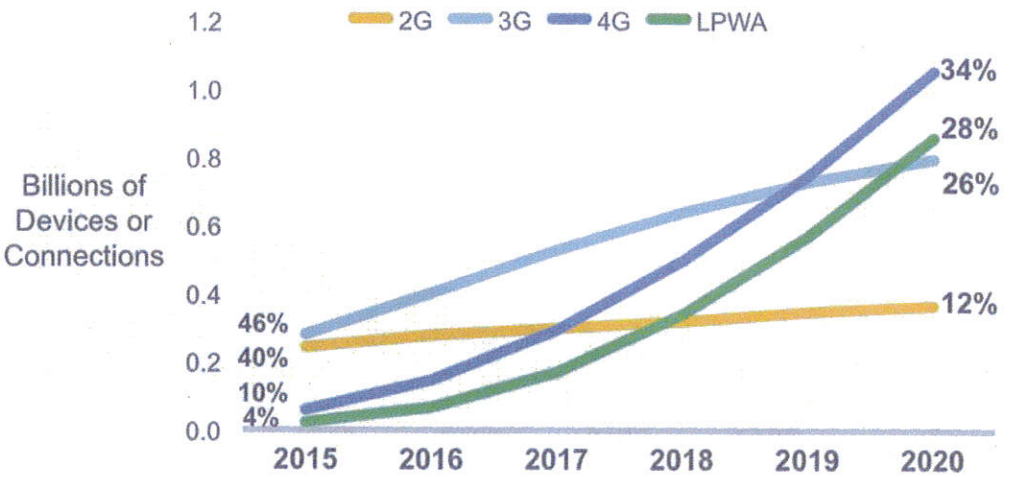
**Figure 13.** Global Mobile Devices (Excluding M2M) by 2G, 3G, and 4G




Percentages refer to device share.
Source: Cisco VNI Mobile, 2016

M2M capabilities, similar to end-user mobile devices, are migrating toward more advanced networks (Figure 14). On one hand, we see 4G connections share growing to 34 percent by 2020, up from 10 percent in 2015, and we also see a big growth in LPWA from 4 percent in 2015 to 28 percent by 2020. Even though LPWA might not be bandwidth-heavy and can tolerate high latency, it is an overlay strategy for MNOs to expand their M2M reach.

**Figure 14.** Global Mobile M2M Connections by 2G, 3G, and 4G




Percentages refer to M2M connections share.
Source: Cisco VNI Mobile, 2016

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The transition from 2G to 3G or 4G deployment is a global phenomenon. In fact, by 2020, 59 percent of the mobile devices and connections in North America will have 4G capability, surpassing 3G-capable devices and connections. Western Europe (53 percent) will have the second-highest ratio of 4G connections by 2020 (Appendix B). At the country level, Australia will have 63 percent of its total connections on 4G by 2020, with Japan having 60 percent of all its connections on 4G by 2020. China, followed by the United States, will lead the world in terms of its share of the total global 4G connections with 28 and 12 percent, respectively, of total global 4G connections by 2020.

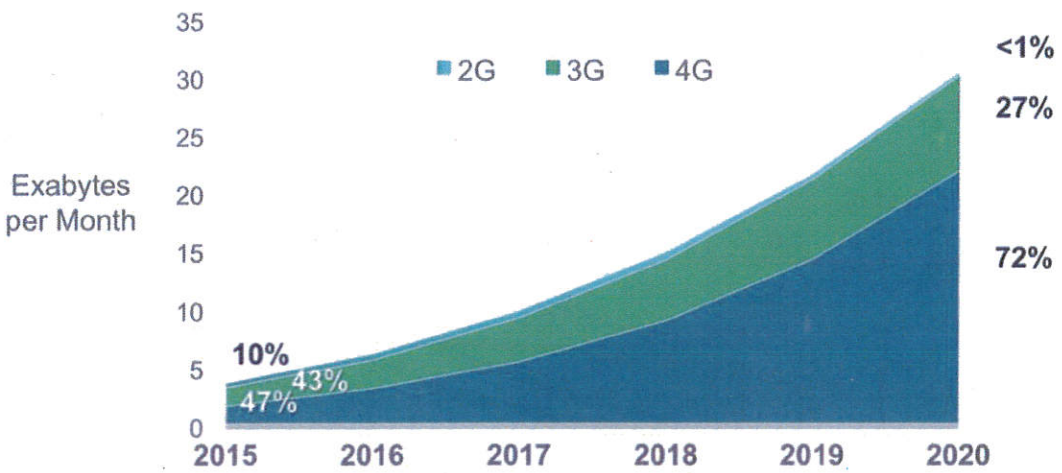
Although the growth in 4G, with its higher bandwidth, lower latency, and increased security, will help regions bridge the gap between their mobile and fixed network performance, deployment of LPWA networks will help enhance the reach of mobile providers in the M2M segment. This situation will lead to even higher adoption of mobile technologies by end users, making access to any content on any device from anywhere and the Internet of Everything (IoE) more sustainable.

## Traffic Impact of 4G

In 2015, 4G traffic surpassed 3G traffic and now represents the largest share of mobile data traffic by network type. 4G accounted for 47 percent of traffic in 2015 (compared to 43 percent for 3G) and will continue to grow faster than other networks to represent 72 percent of all mobile data traffic by 2020 (Figure 15).

Currently, a 4G connection generates six times more traffic than a non-4G connection. There are two reasons for the higher usage per device on 4G. The first is that many 4G connections today are for high-end devices, which have a higher average usage. The second is that higher speeds encourage the adoption and usage of high-bandwidth applications, such that a smartphone on a 4G network is likely to generate significantly more traffic than the same model smartphone on a 3G or 3.5G network. As smartphones come to represent a larger share of 4G connections, the gap between the average traffic of 4G devices and non-4G devices will narrow, but by 2020 a 4G connection will still generate three times more traffic than a non-4G connection.

**Figure 15.** Global Mobile Traffic by Connection Type




Source: Cisco VNI Mobile, 2016

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## 5G Perspectives

5G is the next phase of mobile technology. 5G's primary improvements over 4G include high bandwidth (greater than 1 Gbps), broader coverage, and ultra-low latency. Whereas 4G has been driven by device proliferation and dynamic information access, 5G will be driven largely by IoE applications. With 5G, resources (channels) will be allocated based on awareness of content, user, and location. This technology is expected to solve frequency licensing and spectrum management problems. While there are field trials are being carried out by some operators, significant 5G deployments are not expected until 2020 and beyond. There are several gating factors such as approval of regulatory standards, spectrum availability and auctioning and return-on-investment (ROI) strategies to justify the investment associated with new infrastructure transitions and deployments.

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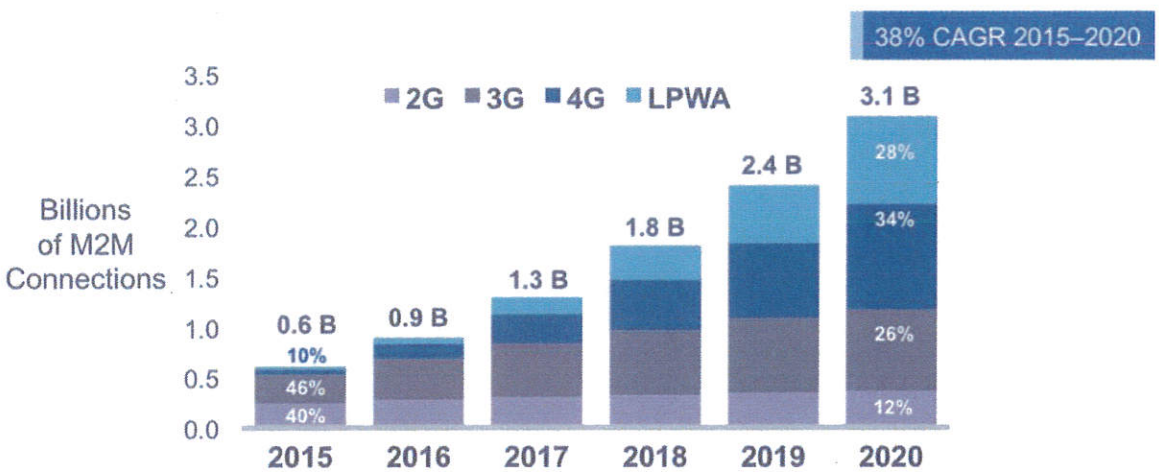
## Trend 3: Measuring Mobile IoE Adoption—M2M and Emerging Wearables

The phenomenal growth in smarter end-user devices and M2M connections is a clear indicator of the growth of IoE, which is bringing together people, processes, data, and things to make networked connections more relevant and valuable. This section focuses on the continued growth of M2M connections and the emerging trend of wearable devices. Both M2M and wearable devices are making computing and connectivity very pervasive in our day-to-day lives.

M2M connections—such as home and office security and automation, smart metering and utilities, maintenance, building automation, automotive, healthcare and consumer electronics, and more—are being used across a broad spectrum of industries, as well as in the consumer segment. As real-time information monitoring helps companies deploy new video-based security systems, while also helping hospitals and healthcare professionals remotely monitor the progress of their patients, bandwidth-intensive M2M connections are becoming more prevalent. Globally, M2M connections will grow from 604 million in 2015 to 3.1 billion by 2020, a 38-percent CAGR—a fivefold growth. As discussed in the previous trend, M2M capabilities similar to end-user mobile devices are experiencing an evolution from 2G to 3G and 4G technologies (Figure 16).

**Figure 16.** Global Machine-to-Machine Growth and Migration from 2G to 3G and 4G




In 2015, 4G accounts for 10% and LPWA accounts for 4% of global mobile M2M connections.
Source: Cisco VNI Mobile, 2016

An important factor contributing to the growing adoption of IoE is the emergence of wearable devices, a category with high growth potential. Wearable devices, as the name suggests, are devices that can be worn on a person and have the capability to connect and communicate to the network either directly through embedded cellular connectivity or through another device (primarily a smartphone) using Wi-Fi, Bluetooth, or another technology. These devices come in various shapes and forms, ranging from smart watches, smart glasses, heads-up displays (HUDs), health and fitness trackers, health monitors, wearable scanners and navigation devices, smart clothing, etc. The growth in these devices has been fueled by enhancements in technology that have supported compression of computing and other electronics (making the devices light enough to be worn). These advances are being combined with fashion to match personal styles, especially in the consumer electronics segment, along with network improvements and the growth of applications, such as location-based services and augmented reality. Although there have been vast technological improvements to make wearables possible as a significant device

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category, wide-scale availability of embedded cellular connectivity still has some barriers to overcome for some applications—such as technology limitations, regulatory constraints, and health concerns.

By 2020, we estimate that there will be 601 million wearable devices globally, growing fivefold from 97 million in 2015 at a CAGR of 44 percent (Figure 17). As mentioned earlier, there will be limited embedded cellular connectivity in wearables through the forecast period. Only 7 percent will have embedded cellular connectivity by 2020, up from 3 percent in 2015. Currently, we do not include wearables as a separate device and connections category because it is at a nascent stage, so there is a noted overlap with the M2M category. We will continue to monitor this segment, and as the category grows and becomes more significant, we may break it out in future forecast iterations.

**Figure 17.** Global Connected Wearable Devices

Source: Cisco VNI Mobile, 2016

Regionally, Asia Pacific will have the largest regional share of wearables, with 32-percent share in 2020 up from 31-percent share in 2015 (Appendix B). Other regions with significant share include North America with 40-percent share in 2015, declining to 30 percent by 2020.

The wearables category will have a tangible impact on mobile traffic, because even without embedded cellular connectivity wearables can connect to mobile networks through smartphones. Globally, traffic from wearables will account for 1.3 percent of smartphone traffic by 2020 at 335 petabytes per month (Figure 18). Globally, traffic from wearable devices will grow 23-fold from 2015 to 2020 (CAGR 87 percent). Globally, traffic from wearable devices will account for 1.1 percent of total mobile data traffic by 2020, compared to 0.4 percent at the end of 2015.

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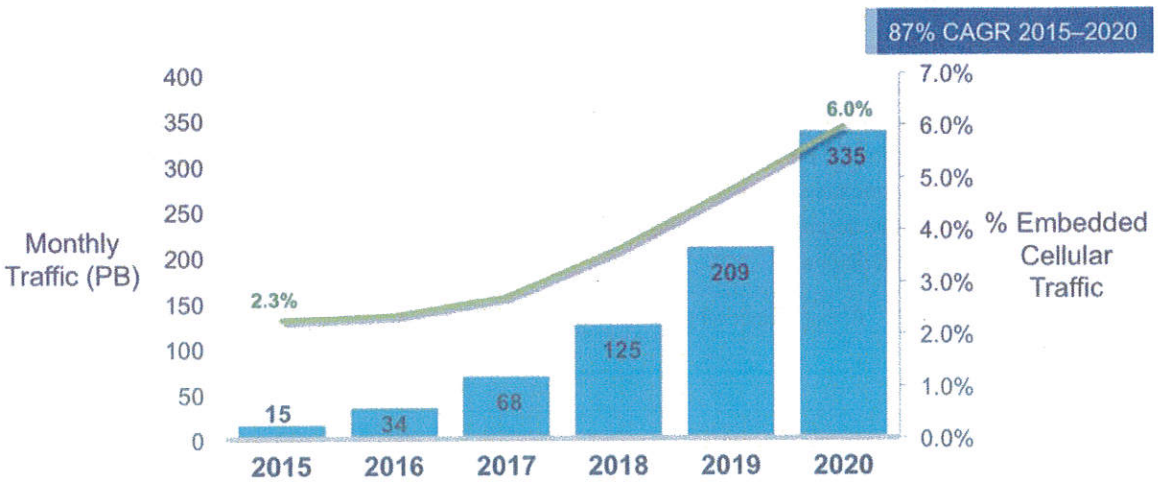
**Figure 18.** Global Wearable Devices Traffic Impact




Source: Cisco VNI Mobile, 2016

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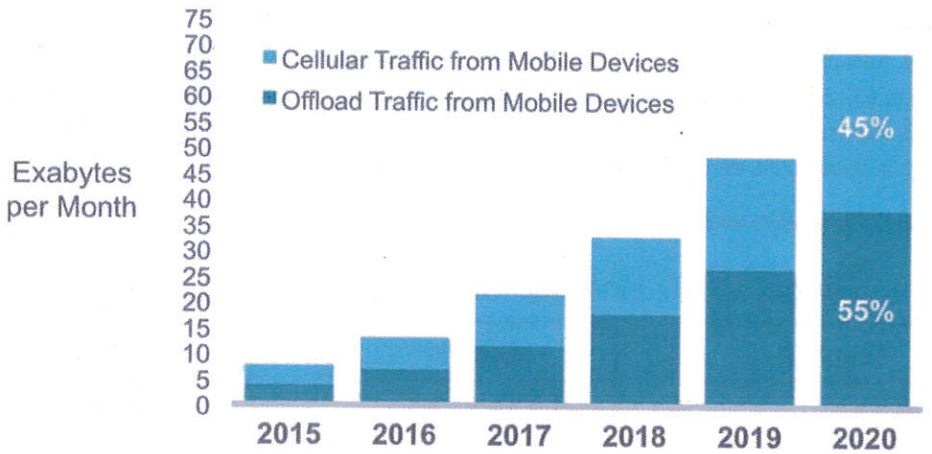
## Trend 4: Tracking Wi-Fi Growth

### Offload

Much mobile data activity takes place within users' homes. For users with fixed broadband and Wi-Fi access points at home, or for users served by operator-owned femtocells and picocells, a sizable proportion of traffic generated by mobile and portable devices is offloaded from the mobile network onto the fixed network. For the purposes of this study, offload pertains to traffic from dual-mode devices (i.e., supports cellular and Wi-Fi connectivity, excluding laptops) over Wi-Fi and small-cell networks. Offloading occurs at the user or device level when one switches from a cellular connection to Wi-Fi or small-cell access. Our mobile offload projections include traffic from both public hotspots and residential Wi-Fi networks.

As a percentage of total mobile data traffic from all mobile-connected devices, mobile offload increases from 51 percent (3.9 exabytes/month) in 2015 to 55 percent (38.1 exabytes/month) by 2020 (Figure 19). Without offload, global mobile data traffic would grow at a CAGR of 62 percent instead of 57 percent. Offload volume is determined by smartphone penetration, dual-mode share of handsets, percentage of home-based mobile Internet use, and percentage of dual-mode smartphone owners with Wi-Fi fixed Internet access at home.

**Figure 19.** By 2020, 55 Percent of Total Mobile Data Traffic Will Be Offloaded




Offload pertains to traffic from dual-mode devices (excluding laptops) over Wi-Fi or small-cell networks.
Source: Cisco VNI Mobile, 2016

The amount of traffic offloaded from smartphones will be 56 percent by 2020, and the amount of traffic offloaded from tablets will be 71 percent.

Some have speculated that Wi-Fi offload will be less relevant after 4G networks are in place because of the faster speeds and more abundant bandwidth. However, 4G networks have attracted high-usage devices such as advanced smartphones and tablets, and it appears that 4G plans are subject to data caps similar to 3G plans. For these reasons, Wi-Fi offload is higher on 4G networks than on lower-speed networks, now and in the future according to our projections. The amount of traffic offloaded from 4G was 56 percent at the end of 2015, and it will be 58 percent by 2020 (Figure 20). The amount of traffic offloaded from 3G will be 48 percent by 2020, and the amount of traffic offloaded from 2G will be 36 percent.

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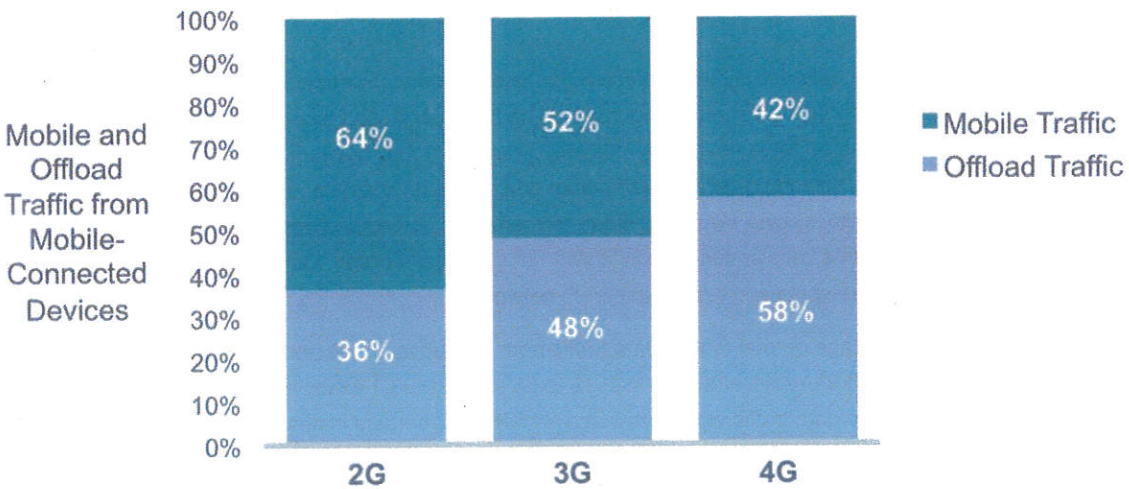
**Figure 20.** Mobile Data Traffic and Offload Traffic, 2019

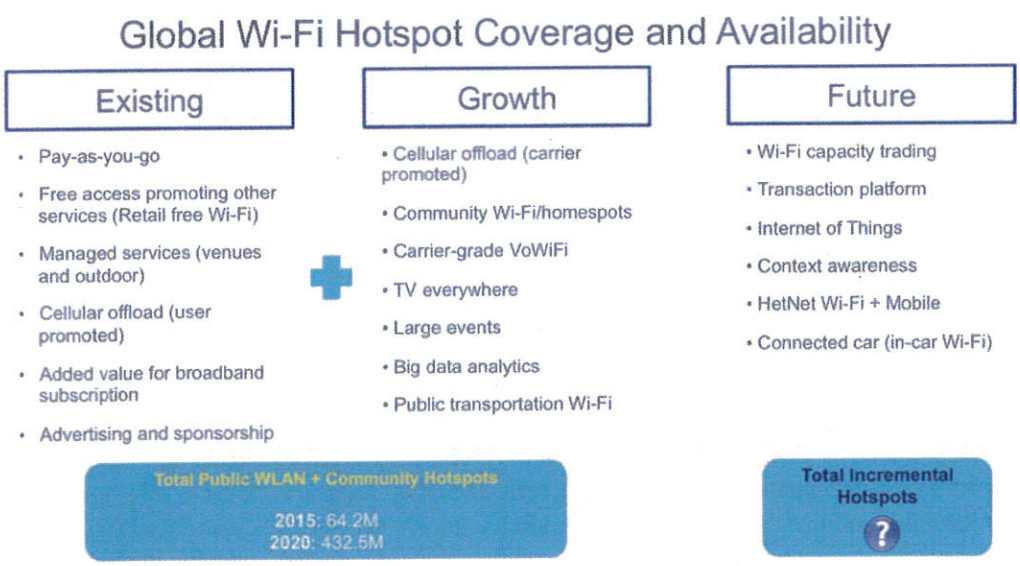



Source: Cisco VNI Mobile, 2016

## Growth of Wi-Fi Hotspots

Globally, total public W-Fi hotspots (including homespots) will grow sevenfold from 2015 to 2020, from 64.2 million in 2015 to 432.5 million by 2020 (Figure 21). Total Wi-Fi homespots will grow 56.6 million in 2015 to 423.2 million by 2020. Homespots or community hotspots are a significant part of the public Wi-Fi strategy. The public Wi-Fi hotspots include public Wi-Fi commercial hotspots and homespots.

**Figure 21.** Global Wi-Fi Hotspot Strategy and 2015–2020 Forecast




Source: Maravedis, Cisco VNI Mobile, 2016

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Commercial hotspots include fixed and MNO hotspots that are purchased or installed for a monthly fee or commission. Commercial hotspots can be set up to offer both fee-based and free Internet Wi-Fi access. Hotspots are installed to offer public Wi-Fi at cafés and restaurants, retail chains, hotels, airports, planes, and trains for customers and guests. Cafés, retail shops, public venues, and offices usually provide a free Wi-Fi Service Set Identifier (SSID) for their guests and visitors. Commercial hotspots are a smaller subset of the overall public Wi-Fi hotspot forecast and will grow from 7.5M in 2015 to 9.3M by 2020.

Homespots or community hotspots have emerged as a potentially significant element of the public Wi-Fi landscape. In this model, subscribers allow part of the capacity of their residential gateway to be open to casual use. Homespots have dual SSIDs and operators download software to a subscriber's home gateway, allowing outside users to use one of the SSIDs like a hotspot. This model is used to facilitate guest Wi-Fi and mobile offload, as well as other emerging models of community use of Wi-Fi (Figure 22).

**Figure 22.** Global Public Wi-Fi Hotspots: Asia Pacific Leads with 37 Percent Hotspots Worldwide by 2020

* Middle East and Africa represents 1 percent of global public Wi-Fi hotspots by 2020.
Source: Maravedis, Cisco VNI Mobile, 2016

## VoWiFi

Several global mobile carriers have recently launched or announced a launch of voice-over-Wi-Fi (VoWiFi) service. Voice over Wi-Fi is not a new concept, but the earlier solutions had several limitations that affected the adoption and ultimately the end-user experience. Since then several enhancements in VoWiFi that now make it a carrier-grade user experience have been made. This service can now be offered independent of the hardware capabilities of the device as long as the device has Wi-Fi enabled on it, even nonsubscriber identity module (SIM) devices such as Wi-Fi-only tablets can have this service turned on.

VoWiFi not only can extend the reach of MNOs by enabling them to deliver a cost-effective, scalable, and quality solution for delivering in building coverage, where cellular coverage might be sketchy, but also can help them battle the erosion of revenue from over-the-top providers' (OTTPs') voice-over-IP (VoIP) offers. VoWiFi is also being positioned as a complementary service to voice over LTE (VoLTE); they are both IP Multimedia System (IMS)-based and can offer a rich set of value-added services. In fact, VoWiFi can help solve the challenge of maintaining accessibility and quality of service for mobile users' indoor use and also help reduce the roaming charges on the bill.

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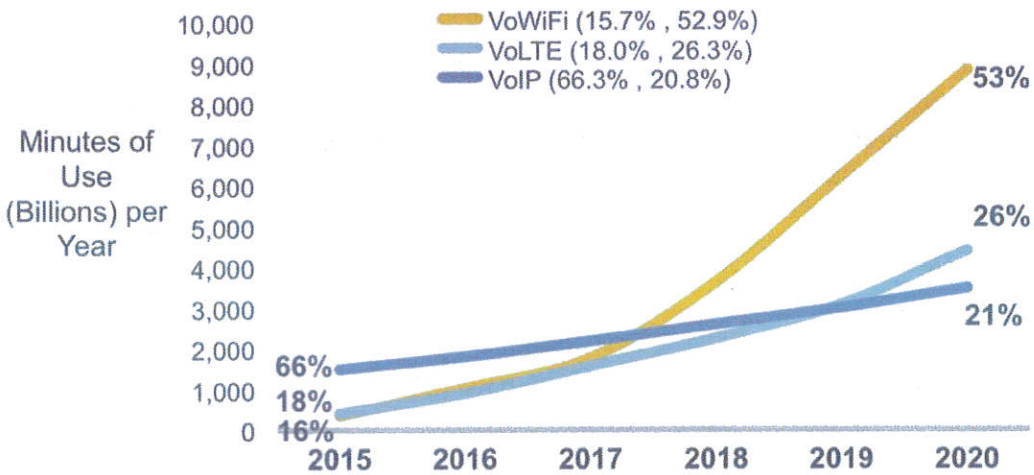
Figure 23 shows that VoWiFi is going to surpass VoLTE by 2016 and VoIP by 2018 in terms of minutes of use. By 2020, VoWiFi will have 53 percent of mobile IP voice, up from 16 percent in 2015. VoLTE is expected to surpass VoIP minutes of use by 2019.

**Figure 23.** Mobile Voice Minutes of Use—VoWiFi, VoLTE, and VoIP



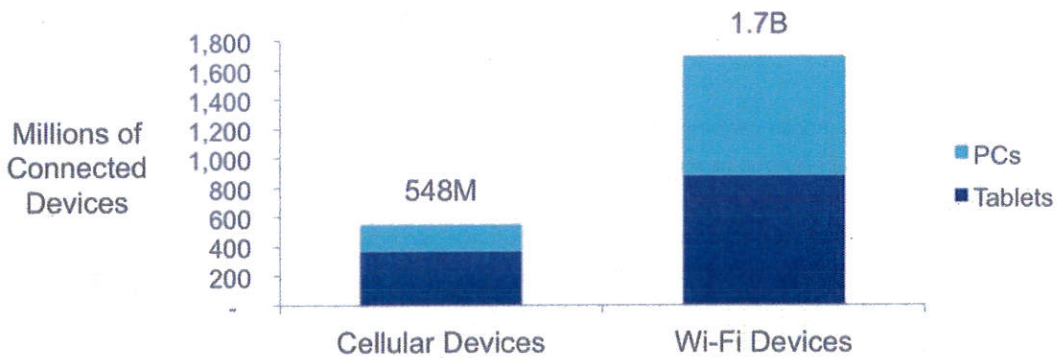

Figures in parentheses refer to 2015, 2020 minutes of use share.

***Note:*** VoLTE and VoIP are mobile-specific; VoWiFi could be from any Wi-Fi connection. Circuit-switched mobile voice is excluded from the mix.

Source: Cisco VNI Mobile, 2016

Because VoWiFi is a native application, it has its advantages over VoIP in terms of faster and higher-quality performance, in addition to providing keypad and contact-list integration. VoWiFi can also be delivered over non-SIM devices, and as such the coverage and usage would be much larger relative to VoLTE. Figure 24 shows how the number of tablets and PCs connected on Wi-Fi will far exceed those with cellular connectivity.

**Figure 24.** By 2020, Wi-Fi Will Connect More Than Threefold Cellular Connected Tablets and PCs




Source: Cisco VNI Mobile, 2016

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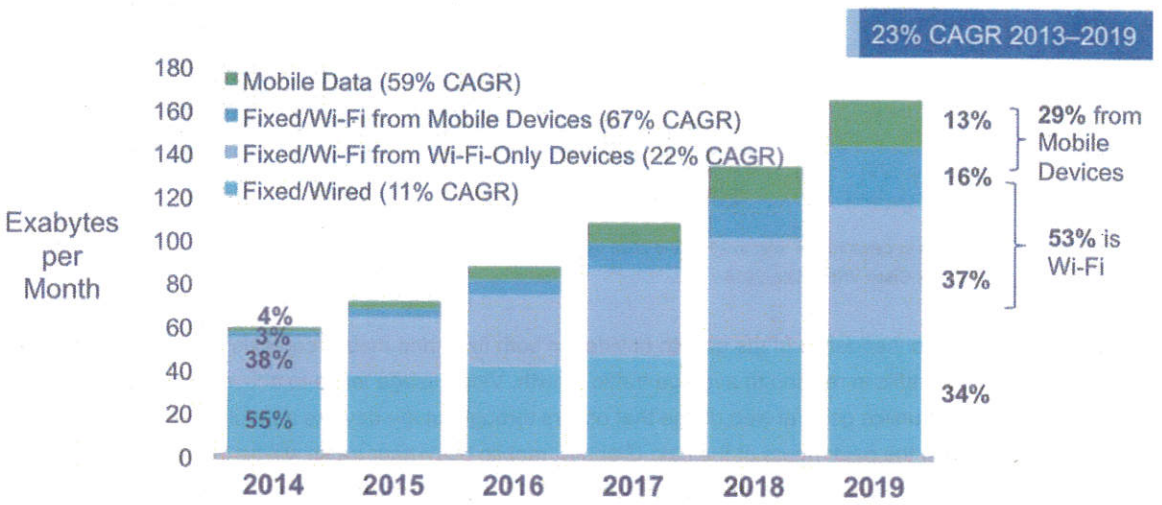
Wi-Fi access has had widespread acceptance by MNOs globally, and it has evolved as a complementary network for traffic offload purposes—offloading from expensive cellular networks on to lower-cost-per-bit Wi-Fi networks. If we draw a parallel from data to voice, we can foresee a similar evolution where VoWiFi is evolving as a supplement to cellular voice, extending the coverage of cellular networks through Wi-Fi for voice within the buildings and other areas that have a wider and more optimum access to Wi-Fi hotspots.

## Overall Wi-Fi Traffic Growth

A broader view of Wi-Fi traffic (inclusive of traffic from Wi-Fi-only devices) shows that Wi-Fi and mobile are both growing faster than fixed traffic (traffic from devices connected to the network through Ethernet). Fixed traffic will fall from 55 percent of total IP traffic in 2014 to 34 percent by 2019. Mobile and offload from mobile devices together will account for almost 30 percent of total IP traffic by 2019, a testament to the significant growth and impact of mobile devices and lifestyles on overall traffic. Wi-Fi traffic from both mobile devices and Wi-Fi-only devices together will account for more than half (53 percent) of total IP traffic by 2019, up from 41 percent in 2014 (Figure 25).

(Note that this forecast extends only to 2019 because the fixed forecast has not yet been extended to include 2020.)

**Figure 25.** IP Traffic by Access Technology




Source: Cisco VNI Mobile, 2016

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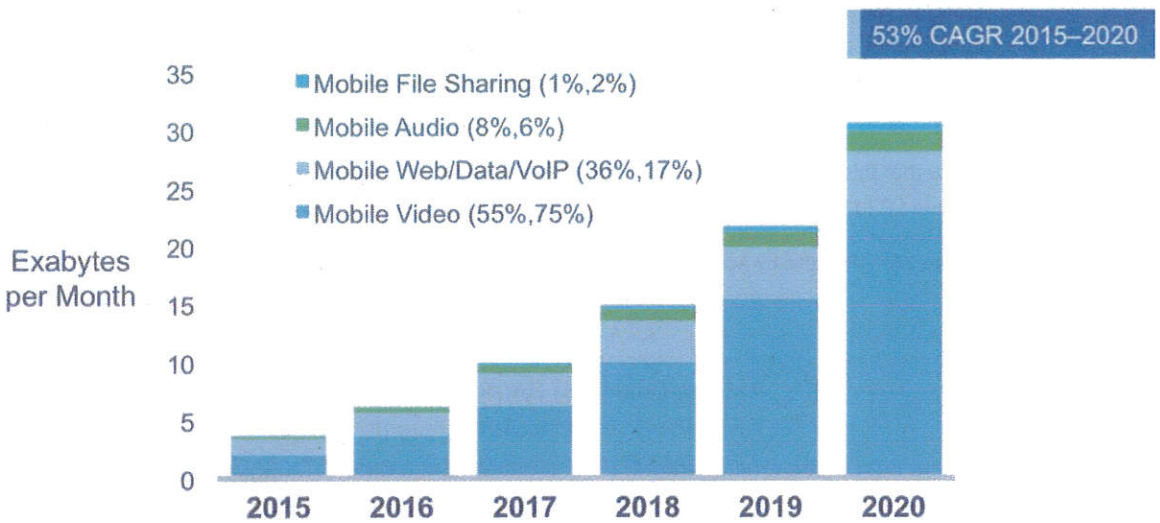
## Trend 5: Profiling Mobile Applications Use and Bandwidth Consumption Patterns

Because mobile video content has much higher bit rates than other mobile content types, mobile video will generate much of the mobile traffic growth through 2020. Mobile video will grow at a CAGR of 62 percent between 2015 and 2020, higher than the overall average mobile traffic CAGR of 53 percent. Of the 30.6 exabytes per month crossing the mobile network by 2020, 23.0 exabytes will be due to video (Figure 26). Mobile video represented more than half of global mobile data traffic beginning in 2012, indicating that it is already affecting traffic today, not just in the future.

**Figure 26.** Mobile Video Will Generate Three-Quarters of Mobile Data Traffic by 2020




Figures in parentheses refer to 2015 and 2020 traffic share.
Source: Cisco VNI Mobile, 2016

One consequence of the growth of video in both fixed and mobile contexts is the resulting acceleration of busy-hour traffic in relation to average traffic growth. Video usage tends to occur during evening hours and has a "prime time," unlike general web usage that occurs throughout the day. As a result, more video usage means more traffic during the peak hours of the day. Globally, mobile busy-hour traffic will be 88 percent higher than average-hour traffic by 2020, compared to 66 percent in 2015. Peak traffic will grow at a CAGR of 56 percent between 2015 and 2020, compared to 53 percent for average traffic (Figure 27).

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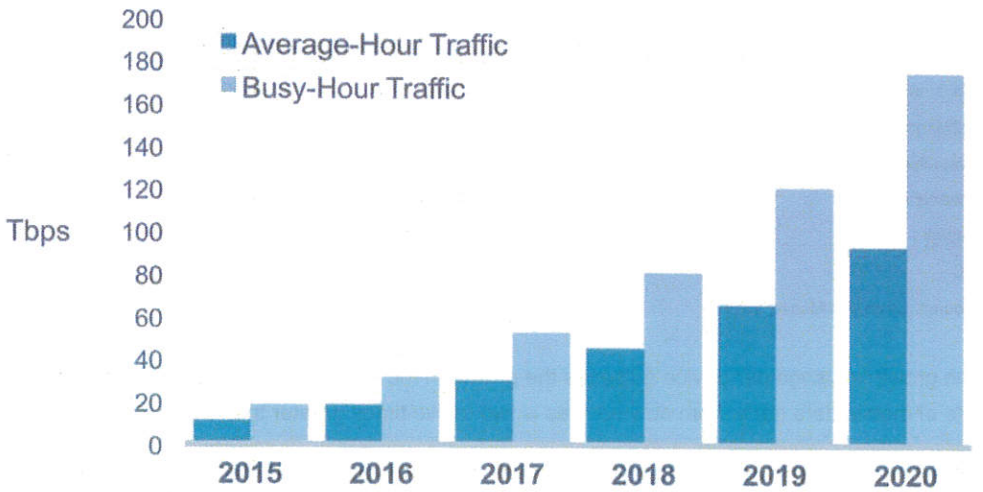
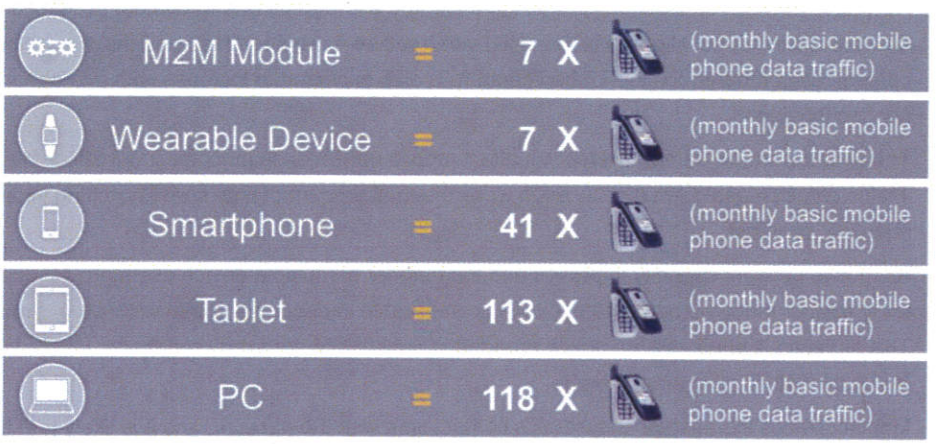
**Figure 27.** Busy-Hour vs. Average-Hour




Source: Cisco VNI Mobile, 2016

An important reason for the increase in video usage on the mobile network is the proliferation of high-end handsets, tablets, and PCs on mobile networks, and the propensity of users to consume higher-bandwidth content and applications on these platforms is apparent in the resulting traffic averages for these devices. As shown in Figure 28, a single smartphone can generate as much traffic as 41 basic-feature phones; a tablet as much traffic as 113 basic-feature phones; and a single PC as much as 118 basic-feature phones.

**Figure 28.** High-End Devices Significantly Multiply Traffic




Source: Cisco VNI Mobile, 2016

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Average traffic per device is expected to increase rapidly during the forecast period, as shown in Table 2.

**Table 2.** Summary of Per-Device Usage Growth, MB per Month

| Device Type | 2015 | 2020 |
|---|---|---|
| Nonsmartphone | 23 MB/month | 116 MB/month |
| M2M module | 164 MB/month | 670 MB/month |
| Wearable device | 153 MB/month | 558 MB/month |
| Smartphone | 929 MB/month | 4,406 MB/month |
| Tablet | 2,576 MB/month | 7.079 MB/month |
| PC | 2,679 MB/month | 5,232 MB/month |

Source: Cisco VNI Mobile, 2016

The growth in usage per device outpaces the growth in the number of devices. As shown in Table 3, the growth rate of mobile data traffic from new devices is two to five times greater than the growth rate of users.

**Table 3.** Comparison of Global Device Unit Growth and Global Mobile Data Traffic Growth

| Device Type | Growth in Devices, 2015–2020 CAGR | Growth in Mobile Data Traffic, 2015–2020 CAGR |
|---|---|---|
| Smartphone | 13.1% | 54.3% |
| Tablet | 22.6% | 50.0% |
| PC | 7.7% | 23.2% |
| M2M Module | 38.5% | 83.4% |

Source: Cisco VNI Mobile, 2016

A few of the main promoters of growth in average usage follow:

- As mobile network connection speeds increase, the average bit rate of content accessed through the mobile network will increase. High-definition (HD) video will be more prevalent, and the proportion of streamed content, as compared to side-loaded content, is also expected to increase with average mobile network connection speed.
- The shift toward on-demand video will affect mobile networks as much as it will affect fixed networks. Traffic can increase dramatically, even while the total amount of time spent watching video remains relatively constant.
- As mobile network capacity improves and the number of multiple-device users grows, operators are more likely to offer mobile broadband packages comparable in price and speed to those of fixed broadband. This situation is encouraging mobile broadband substitution for fixed broadband, where the usage profile is substantially higher than average.
- Mobile devices increase an individual's contact time with the network, and it is likely that this increased contact time will lead to an increase in overall minutes of use per user. However, not all of the increase in mobile data traffic can be attributed to traffic migration to the mobile network from the fixed network. Many uniquely mobile applications continue to emerge, such as location-based services, mobile-only games, and mobile commerce applications.

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## Trend 6: Comparing Mobile Network Speed Improvements

Globally, the average mobile network connection speed in 2015 was 2.0 Mbps. The average speed will grow at a CAGR of 26 percent, and will reach nearly 6.5 Mbps by 2020. Smartphone speeds, generally 3G and higher, will be nearly twice those of the overall average mobile connection by 2020. Smartphone speeds will nearly double by 2020, reaching 12.5 Mbps.

Anecdotal evidence supports the idea that usage increases when speed increases, although there is often a delay between the increase in speed and the increased usage, which can range from a few months to several years. However, in mature markets with strong data caps implementation, evidence points to the fact that the increase in speed may not lead to the increase in usage of mobile data. The Cisco VNI Mobile Forecast relates application bit rates to the average speeds in each country. Many of the trends in the resulting traffic forecast can be seen in the speed forecast, such as the high growth rates for developing countries and regions relative to more developed areas (Table 4).

**Table 4.** Global and Regional Projected Average Mobile Network Connection Speeds (in kbps)

| | 2015 | 2015 | 2016 | 2017 | 2018 | 2020 | CAGR 2015–2020 |
|---|---|---|---|---|---|---|---|
| **Global** | | | | | | | |
| Global speed: All handsets | 2.0 | 2.4 | 3.1 | 3.9 | 5.1 | 6.5 | 26% |
| Global speed: Smartphones | 7.5 | 8.3 | 9.2 | 9.9 | 11.1 | 12.5 | 11% |
| Global speed: Tablets | 11.6 | 12.8 | 13.9 | 15.0 | 15.6 | 16.2 | 7% |
| **By Region** | | | | | | | |
| Asia Pacific | 2.4 | 3.6 | 4.6 | 5.7 | 7.0 | 8.6 | 29% |
| Latin America | 1.5 | 1.9 | 2.5 | 3.1 | 3.9 | 4.9 | 27% |
| North America | 5.9 | 7.9 | 9.9 | 12.1 | 13.7 | 15.3 | 21% |
| Western Europe | 4.1 | 6.1 | 8.3 | 10.5 | 12.2 | 14.1 | 28% |
| Central and Eastern Europe | 2.3 | 3.4 | 5.6 | 7.8 | 9.1 | 10.6 | 36% |
| Middle East and Africa | 0.8 | 1.3 | 1.9 | 2.6 | 3.6 | 4.8 | 45% |

Current and historical speeds are based on data from Ookla's Speedtest. Forward projections for mobile data speeds are based on third-party forecasts for the relative proportions of 2G, 3G, 3.5G, and 4G among mobile connections through 2020.

Source: Cisco VNI Mobile, 2016

The speed at which data can travel to and from a mobile device can be affected in two places: the infrastructure speed capability outside the device and the connectivity speed from the network capability inside the device (Figure 29). These speeds are actual and modeled end-user speeds and not theoretical speeds that the devices, connection, or technology is capable of providing. Several variables affect the performance of a mobile connection: rollout of 2G, 3G, and 4G in various countries and regions, technology used by the cell towers, spectrum availability, terrain, signal strength, and number of devices sharing a cell tower. The type of application the end user uses is also an important factor. Download speed, upload speed, and latency characteristics vary widely depending on the type of application, be it video, radio, or instant messaging.

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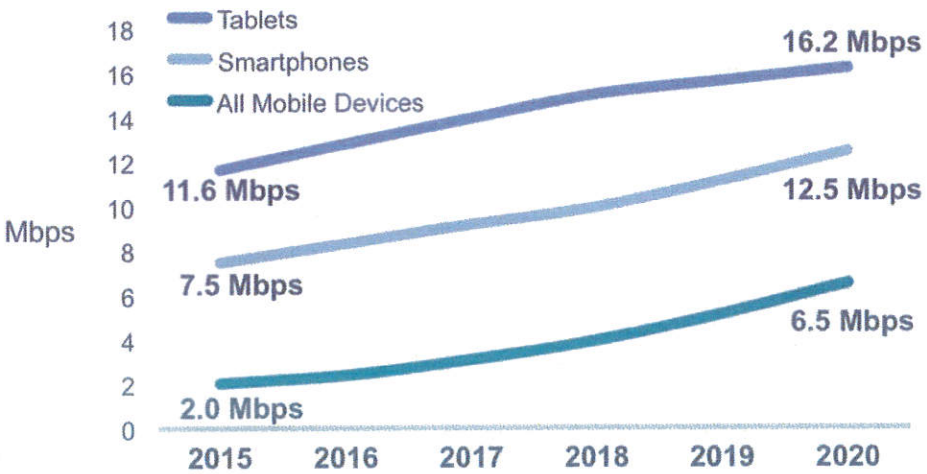
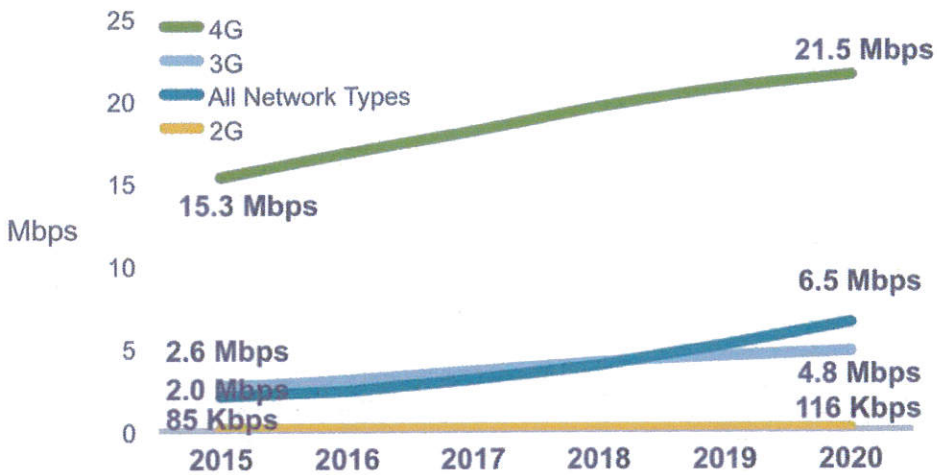
**Figure 29.** Mobile Speeds by Device




Source: Cisco VNI Mobile, 2016

By 2020, 4G speeds will be four times higher than those of an average mobile connection. In comparison, 3G speeds will be 1.2-fold as fast as the average mobile connection by 2020 (Figure 30).

**Figure 30.** Mobile Speeds by Technology: 2G Versus 3G Versus 4G




Source: Cisco VNI Mobile, 2016

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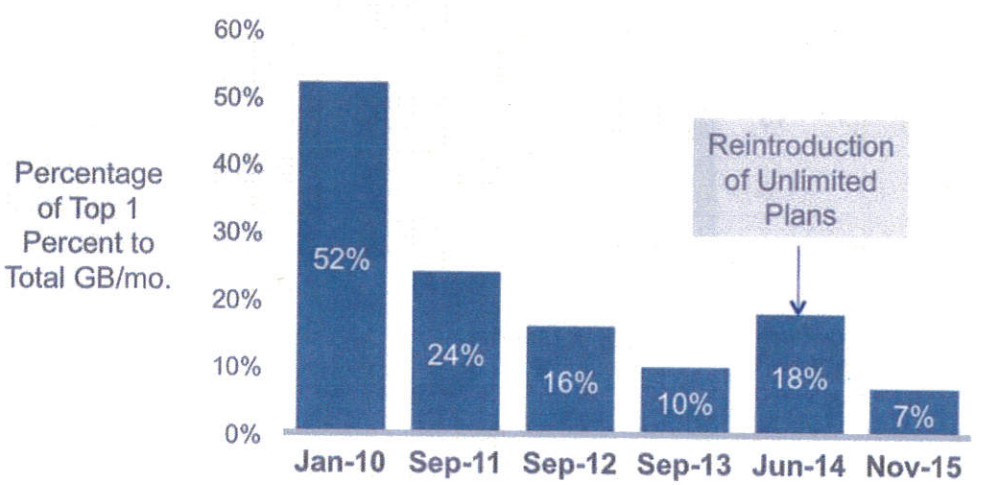
## Trend 7: Reviewing Tiered Pricing—Unlimited Data and Shared Plans

An increasing number of service providers worldwide are moving from unlimited data plans to tiered mobile data packages. To make an estimate of the impact of tiered pricing on traffic growth, we repeated a case study based on the data of several tier 1 and tier 2 North American service providers. The study tracks data usage from the timeframe of the introduction of tiered pricing 4 years ago. The findings in this study are based on Cisco's analysis of data provided by a third-party data-analysis firm. This firm maintains a panel of volunteer participants who have given the company access to their mobile service bills, including GB of data usage. The data in this study reflects usage associated with devices (from June 2014 and November 2015) and also refers to the study from the previous update for longer-term trends. The overall study spans 4 years. Cisco's analysis of the data consists of categorizing the pricing plans, operating systems, devices, and users; incorporating additional third-party information about device characteristics; and performing exploratory and statistical data analysis. Although the results of the study represent actual data from a few tier 1 and tier 2 mobile data operators from North American markets, global forecasts that include emerging markets and more providers may lead to lower estimates.

Unlimited plans had made a temporary resurgence from October 2013 to June 2014 with the increased number of unlimited plan offerings by tier 2 operators. In November 2015, 73 percent of the data plans were tiered and 27 percent of the data plans were unlimited. The gigabyte consumption of both tiered and unlimited plans has increased. On an average, usage on a device with a tiered plan grew from 1.1 GB in June 2014 to 2.7 GB in November 2015. Unlimited plans consumption grew at a faster rate, from 2.6 GB in June 2014 to 6.4 GB in November 2015.Tiered pricing plans are often designed to constrain the heaviest mobile data users, especially the top 1 percent of mobile data consumers.

The usage per month of the average top 1 percent of mobile data users has been steadily decreasing compared to that of overall usage. At the beginning of the 4-year study, 52 percent of the traffic was generated by the top 1 percent. With the reintroductions and promotions of unlimited plans by tier 2 operators in the study, the top 1 percent generated 18 percent of the overall traffic per month by June 2014. By November 2015, just 7 percent of the traffic was generated by the top 1 percent of users (Figure 31).

**Figure 31.** Top 1 Percent Generates 52 Percent of Monthly Data Traffic in January 2010 Compared to 7 Percent in November 2015




Source: Cisco VNI Mobile, 2016

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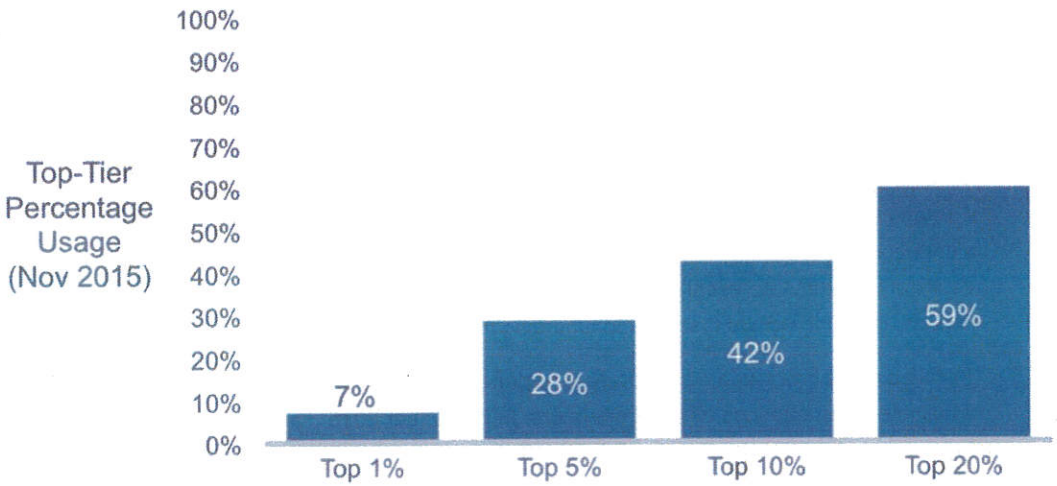
The top 20 percent of mobile users generate 59 percent of mobile data traffic and the top 5 percent of users consume 28 percent of mobile data traffic in the study (Figure 32).

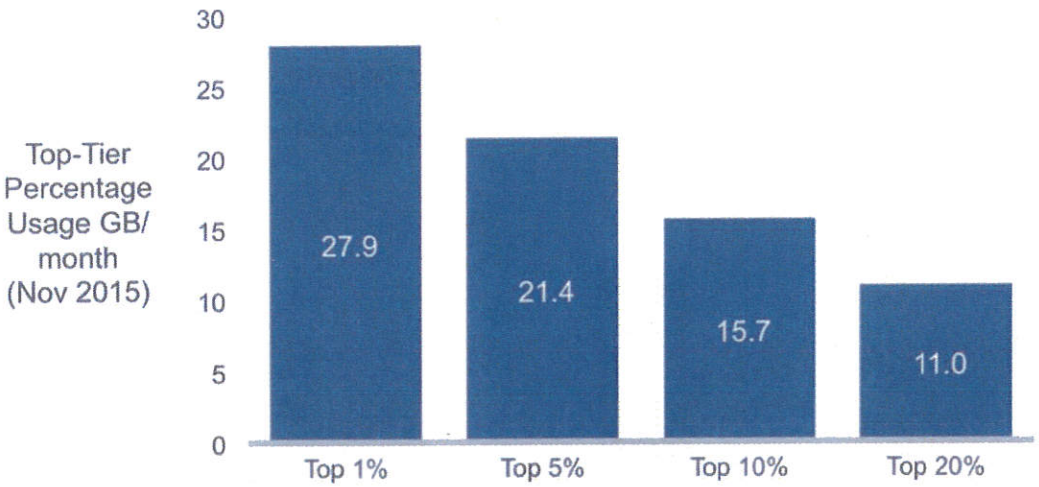
**Figure 32.** Top 20 Percent Consumes Nearly 59 Percent of Mobile Data Traffic




Source: Cisco VNI Mobile, 2016

With the introduction of new, larger-screen smartphones and tablets with all mobile-data-plan types, there is a continuing increase in usage in terms of gigabytes per month per user in all the top tiers (Figure 33).

**Figure 33.** Top 20 Percent of Average Users Consumes 11 Gigabytes per Month




Study limited to a few North American tier 1 and tier 2 operators.
Source: Cisco VNI Mobile, 2016

The proportion of mobile users who generated more than 2 gigabytes per month was 51 percent of users at the end of 2015, and 7 percent of the users consumed more than 10 gigabytes per month of mobile data (Figure 34) by November 2015 in the study.

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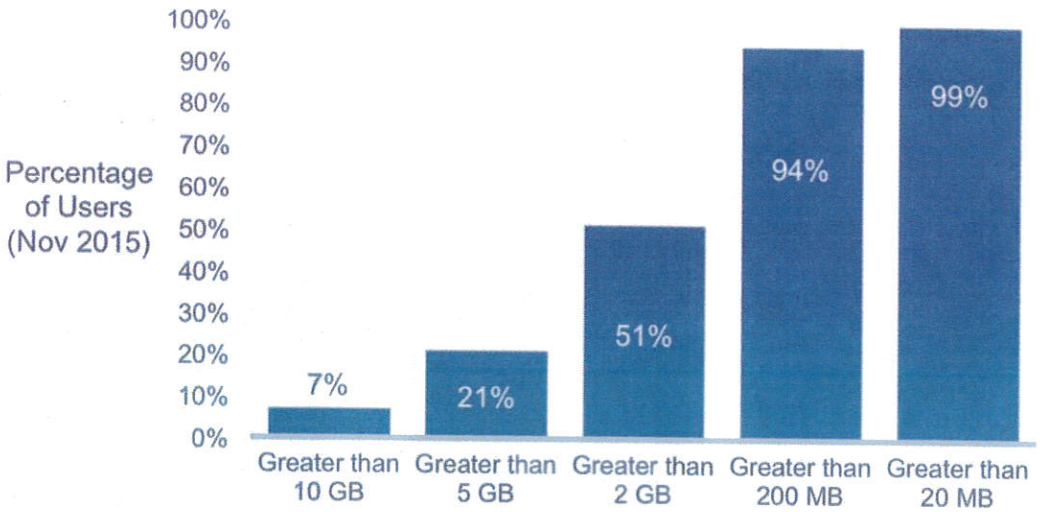
**Figure 34.** More Than Half of Mobile Users Consume More Than 2 GB per Month

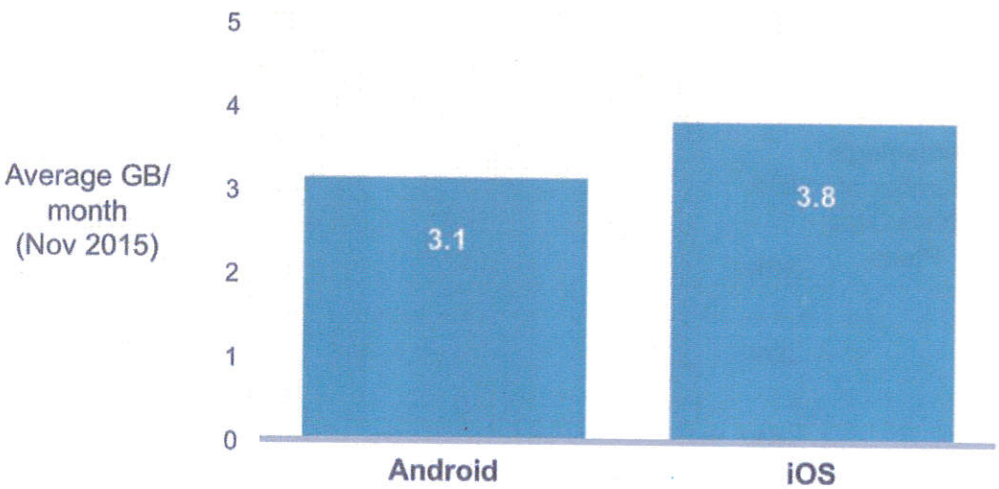



Study limited to a few North American tier 1 and tier 2 operators.
Source: Cisco VNI Mobile, 2016

## iOS Marginally Surpasses Android in Data Usage

At the beginning of the 4-year tiered-pricing case study, Android data consumption was equal to, if not higher than, that of other smartphone platforms. However, Apple-based devices have since caught up, and their data consumption is marginally higher than that of Android devices in terms of megabytes per month per connection usage (Figure 35).

**Figure 35.** Megabytes per Month by Operating System




Study limited to a few North American tier 1 and tier 2 operators.
Source: Cisco VNI Mobile, 2016

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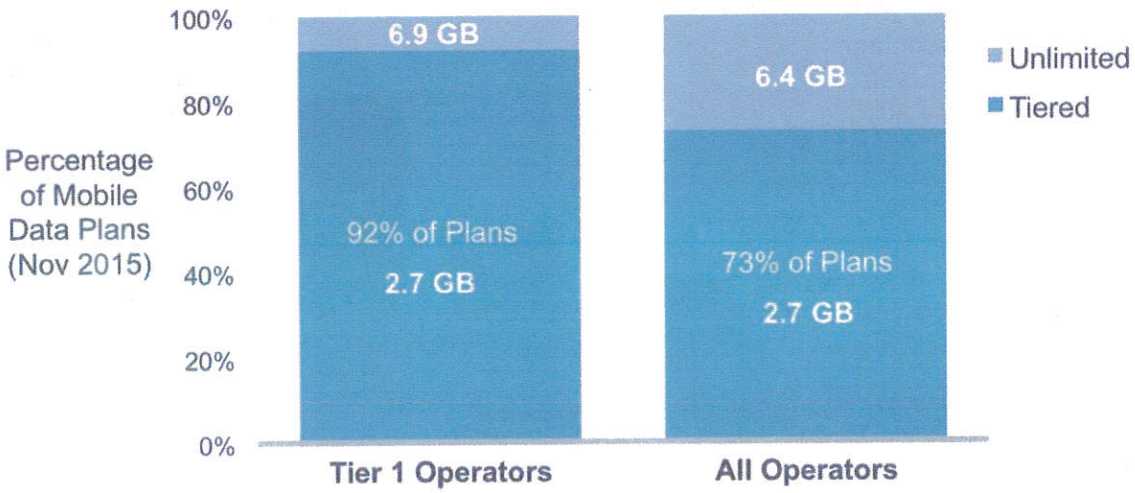
Tiered plans outnumber unlimited plans; unlimited plans continue to lead in data consumption. Although the number of unlimited plans with tier 1 operators is declining, users with tier 1 operators have a higher average usage in gigabytes/month with unlimited plans (Figure 36).

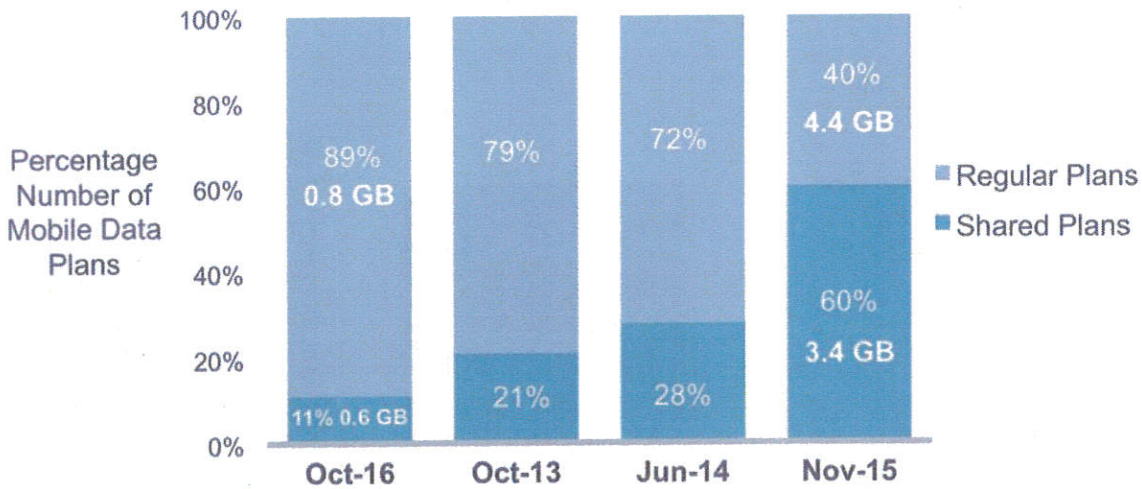
**Figure 36.** Tiered vs. Unlimited Plans




Study limited to a few North American tier 1 and tier 2 operators.
Source: Cisco VNI Mobile, 2016

The number of shared plans is now a majority compared to that of regular plans. The average data usage for shared plans is approaching that of regular plans (Figure 37).

**Figure 37.** Shared vs. Regular Data Plans




Study limited to a few North American tier 1 and tier 2 operators.
Source: Cisco VNI Mobile, 2016

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## Conclusion

Mobile data services are well on their way to becoming necessities for many network users. Most people already consider mobile voice service a necessity, and mobile voice, data, and video services are fast becoming an essential part of consumers' lives. Used extensively by consumer as well as enterprise segments, with impressive uptakes in both developed and emerging markets, mobility has proved to be transformational. The number of mobile subscribers is growing rapidly, and bandwidth demand for data and video is increasing. Mobile M2M connections continue to increase. The next 5 years are projected to provide unabated mobile video adoption. Backhaul capacity must increase so mobile broadband, data access, and video services can effectively support consumer usage trends and keep mobile infrastructure costs in check.

Deploying next-generation mobile networks requires greater service portability and interoperability. With the proliferation of mobile and portable devices, there is an imminent need for networks to allow all these devices to be connected transparently, with the network providing high-performance computing and delivering enhanced real-time video and multimedia. This openness will broaden the range of applications and services that can be shared, creating a highly enhanced mobile broadband experience. The expansion of wireless presence will increase the number of consumers who access and rely on mobile networks, creating a need for greater economies of scale and lower cost per bit.

As many business models emerge with new forms of advertising; media and content partnerships; and mobile services including M2M, live gaming, and augmented reality, a mutually beneficial situation needs to be developed for service providers and over-the-top providers. New partnerships, ecosystems, and strategic consolidations are expected as mobile operators, content providers, application developers, and others seek to monetize the video traffic that traverses mobile networks. Operators must solve the challenge of effectively monetizing video traffic while increasing infrastructure capital expenditures. They must become more agile and able to change course quickly and provide innovative services to engage the Web 3.0 consumer. While the net neutrality regulatory process and business models of operators evolve, there is an unmet demand from consumers for the highest quality and speeds. As wireless technologies aim to provide experiences formerly available only through wired networks, the next few years will be critical for operators and service providers to plan future network deployments that will create an adaptable environment in which the multitude of mobile-enabled devices and applications of the future can be deployed.

## For More Information

Inquiries can be directed to traffic-inquiries@cisco.com.

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## Appendix A: The Cisco VNI Global Mobile Data Traffic Forecast

Table 5 shows detailed data from the Cisco VNI Global Mobile Data Traffic Forecast. This forecast includes only cellular traffic and excludes traffic offloaded onto Wi-Fi and small cell from dual-mode devices. The "other portable devices" category includes readers, portable gaming consoles, and other portable devices with embedded cellular connectivity. Wearables are included in the "M2M" category.

**Table 5.** Global Mobile Data Traffic, 2015–2020

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | CAGR 2015–2020 |
|---|---|---|---|---|---|---|---|
| **By Application Category (TB per Month)** | | | | | | | |
| Web, data, and VoIP | 1,323,168 | 1,968,121 | 2,779,705 | 3,605,388 | 4,427,061 | 5,158,487 | 31% |
| Video | 2,031,425 | 3,643,337 | 6,232,592 | 9,977,073 | 15,410,948 | 22,963,742 | 62% |
| Audio streaming | 279,209 | 462,019 | 722,780 | 1,034,665 | 1,398,055 | 1,788,347 | 45% |
| File sharing | 51,263 | 106,541 | 196,021 | 317,269 | 472,307 | 653,641 | 66% |
| **By Device Type (TB per Month)** | | | | | | | |
| Nonsmartphones | 89,630 | 116,220 | 149,247 | 191,088 | 229,720 | 278,748 | 25% |
| Smartphones | 2,818,199 | 4,829,911 | 7,872,495 | 11,907,415 | 17,419,671 | 24,680,894 | 54% |
| PCs | 335,456 | 424,821 | 527,909 | 648,242 | 784,194 | 950,573 | 23% |
| Tablets | 341,492 | 576,053 | 907,033 | 1,341,790 | 1,913,915 | 2,594,619 | 50% |
| M2M | 99,222 | 232,037 | 473,628 | 845,228 | 1,360,348 | 2,058,795 | 83% |
| Other portable devices | 1,065 | 975 | 786 | 633 | 524 | 588 | -11% |
| **By Region (TB per Month)** | | | | | | | |
| North America | 557,237 | 831,457 | 1,199,309 | 1,700,159 | 2,327,596 | 3,208,203 | 42% |
| Western Europe | 432,322 | 707,537 | 1,045,171 | 1,477,156 | 2,060,788 | 2,795,362 | 45% |
| Asia Pacific | 1,578,865 | 2,676,873 | 4,422,785 | 6,725,446 | 9,771,677 | 13,712,874 | 54% |
| Latin America | 276,416 | 447,991 | 714,540 | 1,065,744 | 1,521,312 | 2,091,703 | 50% |
| Central and Eastern Europe | 545,750 | 946,263 | 1,510,630 | 2,242,669 | 3,249,449 | 4,442,281 | 52% |
| Middle East and Africa | 294,476 | 569,895 | 1,038,661 | 1,723,221 | 2,777,550 | 4,313,794 | 71% |
| **Total (TB per Month)** | | | | | | | |
| Total Mobile Data Traffic | 3,685,066 | 6,180,017 | 9,931,098 | 14,934,395 | 21,708,372 | 30,564,217 | 53% |

Source: Cisco, 2016

The Cisco VNI Global Mobile Data Traffic Forecast relies in part upon data published by Ovum, Machina, Strategy Analytics, Infonetics, Gartner, IDC, Dell'Oro, Synergy, ACG Research, Nielsen, comScore, Verto Analytics, the International Telecommunications Union (ITU), CTIA, and telecommunications regulators in each of the countries covered by VNI.

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The Cisco VNI methodology begins with the number and growth of connections and devices, applies adoption rates for applications, and then multiplies the application user base by Cisco's estimated minutes of use and KB per minute for that application. The methodology has evolved to link assumptions more closely with fundamental factors, to use data sources unique to Cisco, and to provide a high degree of application, segment, geographic, and device specificity.

- **Inclusion of fundamental factors**: As with the fixed IP traffic forecast, each Cisco VNI Global Mobile Data Traffic Forecast update increases the linkages between the main assumptions and fundamental factors such as available connection speed, pricing of connections and devices, computational processing power, screen size and resolution, and even device battery life. This update focuses on the relationship of mobile connection speeds and the KB-per-minute assumptions in the forecast model.
- **Device-centric approach**: As the number and variety of devices on the mobile network continue to increase, it becomes essential to model traffic at the device level rather than the connection level. This Cisco VNI Global Mobile Data Traffic Forecast update details traffic to smartphones; nonsmartphones; laptops, tablets, and netbooks; e-readers; digital still cameras; digital video cameras; digital photo frames; in-car entertainment systems; and handheld gaming consoles.
- **Estimation of the impact of traffic offload**: The Cisco VNI Global Mobile Data Traffic Forecast model now quantifies the effect of dual-mode devices and femtocells on handset traffic. Data from the USC Institute for Communication Technology Management's annual mobile survey was used to model offload effects.

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## Appendix B: Global 4G Networks and Connections

Tables 6 and 7 show the growth of regional 4G connections and wearable devices, respectively.

**Table 6.** Regional 4G Connections Growth

| | 2015 | | 2020 | |
|---|---|---|---|---|
| | Number of 4G Connections (K) | Percent of Total Connections | Number of 4G Connections (K) | % of Total Connections |
| Asia Pacific | 600,965 | 15% | 2,472,262 | 43% |
| Central and Eastern Europe | 30,415 | 5% | 385,707 | 42% |
| Latin America | 31,376 | 4% | 328,422 | 32% |
| Middle East and Africa | 37,513 | 3% | 316,619 | 17% |
| North America | 230,249 | 47% | 608,419 | 59% |
| Western Europe | 143,355 | 23% | 600,376 | 53% |
| Global | 1,073,873 | 14% | 4,711,805 | 40% |

Source: Cisco, 2016

**Table 7.** Regional Wearable Devices Growth

| | 2015 | | 2020 | |
|---|---|---|---|---|
| | Number of Wearable Devices (K) | Percent of Global | Number of Wearable Devices (K) | Percent of Global |
| Asia Pacific | 30,403 | 31.4% | 194,669 | 32.4% |
| Central and Eastern Europe | 5,006 | 5.2% | 45,850 | 7.6% |
| Latin America | 1,828 | 1.9% | 26,083 | 4.3% |
| Middle East and Africa | 4,087 | 4.2% | 25,416 | 4.2% |
| North America | 38,645 | 40.0% | 180,963 | 30.1% |
| Western Europe | 16,748 | 17.3% | 127,644 | 21.3% |
| Global | 96,717 | 100.0% | 600,625 | 100.0% |

Source: Cisco, 2016

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## Appendix C: IPv6-Capable Devices, 2015–2020

Table 8 provides the segmentation of IPv6-capable devices by device type, and Table 9 provides regional IPv6-capable forecast details.

**Table 8.** IPv6-Capable Devices by Device Type, 2015–2020

| Devices (K) | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | CAGR 2015–2020 |
|---|---|---|---|---|---|---|---|
| Global | 2,674,225 | 3,530,721 | 4,435,021 | 5,383,711 | 6,473,049 | 7,648,803 | 23% |
| Laptops | 107,262 | 117,603 | 130,020 | 143,925 | 158,687 | 174,788 | 10% |
| M2M | 135,054 | 282,560 | 501,861 | 788,571 | 1,132,268 | 1,519,097 | 62% |
| Nonsmartphones | 378,052 | 454,883 | 465,755 | 434,243 | 425,316 | 450,773 | 4% |
| Other portables | 11,021 | 8,708 | 7,923 | 8,494 | 10,120 | 12,518 | 3% |
| Smartphones | 1,926,731 | 2,516,710 | 3,137,851 | 3,769,490 | 4,453,279 | 5,139,693 | 22% |
| Tablets | 116,106 | 150,256 | 191,609 | 238,988 | 293,379 | 351,934 | 25% |

Source: Cisco, 2016

**Table 9.** IPv6-Capable Devices by Region, 2015–2020

| Devices (K) | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | CAGR 2015–2020 |
|---|---|---|---|---|---|---|---|
| Global | 2,674,225 | 3,530,721 | 4,435,021 | 5,383,711 | 6,473,049 | 7,648,803 | 23% |
| Asia Pacific | 1,261,150 | 1,710,865 | 2,159,819 | 2,624,540 | 3,170,574 | 3,751,988 | 24% |
| Central and Eastern Europe | 272,566 | 358,322 | 443,894 | 527,417 | 604,191 | 688,174 | 20% |
| Latin America | 282,892 | 361,964 | 441,000 | 519,943 | 608,391 | 698,334 | 20% |
| Middle East and Africa | 225,646 | 323,218 | 440,998 | 580,988 | 777,282 | 1,019,597 | 35% |
| North America | 288,209 | 356,850 | 442,066 | 530,749 | 618,900 | 706,901 | 20% |
| Western Europe | 343,762 | 419,502 | 507,245 | 600,075 | 693,710 | 783,808 | 18% |

Source: Cisco, 2016

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Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
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Seeking Alpha

# Time Warner Cable's (TWC) CEO Rob Marcus on Q4 2015 Results - Earnings Call Transcript

Jan. 28, 2016 1:48 PM ET
by: SA Transcripts

Time Warner Cable Inc. (NYSE:TWC)

Q4 2015 Earnings Conference Call

January 28, 2016 8:30 a.m. ET

**Executives**

Tom Robey - SVP, IR

Rob Marcus - Chairman and CEO

Dinesh Jain - COO

Bill Osbourn - SVP, Controller, Chief Accounting Officer and Acting Co-CFO

Matt Siegel - SVP, Treasurer and Acting Co-CFO

**Analysts**

John Hodulik - UBS

Jessica Reif Cohen - Bank of America Merrill Lynch

Vijay Jayant - Evercore ISI

Brandon Ross - BTIG

Craig Moffett - MoffettNathanson

Laura Martin - Needham & Company

James Ratcliffe - Buckingham Research Group

Stephan Bisson - Wells Fargo

Tom Eagan - Telsey Advisory

Phil Cusick - JPMorgan

Tuna Amobi - S&P Capital IQ

Amy Yong - Macquarie Capital

Jonathan Chaplin - New Street Research

**Operator**

Hello and welcome to the Time Warner Cable's Fourth Quarter 2015 Earnings Conference Call. At this time, all participants are in a listen-only mode. [Operator Instructions] Today's conference is being recorded. If you have any objections, you may disconnect at this time.

Now, I will turn the call over to Mr. Tom Robey, Senior Vice President of Time Warner Cable Investor Relations.

**Tom Robey**

Thanks, operator, and good morning everyone. Welcome to Time Warner Cable's 2015 fourth quarter earnings conference call. This morning, we issued a press release detailing our fourth quarter and full year 2015 results. Before we begin, there are several items that I want to cover.

First, we refer to certain non-GAAP measures. Definitions and schedules setting out reconciliations of these historical non-GAAP financial measures to the most directly comparable GAAP financial measures are included in our earnings release and trending schedules.

Second, today's conference call includes certain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, which are based on management's current expectations and beliefs, and are subject to uncertainty and changes in circumstances. Actual results may vary materially from those expressed or implied by the statements herein, due to various factors which are discussed in detail in our SEC filings.

Time Warner Cable is under no obligation to, and in fact, expressly disclaims any such obligation to update or alter its forward-looking statements, whether as a result of new information, future events or otherwise.

Third, the quarterly growth rates disclosed in this conference call are on a year-over-year basis, unless otherwise noted as being sequential.

And fourth, today's press release, trending schedules, presentation slides, and related reconciliation schedules are available on our Web site at twc.com/investors.

With that covered, I'll thank you and turn the call over to Rob. Rob?

**Rob Marcus**

Thanks, Tom, and good morning everyone. Some quarters are more fun to report on than others. This one is fun, because it gives me an opportunity to share just how proud I am of what our team has accomplished.

We achieved almost everything we set out to do in the fourth quarter and in 2015. We made our network more reliable, our products more compelling, and our customer service better. And significantly, we materially increased our customer base.

I am particularly gratified by our full year residential subscriber gains. As we reported earlier this month, we had residential customer relationship net adds of 618,000. That's not just our best ever. It's nearly three times the previous record. And video net adds were 32,000. It's been a long time since we talked about full year video net adds.

We also added a million HSD subs, and just over a million phone subs. And we ended 2015 strongly with our best ever Q4 residential customer relationship and PSU net adds.

Fourth quarter customer relationships grew in every region, driven by improvements in both connects and disconnects. Connects increased most in LA and Texas, while disconnects came down most in New York City.

Importantly, our subscriber improvement over the last eight quarters is beginning to show up in our financial results. Fourth quarter residential revenue growth of 4.6% was the strongest organic growth in more than six years. I think our residential operation is well positioned for 2016 and beyond. And while we continue to turnaround the residential business, business services kept humming along, recording yet another quarter of more than $100 million of year-over-year revenue growth. That makes 18 quarters in a row.

While I'm excited about our reported results, I'm equally pleased with the progress we're making in the areas that are under the radar that enhance customer experience and are critical to delivering sustainable growth going forward. We continued our multiyear effort to improve reliability in customer service.

Once again in 2015, we invested heavily in our network and equipment. Network investments to drive better reliability and greater capacity included upgrading the power supplies on roughly 10,000 nodes, replacing approximately 19,000 reverse path lasers and splitting almost 13,000 nodes. And in customers' homes we deployed 4.1 million new modems, 2.8 million new set-tops, and 3.5 million digital adaptors, many of which replaced older, less functional CPE.

As a result, but year end 65% of our modems were DOCSIS 3.0, up from 47% a year earlier, and approximately two-thirds of our set-top boxes ran our cloud-based guide, up from just over half at the end of 2014.

We also made great strides in key residential customer service metrics. Fourth quarter customer care calls per CR were down 13%, and repair-related truck rolls fell 19% from last year. When we had to roll the truck in Q4 we arrived within our industry-leading one hour appointment window more than 98% of the time. And importantly, we resolved customers' issues on the first visit 15% more often than a year earlier.

Over the course of the last year we've introduced a number of tools and apps to empower our customers. I'm particularly excited about TechTracker, which now allows our customers to track the whereabouts of their technician and also sends customers a text or email with the technician's name and photo. This way, customers know who is coming, and have an ever better idea of exactly when they'll arrive.

During 2015, we completed our rollout of TWC Maxx in Austin, Kansas City, Dallas, Raleigh, Charlotte, and San Antonio. And we began the process in Hawaii, Wilmington, Greensborough, and San Diego. As a result, a significant portion of our footprint now has all-digital video, and HSD speeds up to 300 megabits per second.

Fueled by our Maxx investments, at year end almost 45% of our total HSD customers subscribed to speed tiers of 50 megabits per second or greater, and more than half of our HSD subs enjoyed TWC-provided home Wi-Fi. In addition, Time Warner Cable HSD customers can now enjoy Internet access outside the home through nearly 500,000 Wi-Fi hotspots nationwide.

We meaningfully enhanced our video product as well. Video customers across our footprint now have access to 30,000 VOD assets. During the year we augmented our TWC TV app, adding more linear and VOD offerings, and making it available on more platforms.

The TWC TV video experience inside the home is fast becoming indistinguishable from our traditional set-top box-based offerings. In fact, for shadowing the video product of the future, we're trialing an IP video offering that eliminates the need for a leased set-top box.

The TWC TV experience outside the home is also becoming more robust, with a 100 live channels and 9,000 choices of VOD content from 64 networks. And even phone is more compelling than it's ever been, with unlimited calling to countries comprising half of the world's population, and apps that enable customers to make and receive unlimited calls from anywhere.

All this is driving lower churn and better customer satisfaction scores. To be clear, we know we have a long way to go, but I'm encouraged and impressed by the progress we've made. Consistent with our practice last year, during the Comcast deal, we will not provide guidance during the tenancy of the merger with Charter. But you shouldn't assume that means we're standing still. Quite the contrary, we have an ambitious 2016 financial and operating plan marked by continued subscriber growth, better financial performance, and continued investment to improve the customer experience. We plan to continue the rollout of TWC Maxx, completing cities begun in 2015, and adding cities primarily in the Northeast and Midwest.

We've set new, even more ambitious targets for network reliability, repair call, and truck roll reduction, on-time arrival, and first call resolution. We'll continue to enhance our products, and we'll continue to drive business services hard, because our opportunity there remains enormous. And as you'd expect, we have every intention of capitalizing on the political advertising opportunity from this year's elections.

Before I close, let me provide a quick update on the status of our deal with Charter. Both the integration planning and regulatory review processes continue to move forward. Together with Charter, we're working constructively with FCC, and DOJ to ensure that they are in a position to approve the deal expeditiously. As you know, the FCC restarted the 180 days shot clock last week,

and we're now at Day 124. New York State approved the transaction two weeks ago. The California PUC held a public hearing on Tuesday evening which went well, and we remain hopeful that the approval process in California can be accelerated.

All that said, we're still not in a position to provide you with a specific timetable for closing. 2015 was in incredible year. Desp the many merger-related distractions, our team has delivered with single-minded determination. We're a much stronger company than we were two years ago, and we've got great momentum as we begin the New Year. Going forward, we intend to continue to drive growth, improve the customer experience, and build value for our shareholders.

With that, I'll now turn it over to Bill Osbourn, and then Matt Siegel, who will review our Q4 results. After they comment on the quarter, the three of us, along with Dinni will be available for Q&A. Bill?

**Bill Osbourn**

Thanks, Rob, and good morning everyone. As Rob said, we capped a very good year, with outstanding operating results in Q4. Since we announced subscriber metrics for the year earlier this month, I won't dwell on the full-year accomplishments although there were quite a few. Instead I'll highlight some of the trends underlying the fourth quarter results. The 200,000 residential customer relationships added in the fourth quarter were driven by very strong connects. In fact, Q4 connects were 14% higher than the year ago. Connect improvement was broad based, but California and Texas delivered the biggest year-over-year increases.

The three key sales channels, inbound sales, online sales, and direct sales, continued to perform significantly better than the year ago, with strong double-digit growth in each channel. But it was not just a connect story in Q4. Residential customer relationship churn declined by 5% despite the year-over-year increase in new subs who tend to churn more. Fourth quarter churn improvement was driven by a significant improvement in voluntary churn, in addition to lower non-paid disconnects. It's noteworthy that we now have more than 15 million residential customer relationships.

Residential PSU net adds of 562,000 were 137,000 better than last year's Q4. The PSU growth was again driven by strong triple play net adds of 205,000. Triple play sell-in at 38% of customer relationship connects remained very strong. Each of the primary residential products did well in the fourth quarter, with 54,000 video net adds, and 281,000 and 227,000 net adds for broadb and voice respectively. On a full-year basis, residential video net adds of 32,000 and broadband net adds of 1 million were t best since 2006. And voice net adds of more than a million were our best ever.

The quality of the residential subscriber base continues to be very solid, as the early life churn continues to be significantly lower than a year earlier.

With that said, let's move on to our financial results. Fourth quarter revenue at $6.1 billion was up 4.9% year-over-year. And full year revenue of $23.7 increased 3.9% over 2014.

We grew fourth quarter Residential Services revenue by $210 million or 4.6%; the best organic year-over-year Residential revenue growth since the second quarter of 2009.

We are very encouraged by the revenue acceleration in the second half of 2015. This demonstrates that the plan we set in motion two years ago to drive subscriber growth and in turn drive revenue growth is working.

Residential revenue per customer relationship of $106.77 in Q4 was up slightly from last year. As we've explained in prior quarters, our strategy of driving very strong volumes of customer connects at promotional rates that are lower than the average of our existing customer base increases aggregate connect revenue, but naturally tempers ARPU growth.

Business Services posted another very good quarter. Revenue increased $109 million or 14.4% year-over-year in Q4. This was the 18th consecutive quarter of year-over-year growth above $100 million. HSD led the way, up 19.1% and contributing significantly more than half the Business Services revenue growth.

The balance of the revenue increase came roughly equally from voice which grew 13.8%, and wholesale transport which was up 14.3%. It's noteworthy that Business Services surpassed 1 million voice lines in service in Q4.

Other Operations revenue declined 6.8% in Q4. Media sales revenue was down $48 million from last year due to lower political advertising revenue, which was $8 million in the fourth quarter compared to $61 million a year earlier.

Fourth quarter other revenue increased primarily due to RSN affiliate fees from our Residential Services segment as well as other distributors of the Los Angeles RSN. Note that affiliate fees from our Residential Services segment are eliminated in consolidation.

Next, Matt will cover expenses, cash flow, and the balance sheet. Matt?

**Matt Siegel**

Thanks, Bill, and good morning. As noted, total company adjusted OIBDA declined $8 million or 0.4% in Q4. Excluding the pension expense increases of $27 million, adjusted OIBDA was up $90 million or 0.9%. On a full year basis, adjusted OIBDA declined $90 million or 1.1%. And excluding the pension expense increase of $108 million, adjusted OIBDA increased $18 million or 02%, somewhat better than we projected on last quarter's call.

In Q4, as in recent quarters, we continued to invest aggressively to drive subscriber growth, take care of our expanded customer base, and improve the customer experience. The biggest increase was in sales and marketing where we increased spending by $79 million or 14.7% in support of higher volumes of connects.

Sales and marketing in the Residential Services segment grew $48 million or 13.4% while the increase in Business Services was $29 million or 22.7%.

Technical operations was up $40 million or 10.3% related in large part to our success in adding customer relationships and PSUs. Customer care, which had been growing at higher rates earlier in the year, grew by just $9 million or 4.1% year-over-year, benefiting from lower call volumes.

Programming and content costs, which increased $128 million or 9.7% year-over-year, continued to be the biggest drag on adjusted OIBDA. Contractual affiliate fee increases were the primary driver of higher programming and content costs.

In the Residential segment, average programming cost per video sub in the fourth quarter was $42.89, up 386 or 9.9% from last year.

Shared functions costs increased 4.3% to $774 million in the fourth quarter, as a result of higher compensation cost per employee including pension expense and higher insurance expense.

Moving down the income statement, fourth quarter adjusted diluted EPS was $1.80, down $0.23 from a year ago. Higher depreciation expense resulting from large capital investment we made over the last several years continued to be a driver of low EPS.

Full 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.

In 2015, we added 66,000 commercial buildings to our network, representing an estimated $975 million in serviceable annual opportunity. Full year free cash flow of $2.2 billion was 7.5% lower than in the prior year mainly due to an increase in capital expenditures partially offset by an increase in cash provided by operating activities.

Free cash flow was $883 million in the fourth quarter, down less than 1% year-over-year due to higher capital spending and cash taxes partially offset by a change in working capital. Note that we had already made our December tax payment when the extension of bonus depreciation was enacted.

Our overpayment of roughly $120 million could be applied to reduce this year's taxes. At the end of 2015, net debt stood at $21.3 billion, down $1.6 billion from year end 2014. Our adjusted net leverage ratio was 2.77 times at year end 2015.

So to summarize, the very strong operating momentum is beginning to transfer into stronger financial performance. We're very pleased with the trajectory of the business, and we believe that we're very well positioned to deliver strong financial performance in 2016.

With that, let me turn it back over to Tom for the Q&A portion of the call.

**Tom Robey**

Thanks, Matt. Operator, we're ready to begin the Q&A portion of the conference call. We would ask that each caller ask a single question so that we can accommodate as many callers as time permits. First question please.

**Question-and-Answer Session**

**Operator**

Thank you. Our first question is from John Hodulik from UBS. Sir, you may ask your question.

**John Hodulik**

Hey, thanks. Rob, it looks like the FCC is moving forward again to try to sort of unbundle the set-top box from the cable service, and maybe circulated NPRM. I know I've asked you about this before, but what's your view on that process, and where it leads, and what does it mean for Time Warner Cable and the cable industry? Thanks.

**Rob Marcus**

Thanks, John. The fact sheet that the FCC circulated yesterday is a little hard to decipher. So I'm not sure we really understand exactly what's being proposed yet, and as you say, it's an NPRM process, and my expectation is that sometime after the meeting in mid-February we'll get a clearer view of exactly what is being proposed. But from what I can glean from the materials that have been shared, it appears to me that this is an attempt to create regulation that is really unnecessary given the advances that have been made driven by marketplace forces. And in particular what I mean is that almost every MVPD, if not every MVPD, has over the last several years made great strides to make their video products available through multiple different devices to give customers a lot more choice than they ever had, and that's happening without any imposition of regulation, which as we all know can have unintended consequences that it can actually stymie or thwart innovation as opposed to advance it.

So I'm highly skeptical, but I really do want to reserve judgment until we see the specifics of what's being proposed. We in particular have been at the forefront of some of the developments in the delivery of IPTV, not only through our TWC TV app, which serves as a complement to our traditional video service. It enables customers to consume our video product in all sorts of IP-enabled devices, but more recently, through the trial that we're doing in New York City which represents kind of the first stage of a potential substitutional service which would enable customers to enjoy our video service without leasing a set-top box, so again, hard to really see the need for regulation in an environments that's as dynamic and as vibrant as this one.

**John Hodulik**

Great. Thanks, Rob.

**Tom Robey**

Thanks, John. Next question please.

**Operator**

Thank you. Our next question is from Jessica Reif Cohen from Bank of America Merrill Lynch. You may ask your question.

**Jessica Reif Cohen**

Thank you, good morning everyone. Your programming costs are still growing at roughly double-digit rates. Can you talk about the outlook for 2016, and beyond if you can? And as part of that, can you comment on how you see the bundle evolving?

**Rob Marcus**

Jessica, we're not going to give specific guidance on 2016 programming expense, just as we're not really going to give any other guidance. I would tell you, I don't expect any near-term fundamental change in the trajectory of programming cost growth.

In the fullness of time, do we see the growth rate we've seen for the last, I don't know, how many number of years moderating? I think it's certainly a very interesting time. And there are some reasons to believe that in fact long-term programming cost growth might moderate.

One of the points of leverage historically that programmers have had is that if we cease to carry a particular network due to an inability to reach an agreement, customers who wanted that network would have no other choice but to switch to an alternative MVPD, and that certainly put pressure on us at the negotiating table.

I think as you see more and more programmers making their networks or their content available on an a la carte basis direct to consumers I think that dynamic changes, and it does potentially shift leverage in a manner that could allow us to moderate programming cost growth. But again, very early days in those kinds of trends, and there's a lot of things that go into programming cost growth, so I'm hesitant to make any firm prediction at this point.

**Jessica Reif Cohen**

Thank you. Can I just follow-up maybe just on HSD penetration still seems pretty low given the increasing, you said like a la carte, there is OTT et cetera, where do you expect it to trend for you over time?

**Rob Marcus**

Again, I'm going to refrain from making longer term projections. We added a million HSD customers in 2015. We're looking forward to robust growth in 2016. So we think there continues to be room to grow, and that's what we're focused on doing for now.

**Jessica Reif Cohen**

Thank you.

**Tom Robey**

Thanks, Jessica. Next question please.

**Operator**

Thank you. Our next question is from Vijay Jayant from Evercore ISI. Sir, you may ask your question.

**Vijay Jayant**

I just wanted to drill down on your Maxx market performance. Obviously we see total company performance, and it's all improving, but can you sort of compare and contrast in the Maxx markets what customer behavior is on take rates on advanced services and churn characteristics so we can understand when we do the full transition what the company could look like? Thanks.

**Rob Marcus**

I'll start on that one, and if Dinni has anything to add he'll chime in, but I think the general takeaway from the work we were doing in the Maxx markets is that the improvements to our product set, the reliability of the product sets and overall customer satisfaction are all really -- we're getting very positive feedback across the board there. And I think it's starting to show up in our numbers. We've had churn improvement across our footprint, but even more significant churn improvement in the earliest of our Maxx markets, New York, and LA. So it's all favorable.

At this point, we haven't seen any material change in take rates on what I guess -- what you're calling is the end services, I can't think of what you might be talking about except maybe transactional VOD, but there's nothing else that would jump out at me as something that would logically flow from the features and benefits that we're rolling out in Maxx markets. But overall we're very pleased with the investments we're making, and that's why in '16 we have a pretty healthy lineup of markets that will be moved to Maxx.

**Vijay Jayant**

If I can have a quick follow-up on your IP Video plans. Are your programming rights allow you to offer these services on a non-facilities base? Meaning, can you do it outside your broadband footprint?

**Rob Marcus**

I'm not going to talk about details of our programming agreements. What I will say is that the offering we're trialing in New York is explicitly directed at in-home video viewing. It really is designed to be an alternative to our traditional set-top box-based video product. Separately, as we mentioned in the prepared remarks, we're always working towards augmenting our outside-of-the-home video offering. And as we said, that -- The channel lineup and the VOD content that's available outside the home is growing pretty quickly, and we think that's a nice value add for our video customers. But the IP TV trial that you're referring is really targeted at in-home viewing.

**Vijay Jayant**

Thank you so much.

**Tom Robey**

Thanks, Vijay. Operator, next question please.

**Operator**

Thank you, sir. Our next question is from Richard Greenfield from BTIG. Sir, you may ask your question.

**Brandon Ross**

Hi, it's actually Brandon Ross. A couple of questions, one, with Google Fiber talking about a large scale build-out in LA, why should investors not be concerned about that?

**Rob Marcus**

So Brandon, we've talked about Google before as a competitor. As you probably know, our experience with Google is still pretty much limited to the Kansas City market, where Google is available in roughly, let's say, 350,000 to 400-and-some-odd thousand homes in the region is the range they're at that's sort of the state of their development. In some places it's theoretically available but it's not yet really being offered. In any event, we -- they're a real competitor. We've certainly experienced some element of sub losses in Kansas City. But as they move into other markets, and the most near-term market is Austin, where they're just getting started. We think as a result of the experience we've had in KC, that we're much better positioned to compete with Google in future markets than we've ever been.

And in part that relates to the rollout of TWC Maxx, where we think our products are not just more capable with HSD speeds up to 300 megabits a second, and all digital video, but also much more reliable. And add to that the fact that we've deployed increased Wi-Fi hotspots in those markets. We think we're very well-equipped to compete with Google wherever they end up going. And as we know from experience, these -- the time between announcements about considering a particular market and actually being in markets are multi-year endeavors. So, to the extent that anything happens in LA, I think we're a number of years out.

**Brandon Ross**

Right. And just following up on an earlier answer that you gave, you said that there's the potential for a leverage shift in programming negotiations because networks are offering more content available over their top. What about the outlook though for sports programming costs?

**Rob Marcus**

I don't really -- I'm not distinguishing much between the two. We've not seen as much in the way of direct-to-consumer availab of sports programming. So to the extent that that's different than the comment I made about a leverage -- a potential leverage shift. And I don't want to get too far ahead of myself here. I don't think we've really quite seen it yet. And I raise it only as a long-term potential. But if in fact sports programming was available on that basis, same thought would apply.

**Brandon Ross**

And just one more, Verizon's been touting the success of Custom TV. How come you guys -- or what's your thought process around offering a similar type choice for customers?

**Rob Marcus**

Yes, Brandon, for long time now I've been an advocate of providing customers with choice, whether that's in HSD or video. On the HSD side, we offer our many tiers -- many speed tiers and consumption tiers because we think that a one-size-fits-all approach doesn't yield maximum benefit to us. Same goes true -- goes for video. And the only reason that we haven't run headlong into a Custom TV-type solution is that we've really made a great effort to simplify our offerings as we tried to turn our residential business around, and keeping things simple. Meaning limiting ourselves really to one lead triple-play offer with a couple of different flavors, and focusing on a simple approach has served us very well. And I think that's in part what's driven our recent subscriber success.

**Brandon Ross**

Great, thank you.

**Tom Robey**

Brandon thanks for your question. Next question please.

**Operator**

Thank you. Our next question is from Craig Moffett from MoffettNathanson. Sir, you may ask your question.

**Craig Moffett**

Thanks. I'm going to see if I can squeeze in two if I could. First I guess for Dinni, -- so if I think about the turnaround that's happened, you've passed the first threshold of subscriber growth. Now you've passed the second threshold of revenue growth. I know you can't give guidance, but can you just talk a little bit about when we could expect to see the final leg of that, which is EBITDA and profitability growth follow.

And then Rob, I wonder if you could just talk about wireless a bit. You're in kind of an awkward situation now in that the wireless auction will begin before your merger is completed based on the California timeline. How do you think about what you might do in wireless given those constraints?

**Dinesh Jain**

Craig, yes, I think -- obviously I am not going to give guidance as you suggested even in the way you asked the question. But what I can say is that what happens after you get the subscriber growth approximately a year later as we are seeing, we start to see the revenue growth. And I think that what seems to lag in the EBITDA growth is often the scaling effect that you have in the business.

There are certain decisions that we've made to bolster our customer service in the call centers and with the tech. But as you get to a point where we're reaching a normalized operating run rate, the year-over-year investments in them -- in that area don't continue to go up. In fact over time, as we've discussed in this call, those will actually start to come down, because as error rates reduce.

So I think we're right on plan from where we would like to be. We're doing around the same level of Maxx each year, so that we're not having to scale up for Maxx as you know every year. And if things continue like they continued last year, I think we would see that just according to our overall plan.

**Rob Marcus**

So Craig, I'll give you a little bit more without any specific numbers. In our prepared remarks, we did say that our 2016 plan contemplated continued subscriber growth and better financial results. And when we say better financial results, we mean not just revenue but also OIBDA. So, put that in. You can factor that comment in.

In terms of wireless, I am not really sure I have much to add to things like previously said in this area. Obviously, we're not go to be participating in the spectrum auction. And our focus in the mobility space has been on the continued deployment of our Wi-Fi access points. We think that adds value to our HSD customers. And we're going to continue to spend to expand that network. And at this point, that's the extent of our wireless game plan.

**Craig Moffett**

Right. Thank you.

**Tom Robey**

Thanks, Craig. Next question please.

**Operator**

Thank you. Our next question is from Ms. Laura Martin from Needham & Company. You may ask your question.

**Laura Martin**

I would love to ask you for more color on consumer demand metric. So with all this fabulous products you now have, could you talk about consumer usage? Are you seeing more consumption of the video product? I would love to learn if you have any insights in terms out of home versus in home. In home, how much shifting to on-demand versus stay-at-home linear feeds? Thank you.

**Rob Marcus**

Yes, I am not sure how granular we can get on the call, Laura although it's we can certainly follow up on. Let me give you a couple of high level numbers. Our usage of the TWC TV app has grown materially over the last year. I think in December, we had something like 20 million sessions. And I think somewhere approaching 10% of our customers actually use the app. So, it's starting to get good traction and certainly adds to the value proposition.

Most of that use is in home. And frankly, most of that use is on a couple of platforms iOS and android with growing use on local devices as well as some of the other platforms.

In terms of linear versus on demand, I don't have the stats at my fingertips and we can probably follow-up with that.

**Tom Robey**

Great. Thanks, Laura. Next question please.

**Operator**

Thank you. Our next question is from James Ratcliffe from Buckingham Research Group. You may ask your question.

**James Ratcliffe**

Good morning. Thanks for taking the question. Just two quick ones, if I could. First of all, following up on John's question around set-top boxes, I mean the last time we tried third party set-top boxes. It seemed like most people didn't actually want to buy box. Has anything changed since then? Particularly, what's your experience of people buying the modems? What share of the customer base purchased the modem? That seems much more straightforward cost-benefit analysis than a set-top with every user interface et cetera?

And secondly, could you just update us what percentage of the footprint actually has Maxx at this point? And what the increase was in '15? Thanks.

**Rob Marcus**

Okay. So just to give you the stat on customer-owned modems, I think roughly 14.5% of HSD customers bring their own modem. It's an interesting question as to whether or not there is real aversion to leasing a set-top box and how much demand there will be for an alternative. We think giving customers the choice is the right way to go. And those customers who want to continue to lease a set-top box from us will be satisfied through a program when we do that. And those that do not, we would like to give the opportunity to consume our video product a different way through a device that they might otherwise own already or that they might go out and purchase themselves.

So we think that customer choice is the order of the day there. And we'll have to see how the demand is. We know that in the trial that we are doing and there is obviously a lot of self selection and trial, but the feedback we're getting is extremely favorable. Thank you for doing this. That's what we wanted. So, we'll have to see. It's one of the reasons why we're doing the trial is to understand exactly how interesting this is to customers.

In terms of Maxx, it's a little tough to say because we're completed in some markets, and then, we are in-process in others. I would say from a totally completed perspective, if you measure it based on customer relationships or homes path, and I think it's more or less the same. I think we're probably in the low 40s% range. Partially completed, we're somewhat higher than that. And probably give or take half of that happened in 2014 -- '15 excuse me, with the first half being in 2014.

**James Ratcliffe**

Great. Thank you.

**Tom Robey**

Thanks, James. Next question please.

**Operator**

Thank you. Our next question is Marci Ryvicker from Wells Fargo. You may ask your question.

**Stephan Bisson**

Good morning. It's Stephan on for Marci. I think you guys have done various trials on usage-based pricing. Do you have any thoughts on implementing it more broadly throughout the footprint?

**Rob Marcus**

Yes, Stephan. We actually are beyond and have been for many years beyond the trial phase. We've offered across our footprint for several years; two different usage-based offerings, one, which enables customers to use five gigabytes a month and another, which enables customers to use 30 gigabytes a month. And the way we think about those are that they are complements to our unlimited offering, and again are consistent with this theme that I have talked about several times of giving customers choice.

The uptake, candidly, has not been significant. We probably got somewhere in the tens of thousands of customers that subscribe to those two tiers combined. That said, we think the choice is nice for customers to have and we're not intending to discontinue them.

**Stephan Bisson**

And on the higher side, so maybe in terms of are there any caps currently, and...

**Rob Marcus**

No, our unlimited service is unlimited.

**Stephan Bisson**

Great, thanks so much.

**Tom Robey**

Thanks, Marci. Next question please.

**Operator**

Thank you. Our next question is from Tom Eagan from Telsey Advisory. Sir, you may ask your question.

**Tom Eagan**

Great. Thanks a lot. A follow-up from a previous question, among your earliest customers on the new triple play promo from a year ago, again what was -- when the price increases by about 20 bucks, what is it showing on those subs? Thanks.

**Dinesh Jain**

We're finding that the retention rate -- we're retaining more than we were retaining, Tom, before we started this offer. So our overall retention both of the customer itself and of ARPU is higher than what we were previously experiencing.

**Tom Eagan**

Great. Thank you.

**Tom Robey**

Thanks, Tom. Next question please.

**Operator**

Thank you. Our next question is from Phil Cusick from JPMorgan. Sir, you may ask your question.

**Phil Cusick**

Hi, guys. Thanks. So we are seeing ARPU picking up nicely. Can you talk about the balance of new subs coming in and price increases as we think about ARPU and revenue growth this year, obviously with forecasting? And then, customer reaction to the recent price increase, how do you think that influences the ramp and as well as disconnect and cord cutting issues? Thanks.

**Rob Marcus**

Boy, a lot of stuff there, Phil. In terms of ARPU, let me just talk about some general dynamics, and I don't think they are new dynamics, but we should talk through them anyway.

When we are ramping gross connects as we have been, those customers by and large come in at promotional rates which are lower than the rates that our existing base is paying, and as a result, it was a dilutive effect on ARPU, although we like the fact that we're increasing aggregate connect revenue.

Disconnects also have an impact on ARPU, and interestingly, what we've experienced recently is that our disconnect -- the revenue per customer that disconnects is also lower than the base. So disconnects actually oddly have the impact of increasing ARPU, but if you have fewer of them on a trend basis, it actually -- the better you do at retaining customers as opposed to letting them disconnect, the worse the effect on ARPU.

And then obviously, there's what happens to the existing base and that's adding to ARPU. So those are the dynamics that are going on, and obviously as you do better in terms of taking customers off of promotions on to higher rates as you increase rates more generally, the impact on the existing base and then on the total ARPU improves, and that's what we're setting out to do. But I don't think there is going to be change in the dynamic that as we ramp across connects or as we continue add a whole lot of new customers that will by definition have a dilutive impact on ARPU.

In terms of the customer reaction to rate and fee increases, I guess without getting into specifics what I would say is that the increases the customers are seeing on their bills this year are pretty comparable to what we did last year.

We adopted the same general strategy of a unified rate and fee increase, which means that customers would not see more than one increase in a given year. And what we also stuck with was the strategy of applying the increases as broadly as we could, and therefore minimizing the impact on any individual customer. That worked quite well last year. And I think we were able to, as you can see from the churn numbers, managed through the rate increase quite well. It's early days in this year's cycle, but our expectation is that we'll be effective in managing churn this time around as well.

**Phil Cusick**

Got it. Thanks, Rob.

**Tom Robey**

Thanks, Phil. Next question please.

**Operator**

Thank you. Our next question is from Tuna Amobi from S&P Capital IQ. You may ask your question.

**Tuna Amobi**

Hey, thank you very much. So Rob, I was trying to understand in terms of the timeframe that you've updated early in call for the closing, it seems to me that -- did you tuck-in someone reading to that, there might be a little more uncertainty in terms of the timing? I think in the last call, you had suggested early 2016 closing. And from everything we have heard, seems like the timeline was on track. And the restarting of the clock, do you foresee anything else that might maybe perhaps delay the closing beyond Q1 of this year?

**Rob Marcus**

So Tuna, let me start with what you said I said, which I don't think is accurate. I think last quarter what I said was that closing in 2015 looked ambitious without any specificity around when in 2016 we might close.

The current short clock, if there are no further delays, will expire towards the end of March. As we know, California has published a timeline that takes us into June although we remain hopeful that we can accelerate that.

At this point, it's impossible for me to predict whether or not the FCC would stop the clock. Again, I have no indication that they would. But again, this is an informal short clock and they have a lot of latitude in how they proceed.

So I wouldn't describe there will be more uncertainty at all. We are further along than we were when we were last on the phone with you, especially given the approval in New York and continued progress elsewhere, but that's about all about I can say. But I certainly wouldn't characterize it as more uncertainty.

**Tuna Amobi**

Okay, fair enough. I stand corrected. Thank you.

**Tom Robey**

Thank you, Tuna. Next question please.

**Operator**

Thank you. Our next question is from Amy Yong from Macquarie Capital. You may ask your question.

**Amy Yong**

Thanks. I understand that you are walking away from guidance -- excuse me, but can you comment on the trajectory of CapEx spend for '16 and beyond? What are the bigger buckets? Maxx going all digital, and can you parse out what could be considered onetime? Thanks.

**Rob Marcus**

Let me try to do it at a very high level and maybe Matt you can supplement it. As we said, we're not going to give specific CapEx guidance. But what I will say is that the things that drove capital spending in 2015 continue to be higher 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'll continue to spend on cell tower back haul in that area. We are going to continue to spend to accommodate the growth that we're driving in units, which means spending CPE and on adding network capacity because not only we're adding units but customers are using our services more. So that means we need to spend on capacity.

And then the last big bucket is that we're spending on improving the customer service -- customer experience and that's really where the Maxx work comes in. And as we said, we have an ambitious schedule for Maxx deployments in 2016.

So at a high level, that's sort of how we're thinking about the buckets of capital. And I should add in addition to Maxx as part of the customer experience effort, and this is something that was very true in 2015, we'll continue to replace customers' set-top boxes that are older less functional. And we think that really does have significant payback in terms of improving the customer experience. Matt, I don't know if there is really anything to add.

**Matt Siegel**

No.

**Rob Marcus**

Okay.

**Amy Yong**

Great, thanks.

**Tom Robey**

Thank you, Amy. Operator, next question please.

**Operator**

Thank you. Our next question is from Jonathan Chaplin from New Street Research. You may ask your question.

**Jonathan Chaplin**

Thanks. Dinni and Rob, I would love to get your thoughts on what's driving the acceleration in broadband subscriber growth that you have seen in your business, but we've seen for the industry in general? How much of it is coming from company specific things you've done around rolling out Maxx and changing pricing versus just increasing broadband and the utility of the board band product and customers increasing willingness to -- reliance on speed and willingness to pay for it?

And what I am wondering about ultimately is to what extend we in the early stages of a trend of acceleration, we could see even higher growth next year versus this being sort of a function of onetime benefits that you've implemented this year?

**Dinesh Jain**

Jonathan, I don't think that what we experienced in 2015 is the product of onetime benefit. I think it's a product as we've said during the course of this call it's the product of better operational focus. Focus on things like driving down disconnect, on priming our connect machines through the various channels that we've talked about. And I think it's through the work that we are doing in things like Maxx where we are delivering a better customer value proposition in the HSD space overall. So, I think it's the aggregation of those things.

And as Rob said in an earlier question, we think that there is a lot of growth in front us in the HSD space. So, we expect -- the growth that we've seen in 2015, we believe is sustainable.

**Rob Marcus**

And then only thing I would add to it, Jonathan, is it's not just going happen. There is an awful lot of work on our side that needs to continue to occur in order for us to remain competitive in the broadband space.

It's already a competitive market, but it's a dynamic market where new competitors are entering all the time and augmenting their capabilities. So we have to continue to improve our product, improve our customer service, make sure that it's incredibly reliable in order to continue grow at the kind of space that we've been able to achieve.

**Jonathan Chaplin**

Got it. Thank you.

**Tom Robey**

Great. Jonathan, thanks very much. Operator, I think that's probably all we have time for this morning. Thanks to everyone for joining us. Have a great day.

**Operator**

Thank you. That concludes today's conference. Thank you all for participating. You may now disconnect.

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