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**Telecom in Ohio**

**September 30, 2014**

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Telecom has become an extremely broad term, encompassing landline, wireless, video and data communications from hundreds of competitors, using dozens of technologies.

The Ohio Telecom Association (OTA) represents a broad range of companies offering landline, wireless, video, broadband and data services. OTA members are constantly investing and innovating to meet the ever-growing demand for advanced communications.

This report reviews the importance of telecom in Ohio and the roles of OTA members. Some highlights:

* Telecom in Ohio is a $20 billion annual industry.[[1]](#endnote-1)
* Ohio telephone companies contribute more than $4 billion annually to Ohio’s economy and employ more than 16,000 Ohioans.[[2]](#endnote-2)
* Ohio telephone companies invest $1 billion annually in the telecom network – constantly making upgrades to expand broadband and wireless services.[[3]](#endnote-3)
* Ohio incumbent local telephone companies have lost 66% of their landlines since the year 2000 to wireless and VoIP alternatives.[[4]](#endnote-4)
* 45% of homes in Ohio are wireless-only and no longer have a landline phone.[[5]](#endnote-5)

###### Broadband is now in 72% of Ohio homes.[[6]](#endnote-6)

* 85% of residential customers cannot cite the broadband speed they receive. About one-third are less-than-satisfied with the speed they experience, even though they don’t know what it is.[[7]](#endnote-7)
* The average household data download has increased 110% over last year.[[8]](#endnote-8)
* Smartphone screen time has surpassed TV viewing at 151 minutes per day versus 147 minutes for TVs.[[9]](#endnote-9)
* Time-shifted television viewing has increased 50% in just the last year.[[10]](#endnote-10)

###### Netflix is responsible for 33% of peak Internet traffic. [[11]](#endnote-11)

* Subscription video providers lost 4% of their customers in 2013, due largely to a shift to online content.[[12]](#endnote-12)
* Wi-Fi carries 60% of mobile data traffic.[[13]](#endnote-13)
* 63% of wireless users now have a smart phone. [[14]](#endnote-14)

For additional information, please contact Charles R. Moses, President, Ohio Telecom Association, 614-221-3231 or moses@ohiotelecom.com.**The Marketplace**

The telecom marketplace in Ohio is highly competitive, with hundreds of companies selling voice, video and data services to Ohio’s 11.6 million residents and 1 million businesses.

Telecommunications in Ohio is now a $20 billion annual industry. Wireless leads the pack among all providers with $6.8 billion in annual revenues – more than 50% of which is derived from data plans.[[15]](#endnote-15)

**Telecom Revenue in Ohio (In Billions)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Service** | **2006** | **2009** | **2013** |
| Local (ILEC and CLEC) | $3.2 | $3.2 | $2.5 |
| Long Distance | $2.5 | $2.2 | $1.0 |
| Wireless and Wireless Data | $3.3 | $4.4 | $6.8 |
| Subscription Video | $1.3 | $2.8 | $3.8 |
| Broadband | $1.5 | $2.8 | $6.2 |
| **TOTAL** | **$11.8** | **$15.4** | **$20.3** |

Technology adoption continues to surge: 63% of wireless users now have a smart phone; 42% of adults now own a tablet computer, such as an iPad; 40% of homes use digital video recording (DVR) for time-shifted television viewing; over-the-top video (video content acquired from websites, such as Netflix) is used by 25% of homes.[[16]](#endnote-16) Netflix alone has more than 30 million subscribers nationally – 2 million more than HBO's 28 million subscribers.

**The Internet of Things**

The ubiquity of wireless and broadband has led to an explosion of connected devices. Beyond computers, smart phones, tablets and TVs, consumers are now connecting household appliances, machinery, tools, automobiles, medical equipment, clothing and everything imaginable to the Internet.

This phenomenon is known as the “Internet of Things.” By 2020, there will be an estimated 26 billion connected devices worldwide.[[17]](#endnote-17)

**Smart Devices**

The term “smart” in consumer electronics means the device can access the Internet and/or be controlled remotely. In a smart home, these devices can include door locks, security cameras, lighting systems, stereo systems and appliances.

On the person, the smart *wearable* devices include Apple’s iWatch, MP3 players, medical bracelets, GPS tracking and eyeglass computers (Google Glass). Some additional statistics:[[18]](#endnote-18)

* Smart home systems will grow 15% annually over the next five years to become a $5 billion annual industry.
* Security systems, home entertainment and lighting make up 56% of the home automation market.
* Smart homes can save as much as 20% on average on insurance.
* Smart homes can save as much as 15% on average on energy.

**Big Data and the Cloud**

With so many devices transmitting and receiving, a new sector in telecom has been born: “Big Data.” This refers to data sets so large and complex that special tools are needed to capture, store and analyze them. Take Facebook and its 900 million users. The company maintains almost a dozen massive data warehouses in the U.S. alone, the latest covering more than 300,000 square feet.

The term “cloud” creates a lot of confusion. What is it? *Where* is it? A simple way to envision the cloud is to replace the word “cloud” with “offsite.” In a sense, cloud computing means “offsite computing,” or a machine located somewhere else that performs a function for you. Cloud storage means “offsite storage,” or storage of your data in another location. What makes it tricky is that there is no one cloud company or single offsite location. An infinite number of companies can offer cloud services in an infinite number of places and deliver the various capabilities via the internet.

**In Ohio**

The telecom companies in Ohio – phone, wireless, Internet and video providers – are having a multiplier effect on the economy. They provide the foundation for all of the connected devices that are manufactured and sold, and they create a market for big data and the cloud.

Furthermore, they create technology jobs for other businesses. The Bureau of Labor Statistics recently reported that 8,700 new IT positions are being created on a monthly basis nationally. This translates to an estimated 3,000 new IT jobs per year in Ohio.

Many Ohio companies are using broadband in innovative ways to do business. Below are three examples of how broadband is being used in the areas of health care, education and agriculture.

**HealthSpot**, located in Dublin, Ohio, applies the innovative application of technology to healthcare services. Working together with providers, health systems, retailers and payers, HealthSpot can produce high quality, low-cost appointments through remote private kiosks that use high-definition video conferencing between doctors and patients. HealthSpot represents the first true integration of telehealth and primary care.

Offered through the **Ohio Board of Regents**, the *eTutoring* program began in January 2010, with five schools and has expanded to 43 schools that include public and private, two-year and four-year higher education institutions. *ETutoring* gives students immediate access to teachers and tutors.

**John Deere’s** investment in technology is changing the way the agriculture community supports and connects with its customers. *JDLink* is a machine monitoring system that provides remote access to fleet location, fleet utilization and diagnostic data, giving farmers an immediate connection to analytics and diagnostics in the field.

**The Network**

The telecom network is the backbone of Internet, wireless and VoIP communications. Without it, the Internet could not operate and most wireless calls could not be made.

As consumers download more and more data to their multiple devices, they assume the network will be able to accommodate their activities: video streaming to their tablets, browsing from their smart phones, high-definition signal on their TVs – all occurring simultaneously.

As a result, the network is bursting at the seams. Consumers and policy-makers have come to expect that the network’s capability to deliver increasingly large volumes of data at lightning fast speeds will be unlimited.

Businesses, educational institutions, government agencies and health care providers rely on faster Internet connections for their very existence. Ohio’s incumbent local phone companies proudly share in the responsibility of supporting commerce and the overall quality-of-life in the state.

**IP Transition**

The telecom network in Ohio is undergoing a radical transformation from old copper phone wires and circuit-based switches to an all Internet Protocol (IP) system. This means that all communications – voice, video, pictures, songs and the Worldwide Web – will be converted to data and processed by new data switches and other electronics.

The transition will require a wholesale replacement of old equipment with new IP networks, including fiber optics. Some telecom providers have already completed their conversions; others are underway.

Once completed, an all IP network will operate much more efficiently than the legacy phone network and provide much greater capacity for consumers’ broadband activities.

**VoIP**

Voice over Internet Protocol (VoIP) is a technology that allows customers to make and receive telephone calls over their broadband lines. There are a range of VoIP providers, from telephone and cable television companies to Skype to Vonage.

**Cable VoIP**

Tapping into their broadband lines, cable television companies began offering phone service more than a decade ago. Dubbed “Cable Telephony” or “Digital Voice™,” the technology is VoIP. The only distinction between Vonage and a local cable company offering VoIP is scope. The local cable company promotes the service exclusively to its cable television and broadband customers, while Vonage promotes its service nationally to anyone with a broadband connection.

**Other VoIP Competitors**

Two other well known VoIP options are Skype with more than 299 million users worldwide and Vonage with 2.5 million customers in the U.S. While Skype is largely free or pay-as-you-go, Vonage charges a fixed monthly fee for unlimited local and long distance calls.

In an effort to become more innovative and efficient, ILECs are also transitioning to VoIP because the VoIP infrastructure costs are much less than those of the public switched network. Over time, VoIP will become the standard technology for transmitting voice communications.

**Telecom Regulation**

**United States**

For more than a century, Incumbent Local Exchange Carriers (ILECs) operated as government-sanctioned monopolies. Each company was assigned a geographic territory and became the sole provider of local phone service in that area. In exchange for this exclusivity, the government set rates, established service standards and restricted the profits that companies could earn.

ILEC areas were opened up to competition with the passage of the federal Telecommunications Act of 1996; yet 18 years later, many of the state and federal regulations that were original conditions of their monopoly status still exist.

In January 2013, the Federal Communications Commission began implementing “Connecting America: a Plan to Reform and Modernize the Universal Service Fund and Intercarrier Compensation System.”

Among the many rule changes, the Commission is phasing out its support programs for landline phone service and reallocating the funds for broadband deployment. Approximately $4.6 billion will be spent nationally every year for the next five years to deploy broadband to unserved or underserved areas. Since broadband is already available to 99% of homes and businesses in Ohio, it is unclear how much federal funding will reach the state.

**Ohio**

In undertaking these changes, the FCC did not coordinate with individual states or consider the impact on state regulations. It simply recommends, in the most general fashion, that each state utility commission reconsider its regulations, based on federal changes. Without timely reform, regulatory uncertainty can adversely impact OTA members’ investment decisions.

On the state level, many of Ohio’s telecom regulations predate wireless and the Internet and are based on the old copper phone network. Advances in technology and competition, though, have rendered many regulations unnecessary or irrelevant.

Nationwide, state-by-state, public utilities commissions and legislatures are evaluating the work of the FCC and are modernizing their policies to create a level playing field for all telecom providers. More than half of states have enacted comprehensive market reform laws to address the changing marketplace.

Ohio took a step toward such action with the passage of SB 162, the Telecommunications Modernization Act of 2010, affirming that the state utilities commission (PUCO) has limited authority to regulate VoIP and may only exercise its limited authority if it finds in a rulemaking that it is necessary for the protection, welfare and safety of the public**.**

The Act reduced ILEC tariff filing requirements to Basic Local Exchange Service (BLES), Carrier Access, N-1-1 services, pole attachments, pay telephone access lines, toll presubscription, excess construction charges, inmate operator services and Telecommunications Relay Service (TRS).

Although VoIP service appears almost identical to traditional telephone service, it is defined by regulators as an “information” service, not a “communications” service. Therefore, VoIP is not subject to most of the regulations imposed on local telephone companies.

As VoIP providers, cable telephony enjoys the competitive advantages outlined below. As of year-end 2012, there were an estimated 925,000 cable telephony customers in Ohio, representing 20% of homes. The exact numbers are unknown, as cable telephony is not a regulated telecom service. Providers are not required to report customer counts, nor is there significant oversight from the PUCO or FCC.

**Comparison of VoIP / LEC Regulatory Requirements**

|  |  |  |
| --- | --- | --- |
| **Regulation** | **VoIP** | **ILEC** |
| Telecom Taxes | Exempt | Applies |
| Universal Service Support | None | Available |
| Local Loop Facilities | None | Regulated |
| Quality of Service | Market Driven | Regulated |
| Disconnect for Non-Payment | At Will | Regulated |
| Billing Rules | None | Regulated |
| State Jurisdiction | None | Yes |
| Federal Jurisdiction | Limited | Yes |
| Access to LD Carriers | None | Regulated |
| 911 Access | Required | Required |
| Tariffs | None | Required |
| Lifeline | None | Required |
| Support of TDD and TDY | Required | Required |
| COLR | None | Required |

Eventually, all voice communications will be transmitted as VoIP, even those of local phone companies, as the telecom network migrates to an all IP platform. However, traditional telephone service is still significantly regulated, and VoIP is not.

**Investment in Ohio**

Ohio’s incumbent local phone companies contribute more than $4 billion annually to Ohio’s economy and invest more than $1 billion annually in the network, making the incumbent local phone companies powerful economic drivers. ILECs are committed to spending billions more to increase bandwidth and capacity. New technologies, such as fiber-to-the-home, can fulfill the need, but they require large capital investments. Fiber connections can easily exceed $10,000 per home in rural areas.

Following are examples of how four diverse telecom providers are investing in Ohio:

A**T&T**

* $1.6 billion in capital investment between 2011 and 2013.
* $120 million investment for phase one of a new data center in Akron.
* 73 company owned retail stores, and 632 authorized dealers in Ohio.
* 930 new jobs added in Ohio in 2013.

**CenturyLink**

* More than 1,900 employees in Ohio.
* High-speed Internet to more than 120,000 residents.
* Voice service to approximately 279,000 residents.
* More than $89 million invested to expand broadband availability.
* 95% of customers can receive broadband in the state.
* Global leader in Cloud Infrastructure and Hosted IT solutions for enterprise customers.

**Horizon Chillicothe Telephone**

* 119 year old Ohio Company with 158 employees.
* Launched one of Ohio’s first rural cable TV systems.
* Pioneered both dial-up internet and satellite TV service in the region.
* Built fiber optic networks since mid-1980s.
* Network Provider for the Southern Ohio Healthcare Network (SOCHN).
* Provide fiber to Community Anchor Institutions (K-12 schools, universities, libraries hospitals, 911 Centers & Government offices).
* Recently completed miles of new, state-of-the-art, world-class fiber optic network.
* Invested millions in 34 county footprints in Ohio since 2009.

**Verizon Wireless**

* + $830 million to extend 4G LTE to 45 Ohio cities and towns from 2010 to 2012, which included adding new cell sites and upgrading equipment on existing cell sites; installing permanent backup generators at cell sites; and prepping the backbone for 4G LTE at urban and rural locations across the state.
* $2.4 billion total investment in Ohio since 2000.
* 4,300 total Verizon employees in Ohio.

As a result of these and other companies’ investments, Ohio is trending ahead of the national average in broadband adoption and mobile data.

**Broadband Adoption in Ohio[[19]](#endnote-19)**

**Ohio’s Local Phone Companies**

New technologies have made traditional local phone service largely obsolete. Most consumers prefer wireless and Internet communications to landline. As a result, many Incumbent Local Exchange Carriers (ILECs) are aggressively expanding to compete in new markets and diversifying with wireless, video and broadband service offerings.

**ILEC Landline Subscribers (in Millions)[[20]](#endnote-20)**

For many consumers, the local phone service is the first telecom expense to be cut. Some additional statistics:[[21]](#endnote-21)

* ILECs have lost 66% of their local phone lines since peaking in 2000.
* ILECs continue to lose phone lines at a rate of 6% - 10% per year.
* 25% of the average local phone bill is for taxes, surcharges and regulatory fees.
* The future of ILECs is in broadband and other services:
  + 100% of Ohio ILECs also provide high-speed Internet.
  + 75% of ILECs are also subscription television providers (through a cable subsidiary, satellite franchise or transmitting IP video over DSL or fiber.)

Despite these shifts, the local telco remains the backbone of all telecommunications. ILECs maintain the infrastructure that connects retail and wholesale customers and allows them to benefit from advanced technologies.

**Wireless in Ohio**

Brimming with innovation, wireless continues to dominate the telecom industry. Wireless service revenues are now $6.8 billion annually in Ohio -- $200 billion nationwide. There are an estimated 11.8 million wireless accounts in Ohio for a population of 11.5 million. Ohio has 11 wireless carriers.[[22]](#endnote-22)

**Wireless Subscribers (in millions)**

An estimated 45% of homes in Ohio have completely eliminated local phone service and rely exclusively on wireless communications. Some additional national statistics:

* Smartphone users increased 23% in 2013 and now total 156 million.
* Wireless Internet connection speeds have doubled over the last year and now average 3 Mbps.[[23]](#endnote-23)
* Smartphone screen time has surpassed TV viewing at 151 minutes per day versus 147 minutes for TVs.
* Wi-Fi carries 60% of mobile data traffic.
* The wireless industry employs more than 3.8 million Americans.[[24]](#endnote-24)
* Apple alone has sold more than $10 billion in mobile apps.[[25]](#endnote-25)
* There are more than 300,000 cell towers across the U.S.[[26]](#endnote-26)

**Broadband in Ohio**

Generally defined as high-speed Internet, broadband is a relative term: a 5 Mbps and a 1 Gbps connection are both considered broadband, but the difference in the two is tremendous. The 1 Gbps connection is 200 times faster!

While Broadband is available in 99% of Ohio homes, it is only adopted in 72% of those homes. Wired and wireless broadband providers are competing head-on to capture the customer’s business. Although wired technologies (DSL, cable, fiber) have the advantage of greater bandwidth, wireless benefits from mobility. The primary providers of broadband in Ohio are:

**Ohio Broadband Competitors[[27]](#endnote-27)**

|  |  |
| --- | --- |
| **Delivery Medium** | **No. of Providers** |
| DSL (copper phone wires­­­) | 49 |
| Other Wireline (T1, T3, etc.) | 35 |
| Cable Modem (cable television wires) | 28 |
| Fiber-optics | 34 |
| Fixed Wireless | 24 |
| Mobile Wireless | 8 |

An Intel study on Internet activity shows just how much is being done online. In a single minute, more than 204 million emails are sent, 47,000 apps are downloaded, around 20 million photos and six million Facebook pages are viewed, and 1.3 million video clips are watched on YouTube. Some additional national statistics:

* Broadband is now in 70 % of all US homes.
* The average household spends $50 per month on wireless broadband (smartphones and tablets connecting to the cellular network.)[[28]](#endnote-28)
* The average household spends an additional $40.17 per month on wired broadband (DSL, cable modem or fiber, for example).[[29]](#endnote-29)
* Netflix is responsible for 33% of peak Internet traffic.
* 85% of residential customers cannot cite the speed they receive. About one-third are less-than-satisfied with the speed they experience, even though they don’t know what it is.
* As shown below, the average household consumes a total of 60 Gigabytes of data per month, an increase of 110% over last year.

**Monthly Residential Data Consumption (in Gigabytes)**

As more Ohioans purchase smart phones and tablet computers, spending on broadband is increasing proportionally.

There are two challenges facing broadband providers: 1) keeping up with customer demands for speed and bandwidth; and 2) converting the 28% of homes without broadband.

With regard to speed and bandwidth, customers expect more and more at no additional cost and with no limitations. They require the ability to stream and download unlimited amounts of data over their wired connections, irrespective of network capacity or expense to the provider.

As to the 28% of homes without broadband, state and federal regulators and policymakers regard broadband to be a life-enhancing service and to provide a benefit to every individual. Getting the service to all Americans is now a public policy priority.

###### **Video in Ohio**

Like wireless, video is exploding with innovation, from three-dimensional imaging to whole-home DVR to digital voice (VoIP). As a result, video providers are enjoying a steady increase in customer spending.

There are 51 cable television companies serving Ohio and two Direct Broadcast Satellite (DBS) providers: DirecTV and Dish Network.[[30]](#endnote-30) The cable companies have been especially ambitious at deploying broadband and telephone service.

**Video Market Share**

Smart televisions bring the Internet directly to an HDTV over a Wi-Fi connection. Some televisions have the receiver built-in, others can be connected to an external streaming device called a Dongle.

These devices and televisions have changed how Ohioans watch TV. As with phone service, many consumers are eliminating their subscription video service and simply accessing all of their content from various websites. As evidence of the range of content available, the 2014 Super Bowl was streamed live from the broadcaster’s website.

Streaming video requires a great deal of bandwidth: approximately 6 Mbps per television. A family with multiple televisions streaming different content simultaneously, while surfing the Internet on tablets and computers, would require a minimum connection of 20 Mbps. Some additional national statistics:

* 75% of all Internet traffic is related to video.[[31]](#endnote-31)
* 88% of homes currently subscribe to a video service provider, such as a cable or satellite company, down from 92% in 2012.[[32]](#endnote-32)
* Time-shifted viewing has increased 50% in just the last year.
* An estimated 4.7 million homes will have “cut the video cord” by the end of 2014.[[33]](#endnote-33)

**About the Ohio Telecom Association**

The Ohio Telecom Association (OTA) promotes the common interests of telecommunications companies serving the state. OTA represents local phone companies, Internet providers, subscription video providers, wireless carriers and associate member companies that supply goods and services to the industry.

OTA is the first established telecommunications association in the United States. It represents the industry before the Ohio General Assembly and the Public Utilities Commission of Ohio. OTA plays an active role in the formulation of telecommunications policy and helps create a business environment in which its members can provide the best telecommunications services possible.

Although they have many divergent interests, OTA members are united in advocating for policies and regulations that create a fair marketplace. No single type of telecom provider – wired, wireless, VoIP – should be handicapped or be given an advantage in competing for the consumer’s business.

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