Broadband and Teaching at a Distance
November 19, 2015
Colebrook Academy, Colebrook, NH
3:30pm – 5:00pm

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Broadband in Coos County Project

- Project Goal:
  - Foster increased broadband deployment and utilization in Coos County

- Project Activities:
  - Data Collection: Extend and enhance mapping of broadband availability
  - Data Analysis: Identify areas that are unserved/underserved
  - Modeling: Generate cost estimates for additional deployment
  - Coordination: Work with communities, RPCs, identified sectors, providers

- Funded by the Northern Border Regional Commission

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What is Broadband?

		Download Speed	Upload Speed
NTIA	Underserved	N/A	N/A
	Served	768 kbps	200 kbps
NHBMPP	Underserved	768 kbps-6 Mbps	200 kbps-1.5 Mbps
	Served	6+ Mbps	1.5+ Mbps
FCC	Underserved	N/A	N/A
	Served	25+ Mbps	3+ Mbps

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Monitoring Broadband Availability

Provider	Technology	Class	Reported Speed (download/upload)
Comcast	Cable	Business	No coverage reported
Time Warner Cable Inc.	Cable		100 Mbps / 6 Mbps
AT&T Mobility LLC	Cellular		6 Mbps / 3 Mbps
Birch Communications	Cellular, xDSL		No coverage reported
United States Cellular Corporation	Cellular		1.5 Mbps / 1.5 Mbps
USAT Corp.	Cellular		1.5 Mbps / 768 Kbps
Verizon Wireless	Cellular		1.5 Mbps / 768 Kbps
186 Communications, LLC	Fiber	Business	1 Gbps / 1 Gbps
Bretton Woods Communications	Fiber		25 Mbps / 25 Mbps
G4 Communications	Fiber		10 Mbps / 1.5 Mbps
Level 3 Communications, LLC	Fiber	Business	1 Gbps / 1 Gbps
Great Auk Wireless	Fixed-Wireless		1.5 Mbps / 768 Kbps
Wireless LINC / NCIC	Fixed-Wireless		6 Mbps / 6 Mbps
Argent Communications, LLC	Fixed-Wireless, Cable		10 Mbps / 1.5 Mbps
HNS License Sub, LLC	Satellite		6 Mbps / 1.5 Mbps
Skycasters, LLC	Satellite		10 Mbps / 1.5 Mbps
StarBand Communications Inc.	Satellite		3 Mbps / 768 Kbps
ViaSat Communications, Inc.	Satellite		25 Mbps / 3 Mbps; 3 Mbps / 685 Kbps
Axiom Technologies	xDSL	Business	No coverage reported
FairPoint Communications, Inc.	xDSL		1.5 Mbps / 768 Kbps
FirstLight	xDSL	Business	No coverage reported
Oxford Networks	xDSL		No coverage reported

http://nhspeed.org

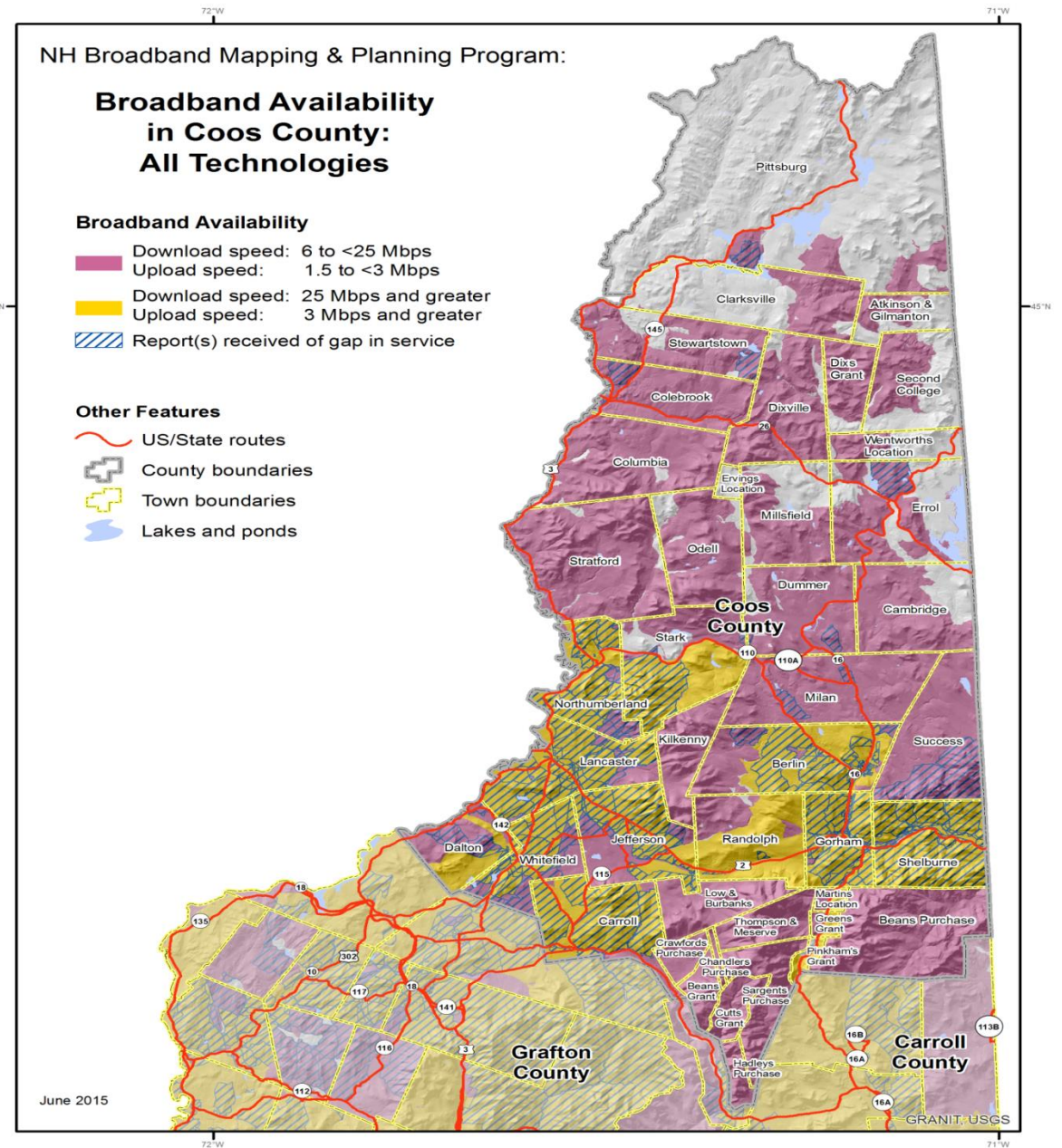# Where is it Available?

Issues:

Aggregating to census block level
Data from September, 2014
Not all providers participating

NH Broadband Mapping & Planning Program:

Broadband Availability in Coos County: All Technologies

Broadband Availability
- Download speed: 6 to <25 Mbps / Upload speed: 1.5 to <3 Mbps
- Download speed: 25 Mbps and greater / Upload speed: 3 Mbps and greater
- Report(s) received of gap in service

Other Features
- US/State routes
- County boundaries
- Town boundaries
- Lakes and ponds

June 2015

GRANIT, USGS

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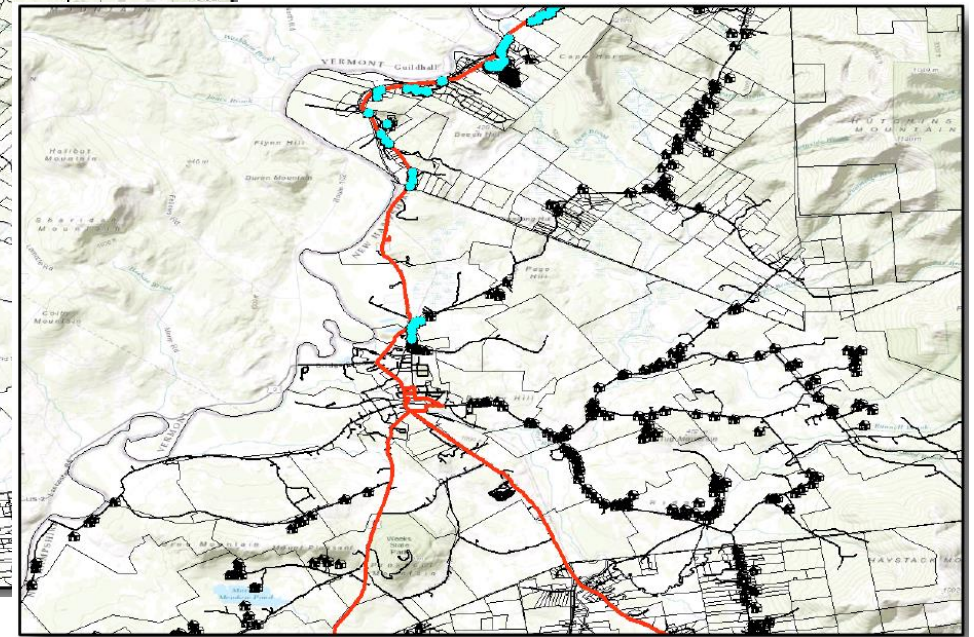# Estimating Cost of Additional Deployment

- Goal: Use mapping data to develop generalized cost models for expansion of fiber broadband in Coos County
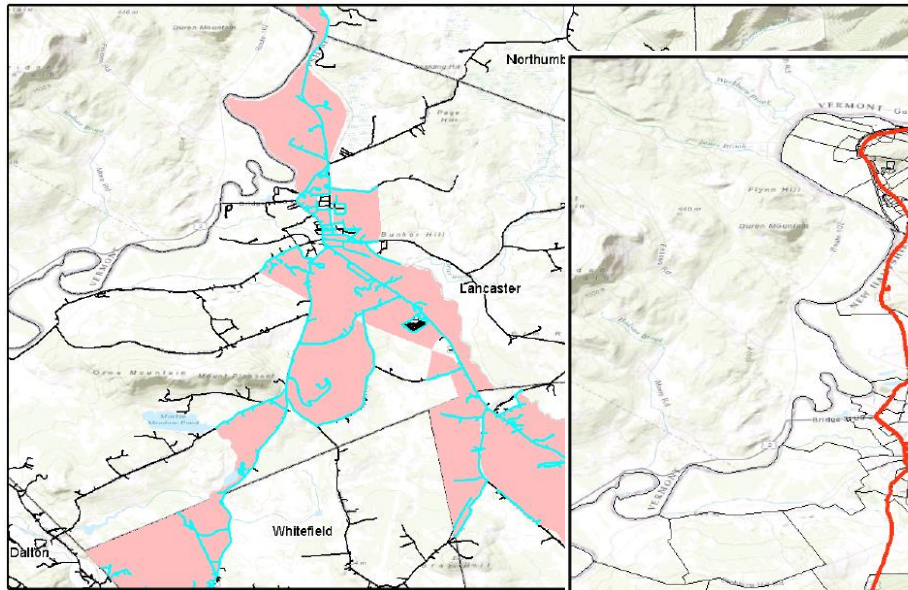
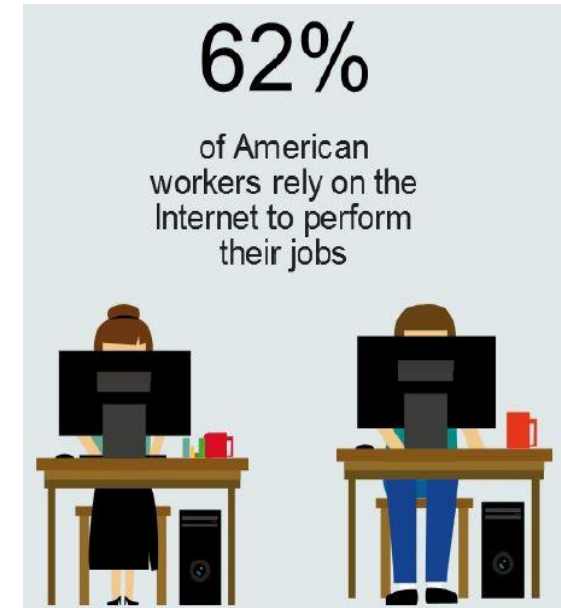1. Areas currently served
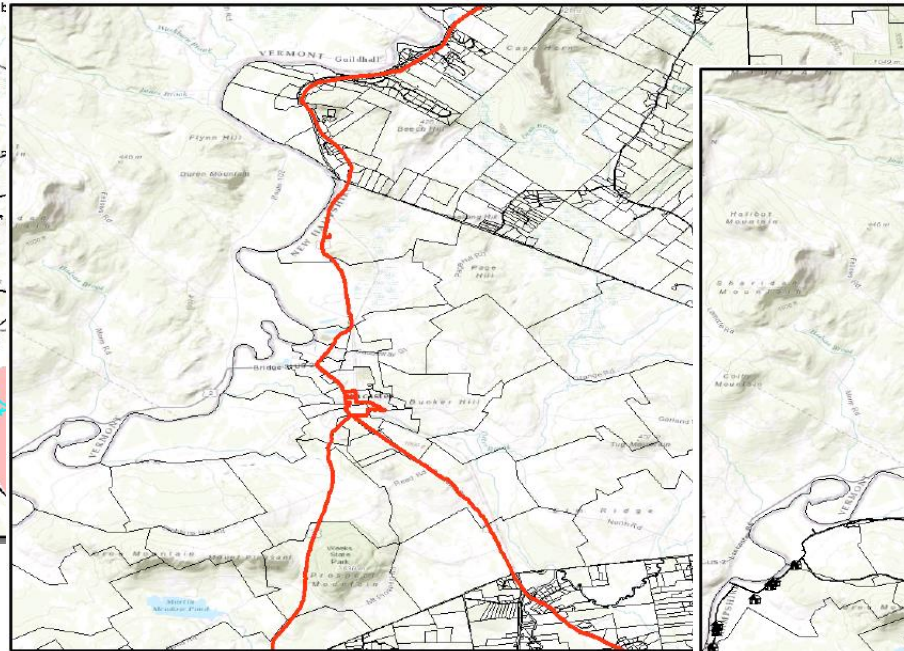
2. Fiber build-out plans

3. Buildings within 1000 ft. of fiber route

Why Is Broadband Important?

- For each $1.00 invested in BB, the economy benefits nearly $3.00 (BEA)

- For every 1% increase in BB penetration, employment will increase by .2 – .3% per year (Brookings)

- Employment in manufacturing, financial services, education, and health all correlated to BB access (Brookings)

- Health benefits to people 65 years and older estimated at $927 billion (Litan, 2008)

62% of American workers rely on the Internet to perform their jobs

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Current Broadband Initiatives

- Tax Credits – Representative Townsend
  - $2M annually for GigE buildout

- Nationwide First Responder LTE Network
  - Dedicated to Pubic Safety using new freq band
  - Alternative RFP in progress
  - Potential statewide commercial access when available

- NBRC – North Country Cell Service Initiative
  - Carrier neutral 4G LTE service
  - 1 to 4 sites in progress
  - potential for up to 10 more sites

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New Hampshire School Connectivity Initiative

- The NHSCI coalition
  - Spearheaded by DoE
  - Governor's Office
  - UNH
  - DRED
  - NH DoIT

- Working with ESH

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# New Hampshire School Connectivity Initiative

- The goals of the NHSCI are:
  - Create K-12 broadband connectivity report (TAB)
  - Set K-12 connectivity goals
  - Develop a plan to meet those connectivity goals
  - Create a plan to enhance utilization of E-Rate funds

- EducationSuperHighway Offers
  - [Fiber consulting program](#)
  - [School WI-FI Buyer's Guide](#)
  - District connectivity pricing portal

NHSCI & Data Driven Decisions

- What vendors have existing fiber?
- Will it be reasonably priced?
- Who may be last on the list?
- Create a local or statewide purchasing consortium?

STEM Science, Technology, Engineering, Mathematics

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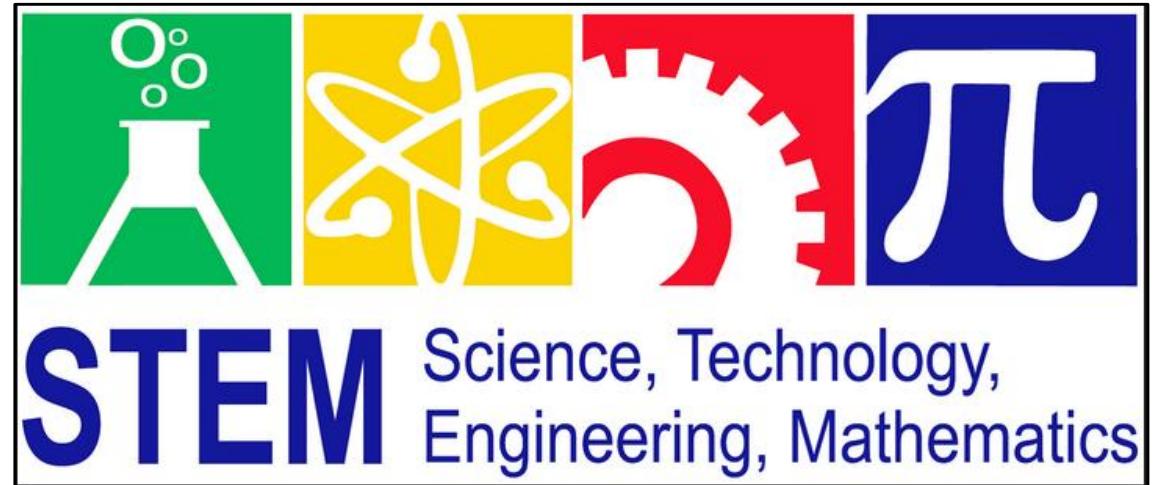
USNH Regional Optical Network

- DWDM between USNH Institutions and Dartmouth
  - Forty 10 Gbps waves per fiber (480 Gbps capacity)
- Statewide Carrier Ethernet Network
  - 20 Gbps Backbone
  - Cooperative Extension
  - Granite Sate College
  - CCSNH, NCES, NCIC
  - Backup for NHSafeNet
- Regional Connections
  - Boston, Albany, NYC
  - Internet and Internet2

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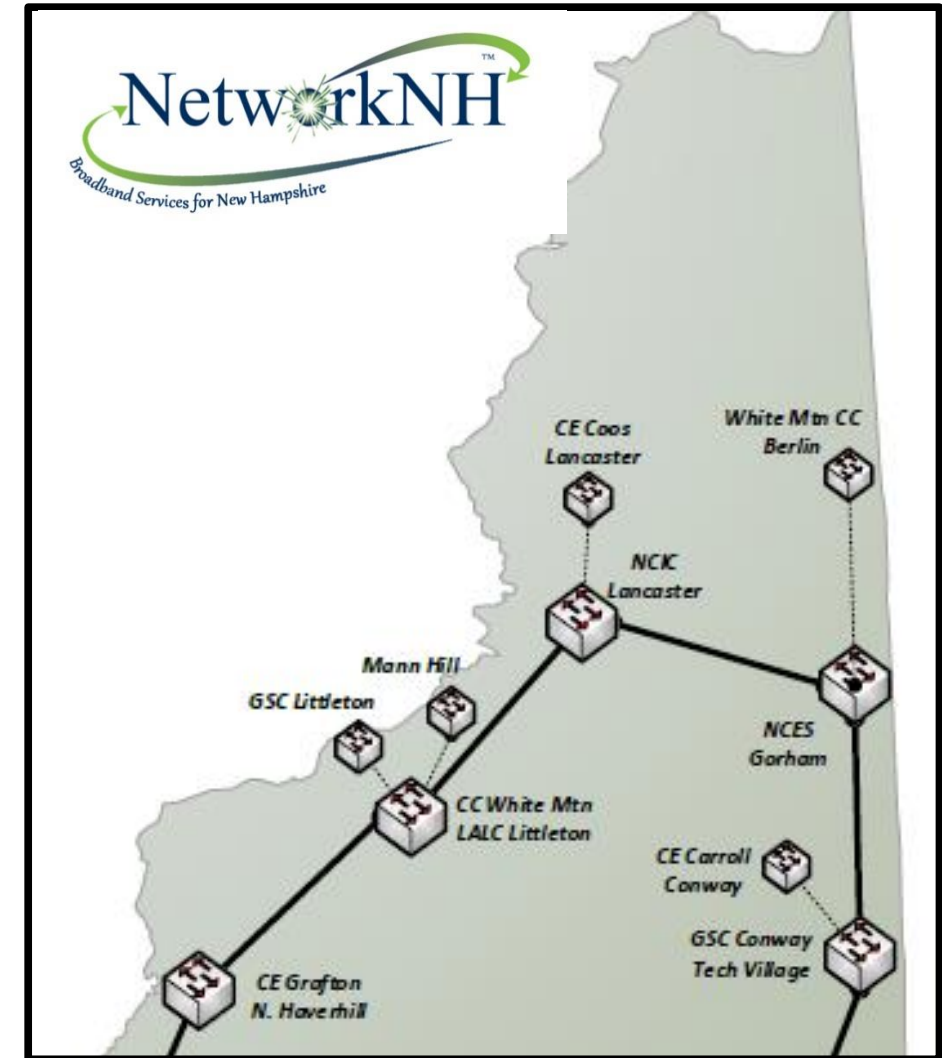
IBEAM SAU 20 campus buildout example

Video Collaboration

- What do you need to get started
  - Broadband (1-2 Mbps with QoS)
  - Local hardware
  - Bridging infrastructure or cloud service

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Videoconferencing Hardware

Laptops and Desktops

Phones and Tablets

Industry Specific Systems

Room Based Systems

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Services & Support

Room Systems

Mobile and Desktop Systems

Bridging: multi-site
High-def and Std def

Live Hotline support
862-VIEW

Media Management:
Storage, Streaming,
and Replay

Contacts Directory
& scheduling

Firewall traversal

Phone Bridge

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ConnectNH

- Affordable videoconferencing network for every New Hampshire community.
- Member Based Organization
- ~60 NH organizations
- Utilize high-speed infrastructure
- Self sustaining

https://www.unh.edu/it/connectnh

Blue- Distance Learning
Red- Telehealth

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Highlights

- Over 1400 conferences, meetings, workshops annually

- Thousands of participants throughout the state, region, nation and world.

- New Hi-Definition Polycom Bridge and Media Management System

- Continuing enhancements

  - Mobile video

  - Click to join - "Web Suite"

  - Content Management

  - Web Streaming

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Telehealth Event Examples

- Northern Human Services Telepsychiatry Project in Northern NH

- Dartmouth Hitchcock Medical Center Grand Rounds Meetings

- NH Hospital's Grand Rounds

- NH Nurses Assoc.

- LRH Nurses Training

- Mainely Girls Eating Disorders

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Distance Learning Examples

- New Hampshire's Role in the American Revolution and Colonial Times

- Witness to History program from the USS Arizona Memorial

- Granite State College-Conway Nutrition Class with Remote Prof.

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Content Capture

🔵 ## NH Infectious Diseases

ConnectNH Content Capture

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USDA RUS GRANTS
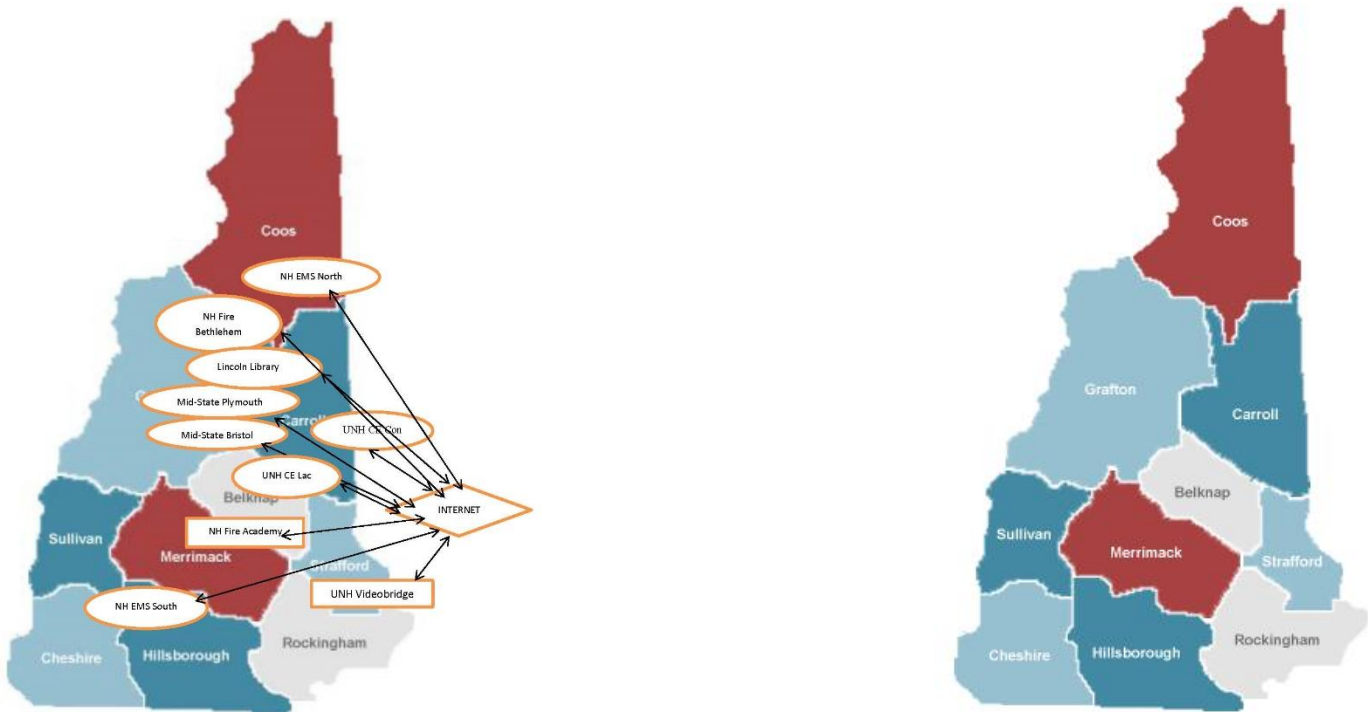
2013 USDA RUS Network for Distance Learning and Telehealth utilizing multipoint videoconferencing through UNH Videobridge via internet

http://www.lowes.com/cd_the+lowes+charitable+and+educational+foundation_474741445_

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Potential Use Cases

- Regional and Statewide Meetings

- Initial and Refresher Training

- Professional Development Programs

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