NEW HAMPSHIRE
broadband
MAPPING & PLANNING
PROGRAM

University of
New Hampshire

Why Broadband Matters in New Hampshire

July 2014

Broadband = "High Speed Internet"

"Right now the future of our economy relies heavily on the Internet and our ability to make sure that all Americans are wired to compete in the 21st Century global economy. The Internet has changed the world and broadband has been the catalyst to accelerate so many of the new technologies that we enjoy on a daily basis".

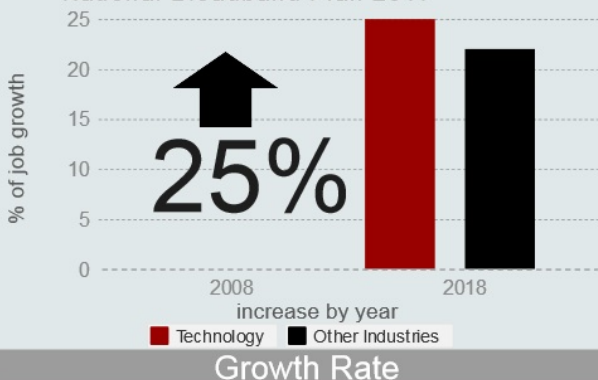US Senator Kelly Ayotte, NH Broadband Conference, May 2014

"High-speed broadband and cell service is essential to long-term economic development and job growth in New Hampshire. Harnessing this technology and spreading it throughout our state will enhance educational opportunities in our schools, attract companies to locate to New Hampshire, provide our first responders with timely information they need to protect and serve, improve the delivery and reduce the costs of health care, and give small businesses a valuable tool to succeed".

US Senator Jeanne Shaheen, NH Broadband Conference, May 2014

Creating Jobs

Broadband access retains and creates new jobs, enhances economic development, and helps job seekers find employment.

Source: Bureau of Labor Statistics, National Broadband Plan 2011

% of job growth

25
20
15
10
5
0

25%

2008   2018
increase by year

■ Technology ■ Other Industries

Growth Rate

Source: Federal Communications Commission, www.broadband.gov, 2011
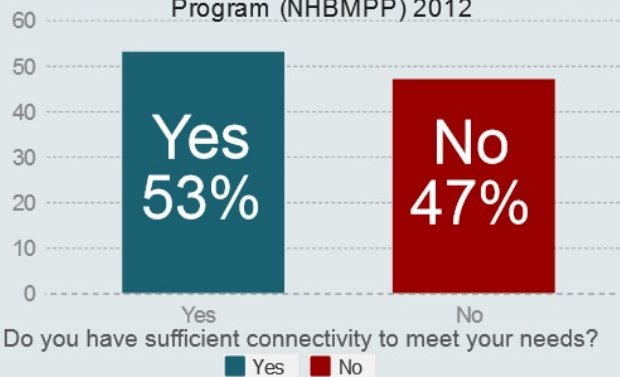
62%

of American workers rely on the Internet to perform their jobs

Small businesses account for a majority of the more than 1.2 million new jobs generated by the growth of the internet during the last 10 to 15 years.

Education

Broadband provides access to educational opportunities, online resources and one another (teacher/student; student/student; and teacher/teacher).

Source: NH Broadband Mapping & Planning Program (NHBMPP) 2012

Yes 53% | **No 47%**

Do you have sufficient connectivity to meet your needs?
- Yes
- No

Schools Survey

100mbps
Schools need a minimum of 100 mbps broadband connections per 1000 students by 2015

Source: State Educational Technology Directors Association (SETDA) 2013

2 X

High School grads with access to the Internet are TWICE as likely to go to college

Source: NARUC, Washington, D.C. 2010

Heathcare

Broadband is needed to allow all NH patients access to affordable healthcare services, and doctors and hospitals access to the digital tools needed to provide quality care.

37%
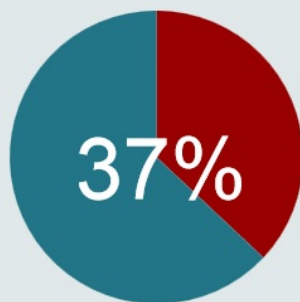
- Rural (37%)
- Non-rural (63%)

NH's population in rural areas

37% of NH's population live in rural areas of the state; there are well-documented disparities relating to access to care, health status, and health outcomes between the populations in rural and non-rural areas.

Source: Planning and Implementing a Statewide Telehealth Program in New Hampshire 2005

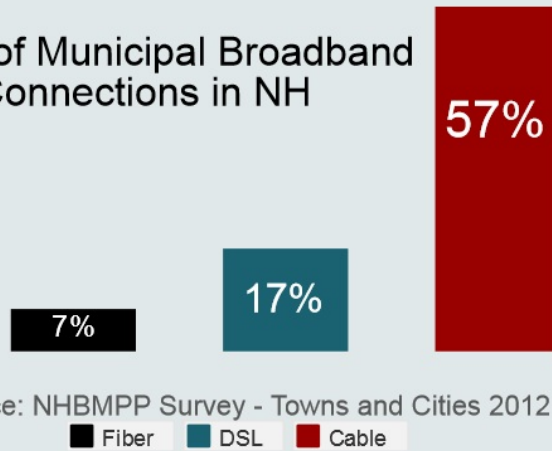**Hospitals need a minimum of 100 mbps broadband connections**

Source: HealthIT.gov 2014

Government

Broadband ensures government has the tools to be efficient, open, and accessible by making information and services readily available to citizens.

Types of Municipal Broadband Connections in NH

7%
17%
57%

Source: NHBMPP Survey - Towns and Cities 2012

- Fiber
- DSL
- Cable

30%
NH municipal employees with < 3 mbps

Source: NHBMPP Towns and Cities Survey 2012

eGovernment

The use of information and technology to support and improve public policies and government operations, engage citizens, and provide timely government services.

Public Safety

Broadband provides law enforcement officers and first responders with reliable communications technologies to quickly respond to emergencies.
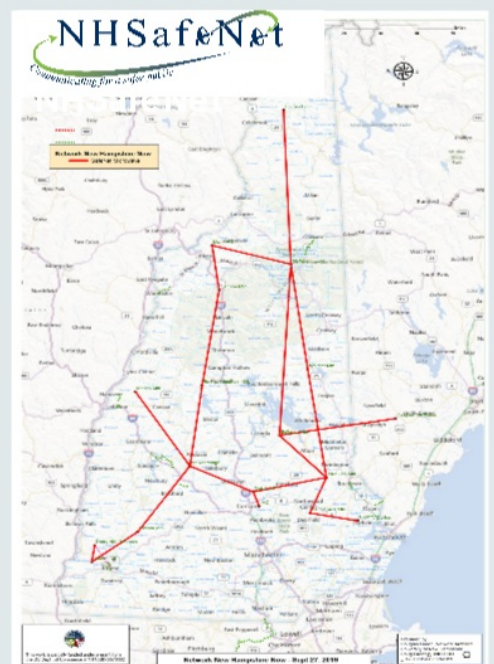
Police

NHSafeNet
Provides increased broadband functionality and bandwidth for:
* NH Dept. of Safety
* NH Dept. of Transportation
* NH National Guard
* NH Dept. of Res. & Econ. Dev.
* NH Public Television

Fire
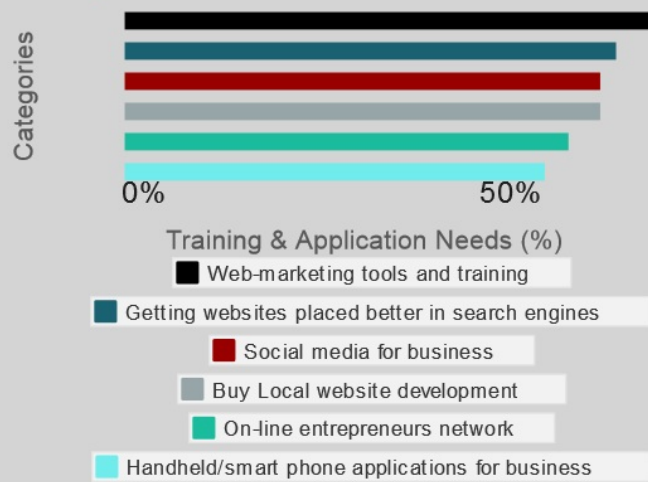
Network is now 20x faster and more resilient (redundant)

64kbps → 100mbps → 300mbps

NHSafeNet

Business

Broadband provides businesses with the tools to be competitive, grow and communicate with customers.

Businesses that use the Internet have

3x

the revenue as those who do not

Source: Connected Nation 2011 Business Technology Assessment

Survey of NH Small Businesses

Categories

0%   50%

Training & Application Needs (%)

- Web-marketing tools and training
- Getting websites placed better in search engines
- Social media for business
- Buy Local website development
- On-line entrepreneurs network
- Handheld/smart phone applications for business

Source: NH Broadband Mapping & Planning Program (NHBMPP) 2012

About 2.4 million U.S. business establishments allow employees to telework, including 1.5 million small businesses with fewer than five employees

Source: Connected Nation 2011 Business Technology Assessment

Communities

Broadband offers an array of tools that support community decision-making, economic development, and other elements needed to sustain vibrant communities.
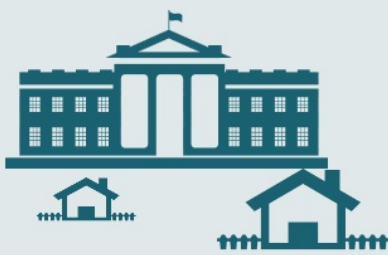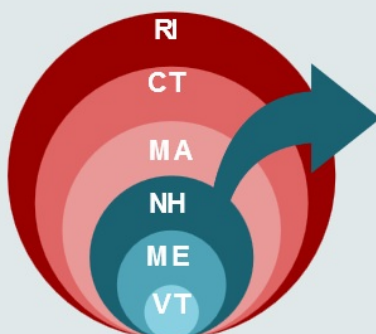
"Robust broadband is an absolute 'must have' for rural New Hampshire. Our residents, businesses and institutions are clamoring for it..."

Julia Griffin, Hanover NH Town Manager

Broadband Toolkit for Communities
at
iwantbroadbandnh.org

RI
CT
MA
NH
ME
VT

NH 4th

in New England

% of population with download access > 10 Mbps

Source: National Broadband Map, December 2013, based on speeds reported by ISPs

Regional Plans

All of NH's Regional Planning Commissions have developed Broadband Plans

What is Broadband and what can you do with it?

Broadband = "High Speed Internet"

Put simply... broadband is high speed internet access which is measured by the number of kilobits (kbps), megabits (mbps) or gigabits (gbps) of data you can send and receive per second.

High Speed Internet

Upload

Speed = bits per second
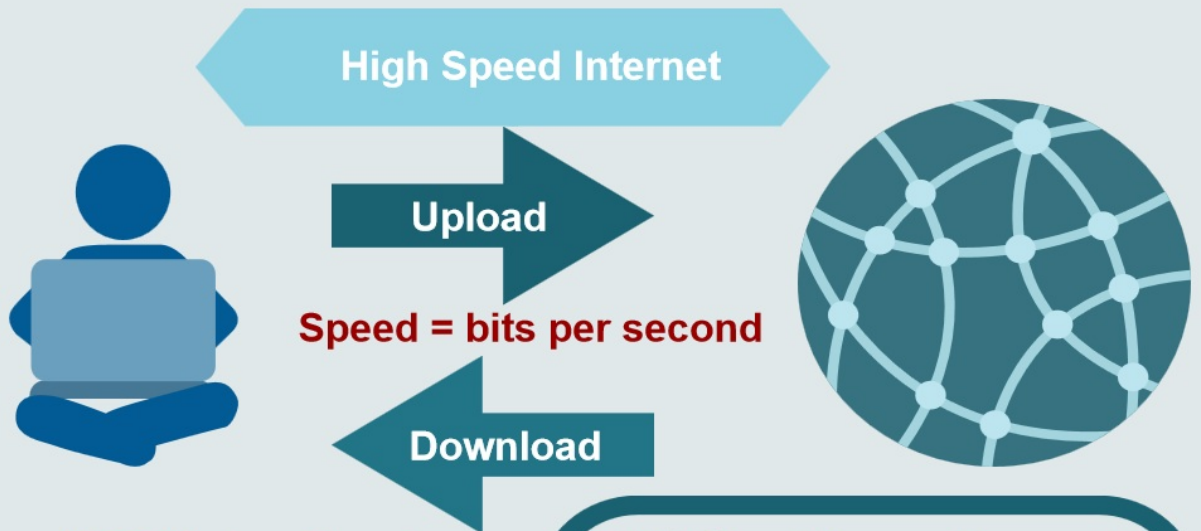
Download

1 Kilobit = 1,000 bits transferred per second (bps); Dial-up connections are 56 kbps

1 Megabit = 1,000,000 bps; about 30 seconds to download an MP3 song

1 Gigabit = 1,000,000,000 bps; about 10 seconds to download an HD movie

FCC - Broadband Definition

Broadband, as established by the FCC, is 4 Mbps download and 1 Mbps upload minimum speeds. But these days, 4 Mbps may not get you very much. The rise of streaming music and video means that all the things we do online now require a lot more bandwidth compared to even five years ago. So the Federal Communications Commission is beginning to consider whether to raise the definition of broadband. The FCC soon intends to solicit public comments on whether broadband should be redefined as 10 Mbps or even as high as 25 Mbps and up, Source: Washington Post 2014

NH - Broadband Level Categories
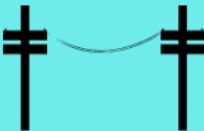
Download Speed	Upload Speed		Designation
< 768 Kbps	< 200 Kbps		Unserved
< 6 Mbps	< 1.5 Mbps		Underserved
> 6 Mbps	> 1.5 Mbps		Served

Delivery Technologies

There are many different broadband delivery technologies. These technologies can be separated into two major categories of wired and wireless broadband. Wired technologies include Digital Subscriber Lines (DSL), Cable Modem, Fiber Optics, Leased Lines (T1), and Broadband over Powerline (BPL). Wireless technologies include mobile wireless (3G, 4G, LTE, WiMax), Wi-Fi, satellite, and Wireless Internet Service Providers (WISP).

Speed Range

Down	Up
25+ Mbps	6+ Mbps
10 Mbps	3 Mbps
6 Mbps	1.5 Mbps
3 Mbps	768 Kbps
> 1.5 Mbps	>768 Kbps

Type of Technology

Fiber Optics

Cable Modem

Wireless

DSL

What You Can Do

HD videoconferencing; Education & Research; Business to Business applications

Telehealth/Telemedicine; On-line Gaming

Work from Home; Streaming Video

You Tube

Web Browsing and Shopping; Social Media

SHOP

g+

Email

Where is Broadband in NH?

NH Broadband Mapping and Planning Program

July 2014

NHBMPP works to improve broadband access and use in the state by **assessing broadband availability**, and by engaging communities and stakeholders in conducting planning, capacity building, technical assistance, and training activities.

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Broadband Availability in New Hampshire by Advertised Maximum Upload Speed

- Between 200 kbps and 768 kbps
- Between 768 kbps and 1.5 mbps
- Between 1.5 mbps and 6 mbps
- Between 6 mbps and 25 mbps
- Between 25 mbps and 50 mbps
- Greater than 50 mbps

Analysis based on:

-- wireline and fixed wireless technologies only; cellular and satellite service is excluded

-- providers that deliver both residential and commercial services; reported speeds may not be available to residential customers

Data collected spring, 2014.

Upload Speeds

Wireline providers only, e.g. cellular and satellite service excluded.

Coos

Grafton

Carroll

Sullivan

Belknap

Merrimack

Strafford

Hillsborough

Rockingham

Cheshire

For Additional Maps visit:

iwantbroadbandnh.org

Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA, Esri, HERE, DeLorme, Mapmyindia, © OpenStreetMap contributors, and the GIS user community
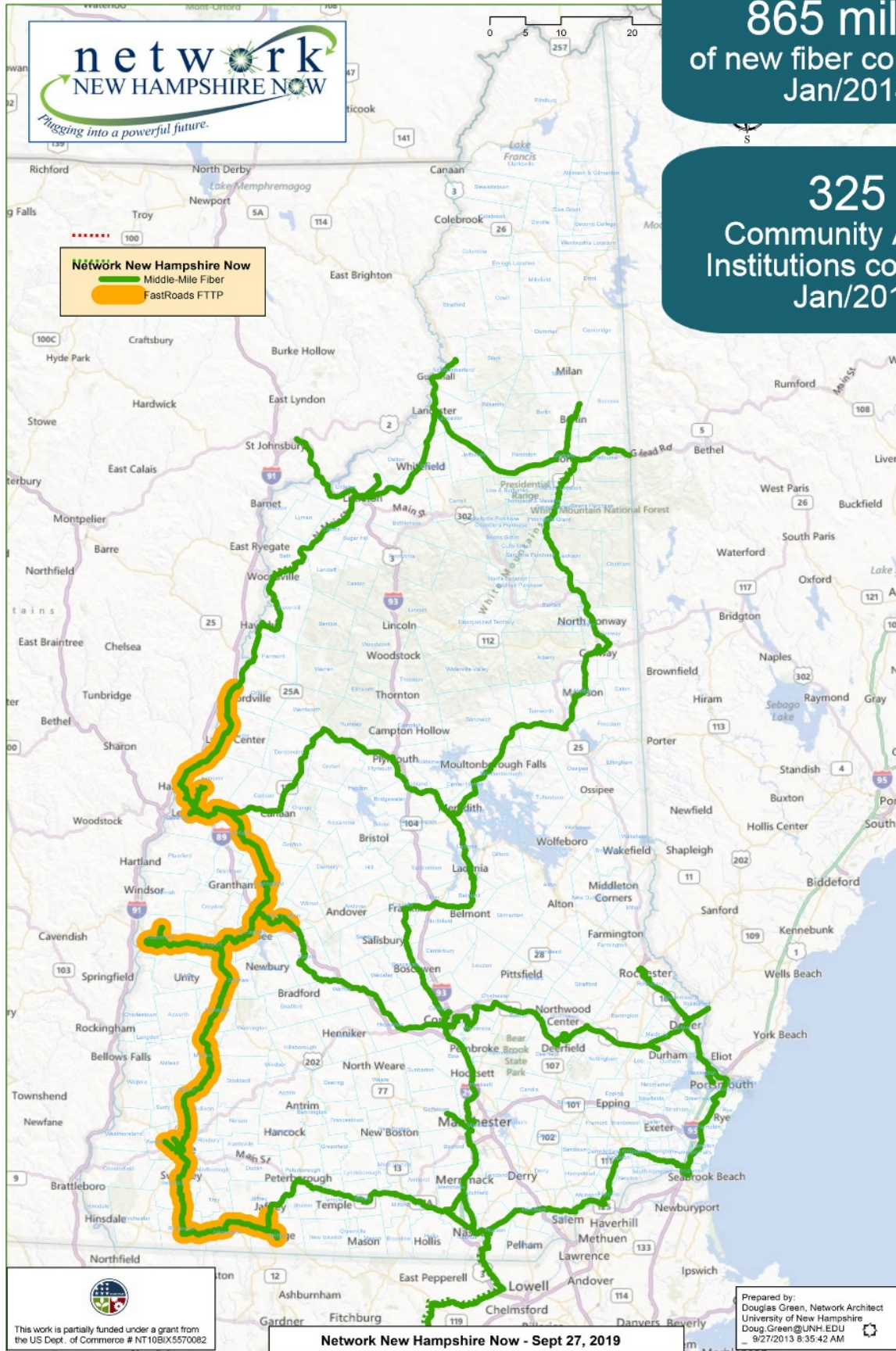
Network NH Now Project

UNH, in partnership with NH Optical Systems, NH Dept. of Transportation, NH Division of Resources and Econ. Dev., and FastRoads, built an 865 mile "middle mile" fiber optic network to expand broadband access to all 10 NH counties.

865 miles of new fiber completed Jan/2014

325 Community Anchor Institutions connected Jan/2014

n e t w o r k
NEW HAMPSHIRE NOW
Plugging into a powerful future.

Network New Hampshire Now
Middle-Mile Fiber
FastRoads FTTP

Network New Hampshire Now - Sept 27, 2019

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Prepared by:
Douglas Green, Network Architect
University of New Hampshire
Doug.Green@UNH.EDU
9/27/2013 8:35:42 AM

For more information...

Contact:

Scott Valcourt
Director, Strategic Technology
UNH Information Tech.
University of NH
scott.valcourt@unh.edu

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Fay Rubin
Project Director
Earth Systems Research Center
University of NH
fay.rubin@unh.edu

David Foote
State Broadband Initiative Mgr.
NHBMPP
University of NH
david.foote@unh.edu

Carol Miller
Dir. of Broadband Technology
Div. of Economic Development.
NH Dept. of Res. & Econ. Dev.
carol.miller@dred.nh.gov

Tim Murphy
Executive Director
Southwest Region Planning
Commission
tmurphy@swrpc.org

ConnectNH
New Hampshire's Consortium Committed to Distance Learning, Telehealth, & Outreach

Brian Shepperd
Director, Broadband Services
UNH Information Tech.
University of NH
brian.shepperd@unh.edu

George Fryburg
Director, ConnectNH
UNH Information Tech.
University of NH
george.fryburg@unh.edu

Broadband
Center of Excellence
Resources for a Broadband World

Rouzbeh Yassini
Executive Director
Broadband Center of Excellence
University of NH
rouzbeh.yassini@unh.edu

RECOVERY.GOV