The ConnectME Authority

Detailed 2016-2018 Strategic Plan for Broadband Service in Maine

February 2016

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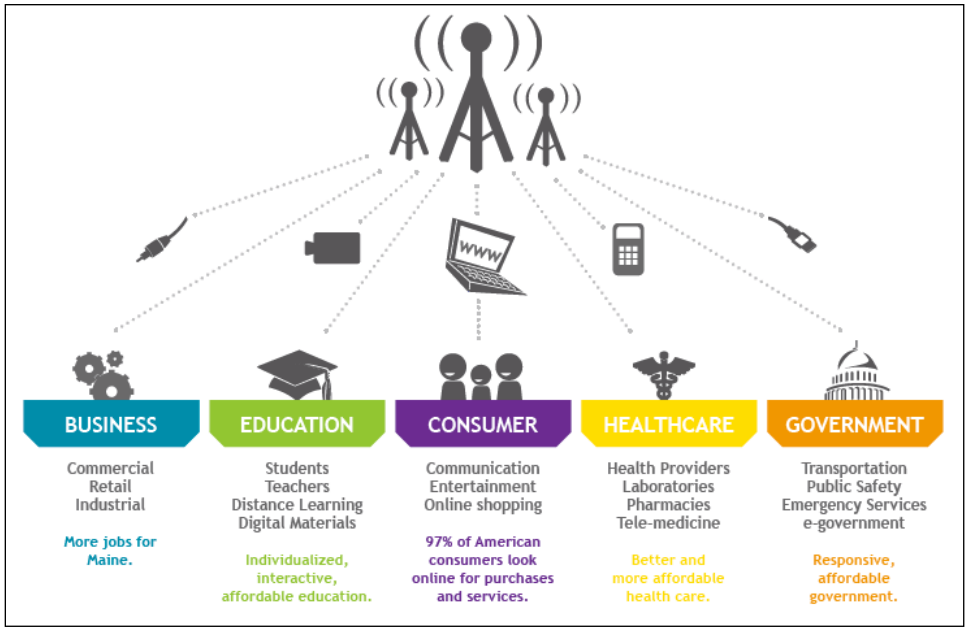
The ABCs of Broadband

In its simplest terms, "broadband" is a fast connection to the internet that is always on.

Broadband is revolutionizing the way people all over the world shop; conduct business; read; communicate; become educated; receive health care; and provide government services.



The Governor's Broadband Capacity Building Task Force identified how a more aggressive use of broadband in all of the above areas could generate 11,000 new jobs in Maine over the next decade, and $485 million in income.[1]

Different internet uses require different bandwidths. Bandwidth is measured in megabits of data per second (Mbps) or billions of bits per second (Gbps) that an internet connection can pull *down* (in a download a user gets information from the internet) or send *up* (in an upload a user sends information to the internet). For example, if a network has a 2 Mbps internet connection, it will take a little over an hour to download a 1 GB file, but the same file will take less than three minutes to download with a 50 Mbps connection.

More complex applications and multiple users require more bandwidth. Light household use, such as email and web surfing by three or fewer users at a time, may require only 1 to 2 Mbps. Higher demand uses (such as high definition video conferencing or online gaming), or having multiple users at the same time, require greater bandwidth. Some uses require symmetrical bandwidth, with equal upload and download speeds.

[1] See http://www.maine.gov/connectme/grants/ntia/capacity-building.shtml

Table 1: Download and Upload Speeds Required by Activity

Application	Download Speeds	Upload Speeds
• Basic email • Voice over IP (VOIP) • Browsing • YouTube video	768 kbps – 1.5 Mbps	256 kbps – 896 kbps
• Remote surveillance • Telecommuting • Streaming music • Standard definition video	1.5 Mbps – 3 Mbps	356 Kbps – 1 Mbps
• Internet protocol television (IPTV) • File sharing (small/medium files)	3 Mbps – 6 Mbps	356 kbps – 1 Mbps
• Video on demand • Remote diagnosis (basic) • Online gaming	6 Mbps – 10 Mbps	768 kbps – 2 Mbps
• IPTV high definition (HD) • Telemedicine • Remote education	10 Mbps – 25 Mbps	2 Mbps – 5 Mbps
• HD video surveillance • Smart/intelligent building control • Educational services	25 Mbps – 50 Mbps	5 Mbps – 10 Mbps
• Video conferencing • Multiple educational services • Research applications • Remote supercomputing	50 Mbps – 100 Mbps	10 Mbps – 25 Mbps
• Real-time data collection • Real-time medical image consultation	> 100 Mbps	≥ 100 Mbps

Source: 2013 Broadband in Maine Update

For current cloud-based applications, such as Microsoft Office 365, the speed requirement calculations are complex[2], and depend upon the number of users, sites, locations, and nature of use. In addition to the broad categories of applications included in Table 1, many business activities now require higher speeds for effective use.

Beyond speed itself, there are other factors affecting broadband performance and adoption. These include:

- Consistency – ability of service to maintain promised speeds at periods of peak use;
- Reliability – ability to maintain service in the case of storms or system breakdowns; and
- Affordability – ability to provide service at a price that consumers can pay

High-speed internet communication comes to people through wires, satellites, cell towers – often in combination – on a sometimes long journey from the source to your computer, cell

[2] Microsoft has a spreadsheet calculator available at https://gallery.technet.microsoft.com/Exchange-Client-Network-8af1bf00

phone, tablet, or device. Fiber provides the most reliable service to the home, but is the most expensive.

The ConnectME Authority Board currently defines effective broadband as 10 Mbps/10 Mbps – 10 megabits down and 10 megabits up. Areas that have maximum available broadband speeds of at least 10 Mbps/10 Mbps are considered ***served***. Areas with available broadband speeds that are lower than 1.5 Mbps download are considered ***unserved***. Areas where the maximum available service is between 1.5Mbps download and 10Mbps/10Mbps are considered ***underserved.***

Note on the Data Sources used in this report

The narrative which follows uses three different data sources, each with subtle differences. The Federal Communications Commission (FCC) receives data from internet service providers every year, and issues annual reports that describe in detail the levels of service available within the US and individual states. The strength of the information is its detail, annual updating, and consistency over the entire country. The weakness is that the "access" is measured in census block groups; therefore, if five households within a census block group of 500 households is eligible for high-speed internet service, the entire block group is considered to have "access." The census block format is not searchable by address location.

The American Community Survey (ACS) gets information from a sample of 17,000 to 18,000 Maine households. The advantages of this data is the size of the survey, its annual updating its consistency over the entire country, and the fact that it measures actual use as opposed to availability. A limitation of the data is that it doesn't measure speed, just the type of internet service one receives.

The ConnectME Authority has contracted with the Sewall Company to collect a variety of information on broadband availability and use in Maine. In 2011 and 2013, Sewall surveyed about 3,500 Maine households and businesses about internet use. Every year, Sewall reviews provider reports to the FCC and updates the ConnectME Authority map. The strength of the ConnectME Authority data is its accuracy and transparency as well its ability to support local address specific searches. The weakness is the mapping has not been tabulated so that it cannot be compared easily to data from other states.

Table 2: Measurements of Broadband

	Broadband defined	**Access Defined**	**Unit of measurement**	**Data source**	**Update frequency**
Federal Communications Commission (FCC)	*Service of at least* 768k/200k	Availability	Anywhere within a census block group (average 500 households)	Reports from providers	Annual
American Community Services (ACS)	Service from DSL, cable, fiberoptic, mobile broadband, satellite, or fixed wireless subscription	Actual usage	Household	Survey of 3-4% of Maine households each year (17,000 to 18,000 surveys)	Annual
ConnectME Authority	*Service of at least* 10Mbps/10Mbps	Availability	Road segment or street address	Reports from providers	Annual

Maine Goals and the Triennial Plan

The Maine Legislature has adopted the following goals related to broadband:[3]

> *A. Broadband service be universally available in this State, including to all residential and business locations and community anchor institutions;*
>
> *B. There be secure, reliable, competitive and sustainable forward-looking infrastructure that can meet future broadband needs; and*
>
> *C. All residents, businesses and institutions in the State be able to take full advantage of the economic opportunities available through broadband service.*

The major policy means for achieving these goals is the ConnectME Authority, established as an independent state agency in 2006. The funding mechanism for the ConnectME Authority is a 0.25% surcharge on all communications, video and internet service bills which generates approximately $1.1 million per year.

Over the past 8 years, the ConnectME Authority has awarded about $10 million in grants to 122 projects, increasing access to high-speed internet to 37,000 Maine households (no data is available on how many of these households has actually subscribed to high-speed internet). The ConnectME Authority has also leveraged more than $7 million in federal high-speed internet grants over the last 6 years.[4]

Table 2: ConnectME Authority Grants

Grant Round/Year	# of Grants	Grant Range In Thousands	Total Grants	Total Project Amount In Millions	Household Broadband Availability[5]	Increased Broadband Availability [6]
1/2007	6	$38 - $370	$739 K	$1.53	13,836	2.5%
2/2008	5	$45 - $533	$1.19 MM	$3.89	8,678	1.6%
3/2009	8	$43 - $232	$610 K	$1.23	4,227	.7%
4/ 2010	22	$23 - $114	$788 K	$1.51	2,957	.5%
5/2010	12	$7- $191	$1.09 MM	$1.66	1,545	.6%
6/2011	23	$5 - $242	$1.55 MM	$2.34	2,296	.4%
7/2012	23	$23 - $284	$2.08 MM	$3.16	2,049	.3%
8/2013	15	$6 - $144	$1.02 MM	$1.69	1,034	.2%
9/2014	8	$12 - $186	$749 K	$1.43	975	.2%
Total	**122**	**$5 - $533**	**$9.82 MM**	**$18.44**	**37,597**	**7.0%**

[3] Sec. 3. 35-A MRSA §9202-A, State broadband policy

[4] See http://www.maine.gov/connectme/grants/ntia/index.shtml

[5] Household broadband availability is defined as those houses offered the option of acquiring broadband services from a provider and is also referred to as houses passed.

[6] Based on the 2010 Census for estimates of population and number of households in Maine, obtained from the State Planning Office. Total est. occupied housing units = 562,873, population = 1.328 MM, 2.36 = average household size.

Current Status of Broadband in Maine

Given Maine's current broadband goals, how are we doing? Not as badly as some think, but not as well as we need to do.

1. **The "take rate" of high-speed internet among Maine households is slightly below the national average.**

The "take rate" refers to the percentage of potential users who subscribe to high-speed internet service where it is available at the prices that suppliers are willing to offer.

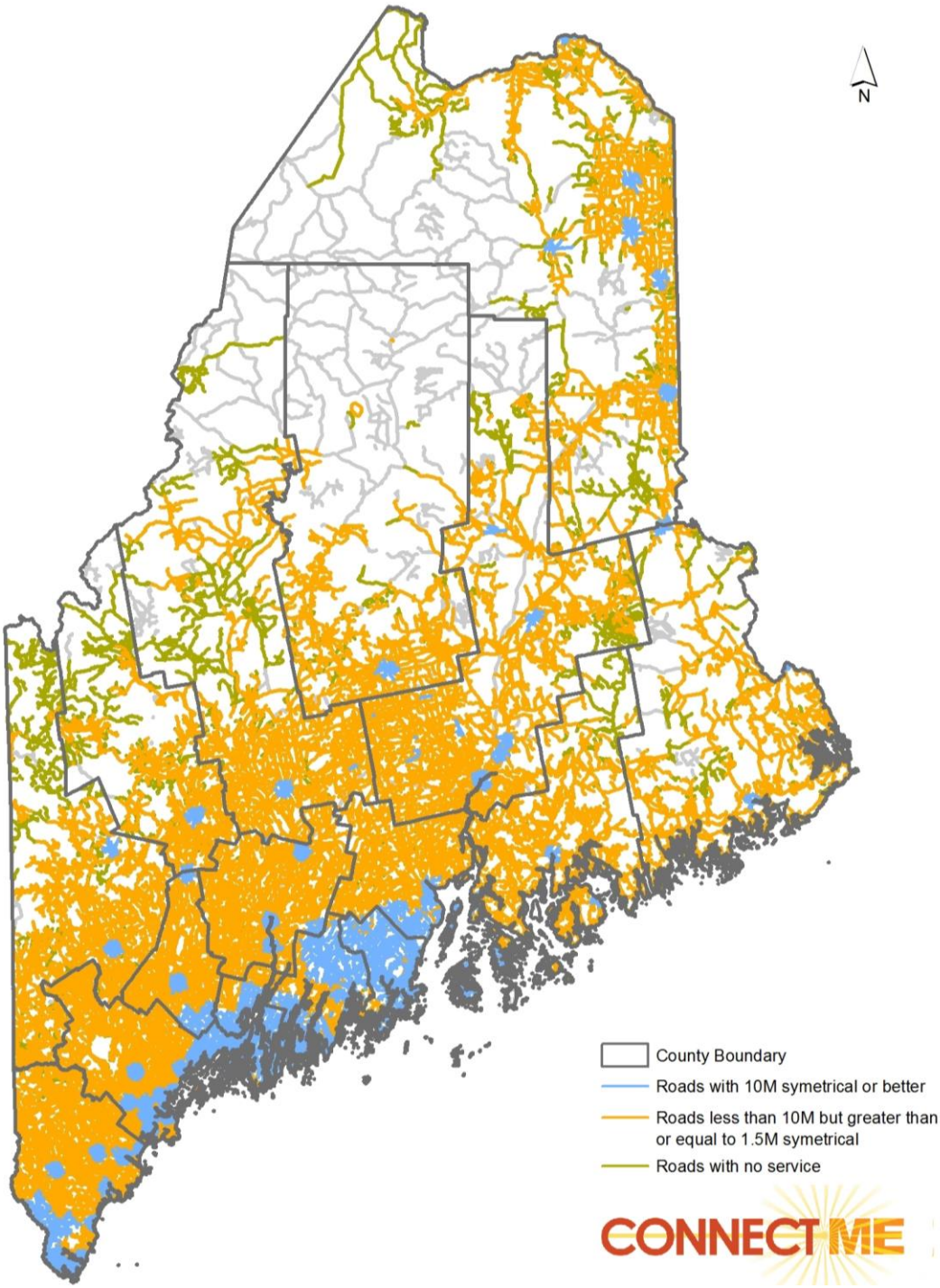
According to the FCC, the most basic level of high-speed internet (with a download speed of 1.5 Mbps) is available to a marginally higher percentage of Maine households than the rest of the nation. At the same time, according to the American Community Survey (ACS), a slightly lower percentage of Maine households actually subscribe to high-speed internet.

Putting the two pieces of information together, it means that Maine households have a slightly lower "take rate" – the rate of subscription when service is available -- than the rest of the nation. Using this comparison of FCC and ACS data, the take rate in Maine is estimated to be 77%, while the take rate nationally is 78%.

2. **When it comes to access to critical higher speeds, Maine lags far behind the nation.**

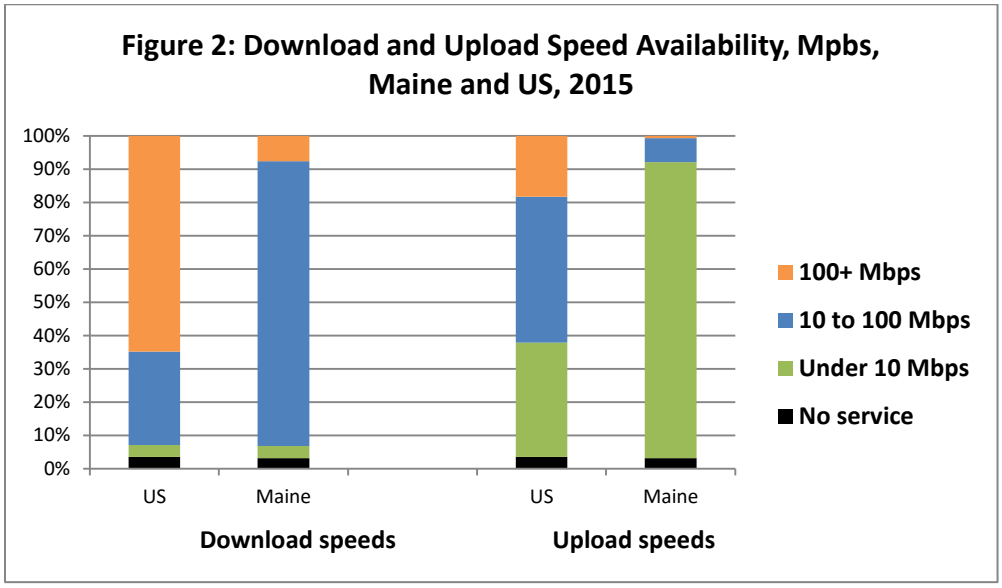
High-speed internet is necessary for commerce, for certain aspects of telehealth services, for video production and editing, and for research and applications in the growing "big data" sector. Maine lags when it comes to high-speed internet capacity. According to ConnectME Authority data, approximately 12% of Maine households and businesses (or street addresses) have access to at least 10Mbps down and 10Mbps up. The map on the following page shows the areas of Maine served and unserved by broadband at 10 Mbps/10 Mbps.

Broadband Availability in Maine (10 Mbps/10 Mbps)[7]



[7] This map is for illustrative purposes only. A detailed version of this map is available online at: https://geopower.jws.com/connectme/MapsPage.jsp?folder_currentfolder=6680 under Miscellaneous Map Products. Note that local grant applicants to ConnectME are responsible for submitting their own data on broadband availability, and that the applicant data will be relied upon for the analysis and scoring of the proposal.

National data indicates that as of December 2015, less than 10% of Maine households had access to service with 100 Mbps down, compared to 65% nationally; and significantly, only 8% of Maine households had access to speeds of at least 10 Mbps up, compared to 62% nationally.



Source: FCC

3. Consumer trends will impact take rates going forward.

Recent research from the Pew Research Center[8] has found that the percentage of U.S households with a high-speed internet subscription at home may have peaked. In 2015, 67% of households were home high-speed internet users, down from 70% in 2013. At the same time, the number of smartphone users has increased, including the number of smartphone only users, who access the internet on their smartphones but do not have a home high-speed internet connection. Among those more likely to be smartphone only users are people with low-incomes and people living in rural areas.

This trend coincides with an increase in the number of households who say they have become "cord cutters," cancelling paid television subscriptions in favor of streaming services.

4. The price of high-speed internet service is an issue.

In the same study cited above, the Pew Center found that the price of broadband was the major obstacle cited for those who didn't subscribe at home. Comprehensive data on the price and affordability of high-speed internet service is not available in Maine, but the available data suggests that affordability is an issue here. A global study of internet pricing found that the median price in 10 European cities for service with 15-20 Mbps down was $32.10; in 10 major

[8] See http://www.pewinternet.org/2015/12/21/home-broadband-2015/

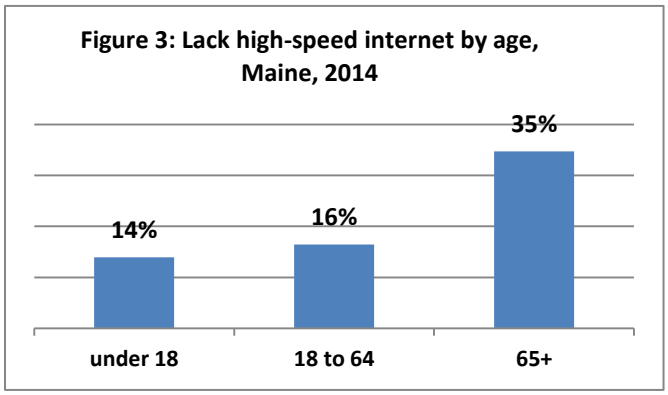
US cities the price was $41.95[9]; and using a sample of four providers on the Maine Public Advocate's web site[10], the median is about $52.00. At the public meetings held by the ConnectME Authority, citizens reported that the price of a higher level of service is a problem; on the other side of the coin, providers reported that a low "take rate" on higher levels of service is a deterrent to private investment.

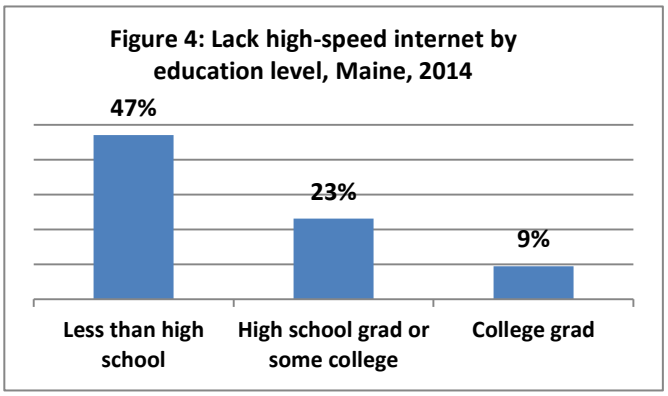
These concerns were reflected in a recent study[11] for an upgraded service in Rockport that found that only 14% of households in the affected area are initially interested in signing up for a $75+/month service that provided 10 to 100 times faster service than they currently have. As the proposed investment requires 65% to 70% of potential customers to commit in order to break even, this projected low take rate presents an obstacle to the investment. As broadband becomes more important in future years, and as prices increase, affordability is expected to become a more significant issue.

5. There is a socioeconomic digital divide in Maine.

Maine citizens who are older, lower income, unemployed, and have lower levels of education are less likely to have high-speed internet. There is also a geographic digital divide in Maine, as illustrated by the map on the previous page.

Telehealth and virtual in-home care are major cost and life-saving trends in health care, but a third of Maine seniors are not able to take advantage of this due to lack of high-speed internet connections (Figure 3). Lifelong learning is a major goal of our workforce system. But those who would have the most to benefit from online learning – those with less than a high school degree



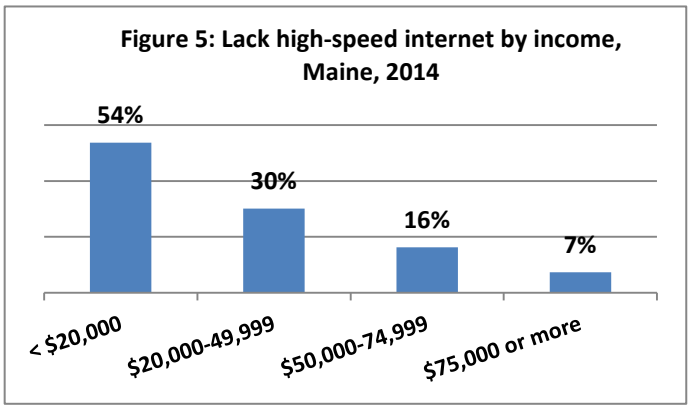


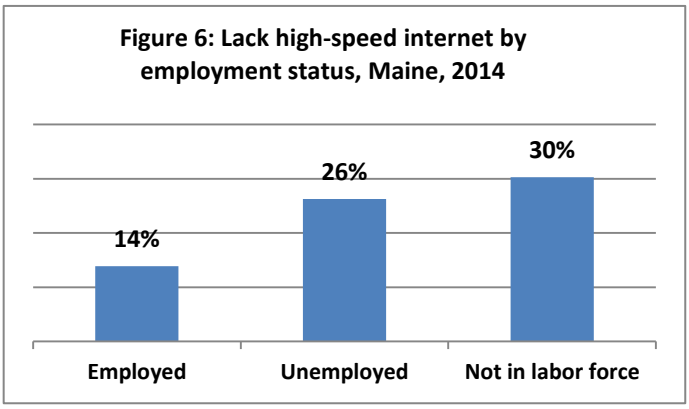
(see Figure 4) – are least likely to have a high-speed connection.
Source: US Census

[9] The Cost of Connectivity, 2014. See https://www.newamerica.org/oti/the-cost-of-connectivity-2014/
[10] The four providers are Time Warner, GWI, Pioneer, and Fairpoint – see http://www.maine.gov/meopa/utilities/internet/index.html
[11] Rockland, Rockport and Owl's Head Broadband Plan and Network Designs, Tilson, September 2015

Evidence shows that a broadband connection can help families living in poverty access education and employment opportunities, as well as health and other services. Yet low-income Maine residents are less likely to have a home broadband connection (Figure 5).

Finally, those who are most in need of high-speed internet in order to find jobs, and most in need of computer skills in order to land jobs, are the least likely to have broadband services (Figure 6).





Source: US Census

A 2013 survey of Maine households found that lack of perceived value is the biggest barrier for people without high-speed internet, followed by price.[12] National studies have also described lower levels of understanding about how the internet works among people who don't subscribe to high-speed internet, as well as higher levels of concern about security and privacy. Digital literacy[13] is an important component of national efforts to improve digital inclusion. In recent years, federal and other grants have supported free digital literacy classes in Maine, providing the skills training people need to use a computer and the internet.

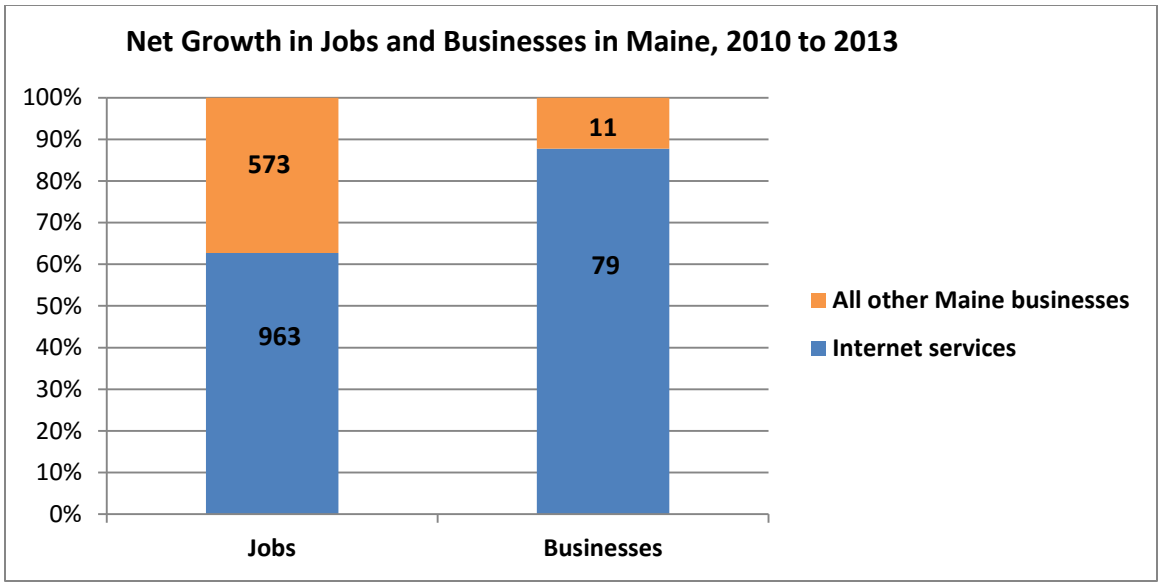
6. High-speed internet use is helping the Maine economy.

Maine's high-speed internet service provider sector – those that directly provide the wires to the houses, host the servers, and maintain the web sites[14] – generated 79 of the 90 net new businesses established in Maine between 2010 and 2013, and 963 of the 1,500 net new jobs in Maine.

[12] ConnectME Authority Baseline Update, 3/28/14, Sewall Company.

[13] See http://2010-2014.commerce.gov/news/fact-sheets/2011/05/13/fact-sheet-digital-literacy

[14] The telecommunications sector is defined as NAICS Codes 517 (Telecommunications), 518 (Data processing, hosting and related services), and 519130 (Internet publishing and web search portals).



Source: County Business Patterns

However, this is not the major contribution high-speed internet is making to Maine's economy. The primary contribution comes from the way that high-speed internet applications – marketing, supply chain management, cloud data storage, analysis – are helping existing Maine businesses to become more competitive, efficient, and profitable. There is no Maine-specific data on this, but global studies have found that 75% of internet-generated economic growth in recent years has taken place in traditional industries that existed long before the internet came along. This research also shows that small and medium size business enterprises with greater high-speed internet use grew more than twice as fast as those with less high-speed internet use[15].

7. Maine businesses are still not investing in an online footprint, thereby not taking full advantage of online services, transactions, and marketing.

Ninety-seven percent (97%) of American consumers look online for goods and services. Yet as of 2013, 55% of Maine businesses did not have a website[16].

Though Maine is tucked into the northeast corner of the country, the internet puts businesses right into the middle of a global market. The Governor's Capacity Building Task Force estimated that sales of Maine's small businesses could increase by $50 million/year if those businesses increase use of the internet to national averages. The ConnectME Authority has conducted successful workshops for small businesses in the use of social media, but the grant supporting this activity has ended.

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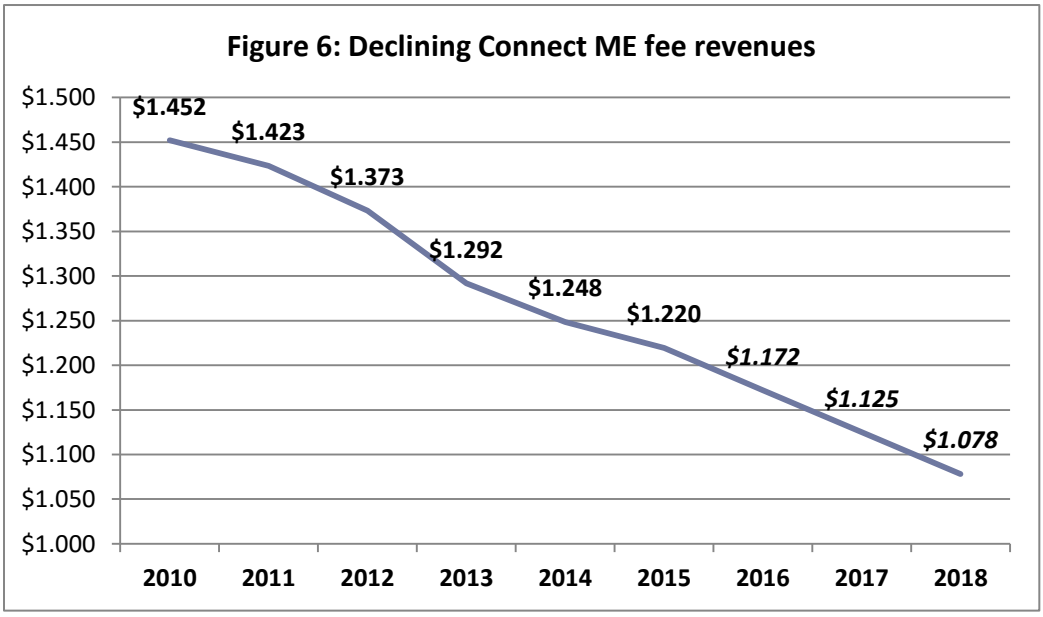
[15] Internet Matters: the Net's Sweeping Impact on Growth, Jobs, and Prosperity; McKinsey and Company, 2011.

[16] ConnectME Authority Baseline Update, 3/28/14, Sewall Company.

8. Available funds for Maine public broadband investment are declining

Over the past nine years, the ConnectME Authority has awarded 122 grants totaling $9.8 million.

Yet the funds for these investments have plummeted. The federal stimulus funding, which helped build the Three Ring Binder (the middle-mile fiber backbone), has ended. The Maine Broadband Sustainability Fee[17], awarding up to $20,000 per month for eligible private providers to expand high-speed internet, expired on October 15, 2015. Finally, the ConnectME fee, the primary support for the organization, which depends in part on landline telephone use, has been declining and will continue to decline steadily as more and more Maine consumers drop land-line service. This fee supports the ConnectME Authority staff, infrastructure grants, and as of this year, planning grants.



Source: Connect ME Authority (note: 2016-2019 are projections and are in italics)

9. Maine people readily voice frustration that broadband progress has not been fast enough.

In the fall of 2015, the Connect ME Authority held community forums in Portland, Augusta, Orono, and Presque Isle to enlist public input as part of the strategic planning process. A total of 86 people attended the four events. Here are some of the themes that emerged.

Many people commented on the difficulty they experienced in operating a home-based business, or in telecommuting, and the loss of income and jobs that a lack of high-speed broadband causes.

[17] A state surcharge on the federally funded Three Ring Binder

> *I am a documentary editor who works from home in the town of Liberty, in Waldo County. I'm losing jobs. More and more people I want to work with are telling me that my internet upload speed isn't fast enough. They won't even consider me. I am not the only business or person who works in town and needs a faster internet.*

Others talked about how the lack of high-speed internet put their children behind others in their classes, because they couldn't do homework in their homes; or hurt their ability to get higher education degrees.

> *In order to pursue higher education, I have to move closer to my university or I need a better Internet connection for online classes. In order for me to effectively work in my field, I need internet connection or I need to move. If I move, all the education and experience I've gained, move with me. It is hard enough keeping people in rural Maine. I want to stay but find I am being forced to leave for education and work.*

Some testified that they couldn't sell their houses because of a lack of high-speed internet. Finally, one person made an eloquent statement about the importance of high-speed internet to rural Maine:

> *People living in rural coastal and island communities across Maine hope to have the same opportunities as the rest of the country: to make a living, to raise a family, to access healthcare, to educate their children and themselves, and to share their experiences with others. If we expect to sustain the quality of life in Maine, then we need to connect the state with the rest of the country and provide innovative ways for Mainers to make a living, access healthcare and education, and reach businesses and customers. Slow or unreliable internet connection is no longer an option if we want to sustain Maine's rural communities. It's imperative that rural Maine can access and afford broadband. Think about where blueberries, broccoli, potatoes, timber, mussels, clams and lobster come from. Adding to that tourism, our rural communities significantly contribute to the economic wellbeing of this state. Most of Maine's island and remote coastal communities have incredibly slow and unreliable internet access. They cannot rely on only their neighbors as their customers or as their second employers. Broadband opens up so many possibilities for a second household income, for 21st century education and healthcare, and to reach markets beyond individual communities or states.*

This is Maine's challenge.

Vision and Objectives

The vision of the ConnectME Authority Board for the State of Maine is that:

Every Maine citizen, business, and institution will have access to and take advantage of high-quality broadband network services.

The ConnectME Authority Board currently defines effective broadband as 10 Mbps/10 Mbps – 10 megabits down and 10 megabits up. Areas that have maximum available broadband speeds of at least 10 Mbps/10 Mbps are considered ***served***. Areas with available broadband speeds that are lower than 1.5 Mbps download are considered ***unserved***. Areas where the maximum available service is between 1.5Mbps download and 10Mbps/10Mbps are considered ***underserved.***

The ConnectME Authority is directed to prepare "a detailed, triennial strategic plan for broadband service … to further the goals and policies in section 9202-A." The Legislature directs the ConnectME Authority to serve as the chief monitor of the state's progress in meeting these goals and to set "objectives, targets, measures of performance, implementation strategies, timelines."

The objectives of the Triennial Strategic Plan for broadband service for the State of Maine are:

1. ***To achieve universally available high-speed internet access by 2018;*** *i.e., access to basic internet service increase in Maine (defined as at least 1.5 Mbps up), as measured by the Federal Communications Commission, from 97% in 2015 to 100% in 2018/*

2. ***To increase the percentage of street locations fully served by broadband to 50% by 2018;*** *i.e., improved infrastructure, through public and private investment, providing broadband service with a 10/10 Mbps speed increase from 12% in 2015, as measured by the ConnectME Authority, to 50% by 2018.*

3. ***To achieve nearly universal usage of high-speed internet by 2018;*** *i.e., the proportion of Maine households that subscribe to high-speed internet (via cable, cell, or other means) increase from 76% in 2014 to 95% in 2018, as measured by the American Community Survey. This requires addressing all aspects of digital inclusion: affordable internet, affordable equipment, digital literacy training, and public computer access.*

4. ***To fully engage Maine business with the internet;*** *i.e., the proportion of Maine businesses that carry out marketing and online activities through their own website increase from 45% in 2013, as measured by a ConnectME Authority survey of Maine businesses, to 80% in 2018.*

The primary method of testing to see progress in Maine will be through surveys of Maine households and businesses through ConnectME. In recent surveys, Maine respondents have

raised concerns about reliability, service interruptions, variations in speed, and other quality issues; and also concerns about affordability. Future surveys should attempt to measure progress in high-speed internet service quality and affordability in a systematic fashion.
It is the policy of the Connect ME Authority to be neutral about the technological means to achieve these goals – not to favor one technology over another in its planning or grant provision.

These objectives cannot be achieved without robust leadership, investment, and activity. The approach which follows recommends a partnership between Maine's private and public sectors to achieve these objectives.

Strategies

The adopted policies[18] of the State related to broadband service include:

- *Maximize sustainable investment in broadband infrastructure in the State;*
- *Maximize federal and private resources to support the deployment of broadband infrastructure in unserved and underserved areas of the State;*
- *Leverage existing infrastructure to extend broadband service;*
- *Prioritize the use of state resources to assist deployment of infrastructure to provide broadband service in unserved and underserved areas of the State;*
- *Promote adoption of broadband service by residents, businesses and institutions.*

The following actions are intended to strengthen Maine's high-speed internet ecosystem, expand its broadband network, drive public demand, and measure progress.

Implementation Strategy 1: Support Broadband Infrastructure Deployment

Action 1A. Continue to target areas where no high-speed internet service currently exists with the ConnectME Authority broadband infrastructure grant program. Maintain a clear priority for helping those currently not served. Use needs-based program criteria for ConnectME infrastructure grants. Projects funded will provide 10/10 Mbps service.

> ***Measures of performance***: Service to number of homes or businesses currently not being served
> ***Target***: Service to 500 homes or businesses per year through ConnectME grants
> ***Timelines***: Implementation in 2016

Action 1B. Determine the effectiveness and impacts of broadband infrastructure grants. Develop standard criteria to evaluate infrastructure grants, including both households served and adoption rates. Gather and analyze data from past and current grant recipients.

> ***Measures of performance***: A report that helps ConnectME Authority Board members to fine tune programs
> ***Target***: Production of two annual reports by the ConnectME Authority
> ***Timelines***: First report issued in January of 2017, second in January of 2018

Action 1C. Implement a local broadband planning grant program. Encourage applicants to first approach the local provider(s) ("provider of first resort") to explore

[18] Sec. 3. 35-A MRSA §9202-A, State broadband policy

broadband expansion, prior to applying for planning grant funds. Incentivize regional approaches.

> ***Measures of performance***: Number of local and regional efforts supported
> ***Target***: 5 planning grants per year
> ***Timelines***: Implementation in 2016

Action 1D. Create a working partnership with FairPoint for the implementation of its nearly $80 million "CAF II" program[19] in Maine. FairPoint is committed to assisting thousands of households in rural Maine to obtain broadband assistance in Maine in the next six years. The ConnectME Authority needs to closely coordinate with FairPoint so that local communities can link in to the effort whenever possible and practical. The ConnectME Authority will support local officials in targeted geographies when there are upcoming projects and opportunities related to CAF II.

> ***Measures of performance***: Meetings between ConnectME Authority staff, FairPoint staff, and municipal and regional entities
> ***Target***: Quarterly coordination
> ***Timelines***: Starting in February of 2016

Implementation Strategy 2: Support Increased Broadband Use

Action 2A. Support innovative efforts to increase consumer and business use of online services. Not all Maine residents realize the value of high-speed internet or have the necessary digital skills. The ConnectME Authority should work with the Maine Department of Education, the Maine Department of Economic and Community Development, the Maine Department of Labor, Chambers of Commerce, the Maine Municipal Association, and other agencies and organizations to continue and expand digital inclusion programs, including digital literacy, for specific populations, for example, seniors and health care providers. The ConnectME Authority should also work with Maine academic institutions and entrepreneurs to identify and highlight best practices among businesses and organizations. Finally, digital literacy should be a component of ConnectME Authority community planning grants.

> ***Measures of performance***: Households using high-speed internet. Businesses and organizations with websites.

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[19] FairPoint has accepted federal Connect America Fund II dollars for broadband expansion into FCC defined rural areas. A map of the 35,500 eligible locations in Maine, those colored dark green, is available on the Federal Communication Commission's website, https://www.fcc.gov/maps/fcc-connect-america-fund-phase-ii-initial-eligible-areas-map

Target: Increased actual median household use. Increased % of Maine business with a website
Timelines: Implementation in 2016

Action 2B. Coordinate consumer advice and assistance regarding broadband service in the Office of the Public Advocate (OPA). The Office of Public Advocate has dedicated staff and experience in handling consumer inquiries and complaints regarding utility services. Therefore, the Office of Public Advocate should provide consumer advice and assistance relative to broadband service. OPA should report to the ConnectME Authority Board annually on emerging consumer broadband issues.

Measures of performance: OPA report on call information to the ConnectME Authority
Target: Quarterly report
Timelines: Implementation in 2016

Implementation Strategy 3: Conduct Research and Provide Information

Action 3A. Issue an annual *Maine Broadband Indicators Report*, which benchmarks where the state stands with regard to broadband access, affordability, and quality. A goal of the report is to collect data that allows for comparisons with national data sets and is specific enough to measure progress in detail. The report should use publicly available information from the FCC, the American Community Survey, and Maine broadband mapping projects, as well as information from grant recipients.

Measures of performance: A report that is useful to policy-makers and citizens
Target: Production of two annual reports by the ConnectME Authority
Timeline: First report issued in January of 2017, second in January of 2018

Action 3B. Serve as a broadband information resource to Maine communities, aggregating and sharing experiences and encouraging collaboration. The ConnectME Authority should be a resource for local communities, including guidance on how to initiate a local planning process, a list of broadband planning vendors, the availability of data, the range of models available for broadband expansion, the financing sources available, and contact information for community assistance personnel at private providers.

Measures of performance: Guidance documents and resource library
Target: Information available
Timelines: Implementation in 2016

Action 3C. Conduct a needs analysis to determine the level of investment necessary to make broadband available to all Maine residents and businesses. The analysis should also calculate the opportunity cost of not making the investment. Many ideas for funding large investment in Maine's broadband infrastructure have been proposed. What is first needed is a comprehensive and current view of overall broadband investment needs over the next five years. From this, possible mechanisms for funding those investments can be developed.

> ***Measures of performance***: Needs analysis
> ***Target***: Complete analysis
> ***Timelines***: By December 2016

Action 3D. Leverage broadband opportunities, including encouraging MDOT to implement "dig once" policies, using collective state government broadband purchasing power, and identifying policy barriers to private broadband expansion.

> ***Measures of performance***: Outreach and communication with state agency leadership
> ***Target***: Quarterly review at ConnectME Authority Board meetings
> ***Timelines***: Implementation in 2016