



Cornish Broadband Committee

Broadband Infrastructure Expansion in Cornish

Final Report: January 16, 2023

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Introduction

The Cornish Broadband Committee was formed at the request of the Selectmen in late June 2022, with the following charge:

- Assess the adequacy of broadband internet coverage and reliability in Cornish;
- Investigate opportunities for improvements with no additional burden on the taxpayers at an affordable price to subscribers;
- Work to determine specific areas in town where broadband is not readily available and how better coverage could be achieved;
- Review current government funding opportunities that could potentially leverage private investment and/or user fees to bring broadband to town residents presently unserved or underserved;
- Investigate, not procure, funding;
- Review other current or recently completed initiatives in New Hampshire at the town, county and/or regional level designed to achieve greater broadband coverage in towns similar to Cornish;
- Prepare a report for the Board of Selectmen by January 15, 2023.

The term of this Committee will expire no later than the time of the 2023 Town Meeting.

The Committee has met frequently since it was first organized. The committee has:

- Investigated relevant federal and state programs which are available to provide funding for expanded broadband;
- Through the Selectmen, requested information from all of the Internet Service Providers (ISP) currently providing services, or who could provide service, in the Town.
- Communicated with several of the ISPs and had zoom meetings to gather further information.
- Prepared and published a survey to residents of Cornish to assess the current level of service, and to identify their concerns and their opinion of the adequacy of broadband service to their residences and businesses.
- Attempted to determine the number of unserved and underserved homes and businesses in town.
- Monitored the State grant programs currently being funded and administered.

Respectfully submitted by the Cornish Broadband Committee on January 16, 2023

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Executive Summary

Our charge turned out to be far more challenging than we originally anticipated. There are multiple Federal programs, administered by the State, which will bring a tremendous amount of funding into New Hampshire to extend affordable broadband access over the next five years. These programs are complex, offered through different Federal agencies, and they are being deployed both now and in the near future.

At our request, the Selectmen sent a Request for Information to eight existing and potential internet providers. We received a response from four, and we received some detailed information from Comcast and Consolidated Communications. It would appear that the only present provider of true high speed broadband in Cornish is Comcast (aka Xfinity).

We attempted to determine the number of unserved addresses in the Town using a variety of data sources, including information from Comcast and Consolidated Communications. We discovered that this was very difficult to do with any accuracy. Fortunately, UNH has a contract through the NH Bureau of Economic Affairs (BEA) to do a conclusive internet mapping study which is expected in the first quarter of 2023. Until this is complete, our best estimate is that there are 178 to 243 eligible addresses in the Town which are considered unserved or underserved, using the standards set by the most recent Federal programs.

In 2015 the Federal Communications Commission (FCC) defined the term “broadband” as 25 megabits per second download (25 Mbps) and 3 megabits per second (3 Mbps) upload. Today, the current federally funded programs require ISPs to offer 100 Mbps download and 20 Mbps upload in order for an address to be considered as “served”. An address with broadband access below those thresholds is considered “underserved”.

We conducted a survey to assess internet coverage and satisfaction within Cornish. In order to encourage people to respond either online or using a paper form, we placed multiple notices in Connect Cornish. We also mailed a notice to every postal address in the Town. The survey received 278 individual responses, representing 240 households and 6 businesses. The survey showed that there is a lack of adequate broadband access (and cell coverage) in town. Less than half of the respondents indicated that they were satisfied with their internet. Based on those who provided speed test data, only 13% reported speeds of 100/20 Mbps or greater. A great deal more detail on the survey results is available below and in the Appendix.

As of this time, NH has been allocated \$122 million from Coronavirus Capital Projects Fund (CPF) under the American Rescue Plan Act (ARPA) of 2021. This will be administered by the Broadband Initiative office of the NH BEA.

The first of these BEA programs (the Statewide Broadband Build) awarded a \$50 million competitive contract to NH Broadband, part of the NH Electric Cooperative (NHEC). We think this will directly affect between 54 and 81 unserved or underserved addresses in Cornish. The second program is very similar. The BEA received three second round proposals. We won't know more until the contract is approved by the Governor and Executive Council.

The third major program funded by the (CPF) is a cost-share model. BEA calls this the Broadband Matching Grant Initiative (BMGI). This program is in the final phase of the rules process, which may take several more months.

Also, the CPF/BEA funding awarded a contract to UNH to conduct a statewide broadband mapping project. This project is expected to be completed in the first quarter of 2023.

Another major Federal program, the Broadband Equity, Access, and Deployment (BEAD) Program, appropriates \$42.45 billion for states, territories, the District of Columbia and Puerto Rico. NH is expected to receive a tremendous amount of funding under this program. The BEAD program is focused on "Internet for Everyone" and it appears to be structured to provide service to those locations that have a high cost per address.

The first three statewide programs have focused on maximizing the number of addresses served at minimum cost. This will result in a higher cost to provide service to the remaining unserved addresses. We recommend that the Town investigate and pursue further opportunities and programs, including BMGI and BEAD, as they become available. These programs appear likely to include remaining unserved addresses.

Background Information

A. Broadband Basics

Definitions:

- **Broadband** is the transmission of data over a high-speed internet connection. There are several types of connections:
- **Fiber** optic cables carry large amounts of data using pulses of light through strands of fiber at the fastest speeds. There is very little availability of fiber in Cornish.
- **Wireless Broadband** connects a home or business to the internet using radio signals instead of cables. This signal can originate from antenna towers or smaller nearby antennas mounted on utility poles. Providers such as WaveComm can serve parts of Cornish, but a clear line of sight is needed between a home and their tower. Weather can affect the link.
- **Digital Subscriber Line (DSL)** transmits data over traditional copper phone lines. It is limited in speed and the speed reduces as the length of the cable increases. Consolidated Communications provides this service in much of Cornish. The speed is very limited.
- **Cable** delivers high speed internet over the same coaxial cables used for cable TV. Comcast (Xfinity) provides this service to many subscribers in Cornish. Speeds up to 1000 Mbps are available
- **Satellite** provides a connection using geostationary communication satellites. Speed is limited and latency is extremely long. Multiple providers are available. Weather can affect the link.

Broadband Speed involves three components:

- **Download speed** is commonly mentioned alone. That is the speed in megabits per second (Mbps) that the system can deliver data. Most current Federal and State programs consider a property “unserved” unless a minimum download speed of 100 Mbps is available at that location.
- **Upload speed** is the speed in Mbps that the system can receive data. Most current Federal and State programs consider a property “unserved” unless a minimum upload speed of 20 Mbps is available at that location.
- **Latency** is the “round trip” time between sending out data and receiving a response to it. Satellite systems, simply because of the distance between a home and the satellite, typically have very long latency.

Speed requirements are a function of the needs of an individual subscriber. For simple email without large attachments, very slow services (like slow DSL) can be satisfactory. For streaming HD videos, and downloading large files, 100 Mbps or more may be needed. For online gaming, low latency is essential. Uploading large files (for example, someone working from home as a video editor), upload speeds are very important. For a home with multiple users, speed requirements increase. There is more detail in the Broadband Survey section below.

Cellular Service and Broadband:

It is important to understand the difference between broadband service and cellular phone service. There are many areas in Cornish with a poor cellular phone signal, and while that is frustrating, improving broadband access does not directly improve that. Broadband service can be delivered through the cellular network, although at the present time it is relatively slow and also costly. High Bandwidth 5G cellular service may offer high speed broadband, but at the present time, it's pretty much limited to more densely populated areas like cities.

B. History of Broadband Expansion in New Hampshire

The Granite State, in conjunction with UNH and business sector partners, has been actively pursuing deployment of high speed broadband access for more than twelve years. In 2010, the New Hampshire Broadband Mapping and Planning Program (NHBMPP) was announced. The final report can be viewed here:

https://www.unh.edu/broadband/sites/www.unh.edu.broadband/files/media/kb-reports/initiatives/NH_Broadband_Report_2015_UNH.pdf

The UNH Broadband Center of Excellence (BCoE), established shortly after the completion of that report, provides unbiased information and other services to encourage the development of innovative network applications. See: <https://www.unh.edu/broadband/>

In May of 2018, Senate Bill 170 was signed by the Governor. This Bill, which was the result of a one year long effort, granted the Towns the authority to issue bonds for the expansion of broadband infrastructure. This is explained in more detail below.

In 2020, New Hampshire allocated \$13M from the short term CARES Act Fund for broadband expansion that benefitted over 4,500 households.

In June 2022, New Hampshire was announced as the first state in the nation to receive approval for its broadband expansion plan utilizing funds from the ARPA Coronavirus Capital Projects Fund (CPF).

C. Cost Considerations

Many of the funding programs focus on the best return for a given investment: for instance, under the first phase of New Hampshire's Broadband Buildout, proposers were judged on the "cost per unserved address", amongst other criteria. The first round was awarded to NHEC. This will provide broadband access to more than 23,000 locations statewide at an average cost per address of about \$2,200 per address. Note that those are addresses where service will be available, even though residents may not elect to use it.

NHEC's proposal (see Appendix D) discusses the cost per mile of installing fiber, which may be roughly \$40,000. So to serve customers at \$2,200 per address, you need to have 18 or so potential customers per mile. This is the same kind of analysis that a for-profit telecom company or cable company does when they decide to install facilities at their cost: they only make the investment where they expect a reasonable return.

Sparsely populated areas can have a very high cost per address. Consider St. Gaudens, Gap and Dingleton Hill roads: as a group they total about eight miles, so it might cost \$320,000 to install fiber on those three roads. There are only about 39 potential customers on those roads, so the cost per address is over \$8,600. On the other hand, one mile of road in Cornish Flat might have 70 addresses, which is an average cost of less than \$600 per address.

We are aware of successful broadband buildouts in several towns funded by local broadband infrastructure Bonds funded under RSA 33:3-g. It is clear that such funding only works where there is a favorable mix of both high and low cost addresses. The challenge for Cornish is that one provider has already "cherry picked" the lowest cost addresses in the town, and the first two statewide programs are also doing the same thing with the remainder of the unserved addresses. This leaves many higher cost addresses unserved. Fortunately, the BEAD program would seem to offer a solution for those locations.

Broadband Survey

We conducted a survey to assess internet coverage and satisfaction within Cornish. The survey could be taken online or by paper. Along with putting a notice in Connect Cornish, we also mailed a notice to every postal address in the Town, encouraging people to respond online or by using a paper form. Each member of the household could fill out the survey individually. The survey received 278 responses, representing 240 households and 6 businesses.

We measured satisfaction based on a combination of speed, cost, and reliability: 48% responded as “Very satisfied” or “Somewhat satisfied;” 15% responded as “Neutral;” and 36% responded as “Somewhat dissatisfied” or “Very dissatisfied.” Comments from this question revealed that high cost and reliability/outages were among the top concerns.

The survey showed that while there are several options for internet access in Cornish, there are two major ISPs being used: 51% use Comcast and 24% use Consolidated Communications. 3% of respondents indicated that they did not have internet at their home or business.

Federal and State programs stipulate minimum download speeds of 100 Mbps and minimum upload speeds of 20 Mbps as ‘served’. Of the 135 respondents who supplied both download and upload speeds, 47% are “unserved”, 39% are “underserved” and only 13% are “served.” The chart below lists the recommended speeds for typical internet activities based on the number of users.

Note that the percentages above do not add up to 100% as the result of rounding errors.

Internet Speed	Number of Users	Type of Activity
5-20 Mbps	1-2 Users	<ul style="list-style-type: none"> • Emails • Regular website browsing • Music streaming • SD video streaming
20-40 Mbps	1-3 Users	<ul style="list-style-type: none"> • Working from home using light apps • Streaming music • Online gaming • 4K video streaming • HD video streaming
40-100 Mbps	2-4 Users	<ul style="list-style-type: none"> • Multigaming • 4K video streaming • Using home security • Using smart appliances • Downloading large files
100-500 Mbps	2-5 Users	<ul style="list-style-type: none"> • Running a home office • Using creative apps or software • 4K video streaming • UDHD streaming on multiple screens • Fast file download of large files
500-1,000 Mbps	5 Users or more	<ul style="list-style-type: none"> • Running a home office • Using creative apps or software • 4K video streaming • Using home security • Using smart home devices • Multiuser/ multi-device functions

Source: <https://www.allconnect.com/blog/faqs-internet-speeds-what-speed-do-you-need>

The survey showed that respondents use the internet for a variety of reasons: 98% use it for email and/or phone, 87% for shopping, 86% for news and/or weather, 77% for entertainment (i.e. TV, movies, gaming, etc.), 67% for video conferencing/video calling, 66% for social media, 52% for education, 52% for working from home, and 51% for healthcare/telehealth. Other prominent uses included security systems, access to government services (i.e. Medicare, Social Security, etc.), and/or running a small business.

In areas where there is no cell service, the internet, if available, can be used for communication. For this reason, the survey also asked about phone usage: 56% use both a cell phone and landline; 34% use a cell phone; 9% use a landline; and 1% use neither. Of residents that use a cell phone 68% indicated that they have poor or no signal at their home.

The comments below summarize recurring issues in the Town due to poor internet and/or cell signal (edited for spelling and grammatical errors):

“Lack of better internet service options make Cornish a less desirable location to live”

“No way to communicate easily in a power outage”

“When my children were in high school and college (during COVID) they were several disadvantaged for school projects because we did not have sufficient internet.”

“Many times not able to access my medical provider; cell phone often not usable because of no signal.”

“We ... depend on the internet, to run our business, on a daily basis!”

“Lost a job due to lack of internet connect-ability.”

“Have to drive to the library or to Panera to connect to internet.”

“Frustrating when it drops off, which is often.”

Full survey results and all comments can be viewed in Appendix B.

Available Programs

A. BEA Statewide Broadband Buildout, Round One

This is the first major portion of funding from the CPF, which is part of the American Rescue Plan Act of 2021 (ARPA). Detailed information on the process can be found here: <https://www.nheconomy.com/about-us/office-of-broadband-initiatives/request-for-proposals>.

At the Federal level this program is administered by the U.S. Department of the Treasury. At the State level, it is administered by the Office of Broadband Initiatives, which is part of the BEA. The BEA issued a Request for Proposals (RFP).

The BEA evaluated and scored the proposals received in response to the RFP, and ultimately awarded a \$50 million contract to NHEC. This contract will bring broadband to over 23,000 addresses statewide. A redacted copy of the NHEC proposal is included in the Appendix. After the contract was negotiated and signed by the Governor, the BEA released map data (in GIS format) of the addresses that would be served. Working with this data we found that NH Broadband proposed to serve 81 previously unserved addresses in Cornish. Our review of the map data does show some discrepancies which we have not yet been able to resolve.

B. BEA Statewide Broadband Buildout, Round Two

Originally, BEA had not planned on two rounds of the buildout RFP. Based on the success of the first round, they initiated a second round. Round two is very similar to Round one, with a smaller budget of \$40 million. Detailed information on the process can be also be found at same site: <https://www.nheconomy.com/about-us/office-of-broadband-initiatives/request-for-proposals> The BEA received three second round proposals. As of this time, further information remains confidential until the contract is approved by the Governor and Executive Council, in accordance with RSA 21-G:37.

C. BEA Broadband Matching Grant Program

This is the last major portion of funding from the CPF. This program provides up to a 75 percent match to applicants to build broadband Internet infrastructure in unserved and underserved parts of a community. The program allows various applicants to use funds from various sources to make up the balance of the cost. BEA has not released any detailed information but a preliminary version of the program has been reviewed and adopted by the Joint Legislative Committee on Administrative Rules, and that version is included in the Appendix. It is now in the final phase of the rules process, which may take several more months.

This may be a program in which the Town could become involved directly. We can only evaluate this opportunity after the results of Round 2 of the broadband buildout program are known, and after the BEA publishes specific information on the application process.

D. Broadband Equity Access and Deployment (BEAD) Program

BEAD is a federal grant program that “aims to get all Americans online by funding partnerships between states or territories, communities, and stakeholders to build infrastructure where we need it to and increase adoption of high-speed internet”. The Federal government’s slogan for this is “Internet for all” (see www.internetforall.gov).

BEAD prioritizes unserved addresses that have no internet access or only have access under 25/3 Mbps, as well as underserved addresses that only have access under 100/20 Mbps. BEAD also prioritizes fixed fiber infrastructure over cable, DSL or any type of wireless. BEAD is administered by the National Telecommunications and Information Administration (NTIA), which is part of the U.S. Department of Commerce. At the State level, it will be administered by the Office of Broadband Initiatives, which is part of the BEA.

This is a \$42 billion program. The allocations to the States and Territories are subject to a complex and competitive process, but we know that there will be at least \$100 million of funding available to New Hampshire, and some industry sources estimate we could receive as much as \$400 million overall for the entire duration of the program. Based on our understanding right now, this program has the greatest potential for providing service to those locations that are “high cost”.

E. Other Federal Programs

The first two of these programs are relevant to Cornish right now, although they do not fund broadband infrastructure:

Affordable Connectivity Program: This is an FCC benefit program that helps ensure that households can afford the broadband they need for work, school, healthcare and more. It’s available right now to anyone who meets any of the qualification criteria See: <https://www.fcc.gov/acp>

FCC National Broadband Map: In November 2022 the FCC released their pre-production draft of its new broadband maps. The maps reflect broadband availability at the physical location level. The FCC is required to continually update the accuracy of the map via a challenge process which is open to the public. See: <https://www.fcc.gov/news-events/notes/2022/12/19/where-are-we-now-broadband-mapping-update>

Northern Border Regional Commission: This is a federal-state partnership for economic and community development within most distressed counties of New Hampshire (including Sullivan County), Maine, Vermont, and New York. Broadband and other telecommunications infrastructure are eligible for funding. See: <https://www.nbrc.gov/content/new-hampshire>

ReConnectProgram: This program offers loans, grants, and loan-grant combinations to facilitate broadband deployment in areas of rural America that currently do not have sufficient access to broadband. It is offered through the U.S. Department of Agriculture Office of Rural Development. See: <https://www.usda.gov/reconnect>

Rural Digital Opportunity Fund: The Federal Communications Commission (FCC) administers the Rural Digital Opportunity Fund (RDOF) to “efficiently fund the deployment of broadband networks in rural America”. Through a two-phase reverse auction mechanism, the FCC will direct up to \$20.4 billion over ten years to finance up to gigabit speed broadband networks in unserved rural areas. Bidders are typically large telecom companies and cable companies. This program,

which began in 2020, is expected to run through 2030. It is unknown if any of this funding will affect Cornish.

F. Local Broadband Infrastructure Bonds

Another option available for “unserved locations” in the Town would necessitate the Town entering into a combined public-private partnership to provide broadband infrastructure for these properties. Before these more recent Federal programs became available, this approach was successfully used in the towns of Westmoreland, Walpole, Chesterfield, Acworth, Enfield and others. All of the towns achieved speeds of at least 100 Mbps, and speeds in some reached as high as 1 Gbps (1,000 Mbps).

This option presumes that governmental funding or grants are unavailable to cover the cost of providing broadband to the Town. The option requires the town to specifically bond the expense of the project and to enter into an agreement with an ISP. The ISP then makes the bond payments. NH RSA 33:3-g permits the bonding for broadband infrastructure. The bond article must be placed on the Town warrant and must be approved by 2/3rds vote of the voters at town meeting. The bonds must be used to provide broadband services to “unserved” locations in town as per RSA 38:38.

It is not clear at this time whether this will be an economically viable option to provide service to the remaining unserved locations, either as part of the BGMI or even after the completion of BEAD. For further detailed information on this option please review the “Monadnock Broadband Implementation Guide,” October 2020, (Appendix F). See the detailed example of a timeline contained in that document.

Recommendations

The Broadband Committee’s charge is to expire at the time of the 2023 Town Meeting. The Committee makes the following recommendations:

1. The Committee should be reinstated for at least one additional year.
2. The Committee should continue to monitor the several grant programs that are currently being administered.
3. The Committee should consider assisting and/or promoting corrections to the FCC National Broadband Map for Cornish locations (The FCC calls these corrections “challenges”).

4. The Committee should have as its primary goal to ensure that all residences and businesses in town have access to high speed internet services (a minimum of 100 Mbps download, 20 Mbps upload), at an affordable price, including special consideration for low income members of the community.
5. The Committee should continue to regularly communicate with ISPs and relevant state agencies.
6. The Selectboard should designate a liaison to work with ISPs in the build out.
7. The Committee should continue to monitor legislative and administrative developments.
8. The Committee, with the approval of the Selectmen, should regularly communicate with state administrative and legislative parties to achieve 100% broadband coverage for all residents and businesses in Cornish, including those that are costly to serve.

Appendix (transmitted separately)

- A. RFI Contacts**
- B. Survey Results**
- C. Unserved and Served Address Data**
- D. NHEC Round 1 Proposal (redacted)**
- E. BEA Interim Rules of Broadband Matching Grant Initiative (BEA 400)**
- F. Monadnock Broadband Implementation Guide, October 2020**