

Phase I  
Technology Plan

Northern Maine Lakes Region

Broadband Study

Submitted by:

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  - Northern Maine Lakes Broadband Digital Equity and Digital Inclusion Plan

## Phase I Executive Summary

The ConnectME Authority approved a grant for Northern Maine Lakes Region (NMLR) that includes 11 communities and border Unorganized Territories. The grant was awarded in two Phases. This report focuses on Phase I and is designed to help a community understand its existing internet provider infrastructure, gather information from community members about their level of concern around Broadband connectivity, recognize any municipal ordinances or procedures that would affect broadband planning and implementation and finally, a Digital Equity and Digital Inclusion Plan that catalogs and identifies existing internet resources available to citizens of the community.

Phase I helps a community build a foundation to apply for Phase II where an internet connectivity plan for implementation will be developed.

### Surveys

The communities undertook a survey to understand the needs and desires around better internet connectivity. The picture that was painted by the surveys makes implementation planning more challenging.

### Current Providers

The Broadband Committee met with several internet providers to better understand their willingness to invest, upgrade or enhance the current internet situation in the NMLR. The vast majority of subscribers have service through Consolidated Communications or Spectrum.

### Assets and Municipal procedures

Axiom has had conversations with the communities about what barriers exist to building a new network. We are not aware of any ordinance that would prohibit or impede a network design.

### Digital Equity and Digital Inclusion

The Digital Equity and Digital Inclusion Plan is a roadmap to help the community drive internet subscription rates and support local citizens with access and on-line learning that they can apply directly into their everyday lives. The Northern Maine Lakes Region Digital Equity and Digital Inclusion Plan is provided by the National Digital Equity Center, [www.digitalequitycenter.org](http://www.digitalequitycenter.org).

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Given the relatively complicated situation and remoteness of some of the potential coverage areas there are several paths that will need to be investigated and explored in Phase II.

- Survey results point to unusually low satisfaction with Spectrum service- this will need further investigation with Spectrum and communities that have Spectrum service
- Because there are a number of very small, and generally resource starved areas, and a group of larger towns, exploring ways to work together on a plan that would develop across municipal borders or cross over into the UT needs significant investigation
- Strategically planning for those areas outside of the urbanized centers will be important to successfully attract capital- and to help the most remote and unserved areas obtain internet service
- Northern Maine Development Commission (NMDC) will be an important partner to help understand what collaborations are possible
- Fiber will be important, but wireless service, depending on terrain and distance will also be strongly considered

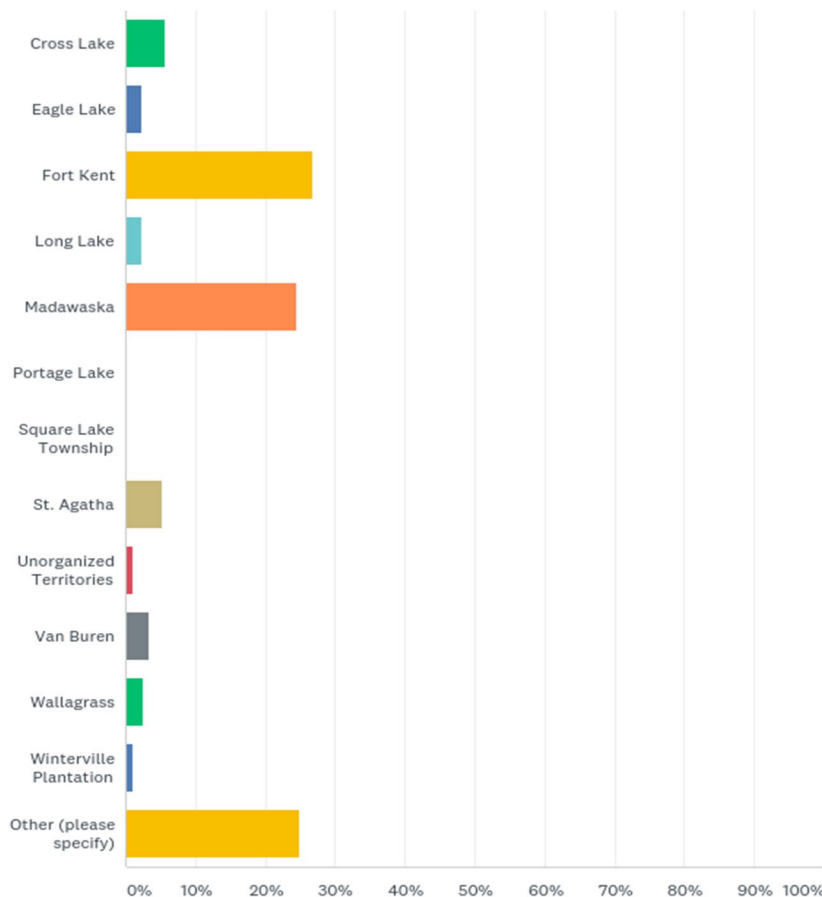
## Surveys

The surveys are one part of the elements of a Phase I ConnectME Planning process. These surveys can help identify issues in communities, help communities better understand constituent issues and generally be one element of supporting evidence for moving to Phase II. Overall the survey had 584 responses, with over 145 of those coming from other locations including Cyr Plantation, St. Francis, Frenchville, St. David and a smattering of unorganized territories.

### Survey Takeaways:

- Strong support for NMDC role to move forward
- Price is very important in this region of Maine, more so than other places- any new service must be affordable
- Better residential service should be the focus for the majority of the communities
- Spectrum service seems more unreliable in this region than any other place in Maine
  - Worth a call to Melinda Kinney at Spectrum to discuss and potentially map out responses to lend visual representation to the issues
- A Digital Equity and Digital Inclusion program is important, but must be customized carefully to be successful

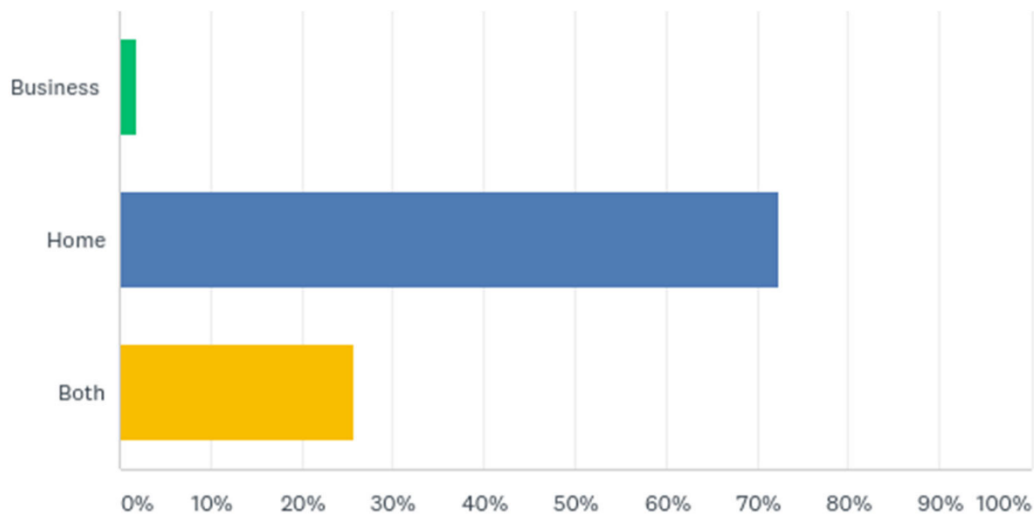
Where Responses came from:



ANSWER CHOICES	RESPONSES	
Cross Lake	5.66%	33
Eagle Lake	2.23%	13
Fort Kent	26.76%	156
Long Lake	2.23%	13
Madawaska	24.53%	143
Portage Lake	0.17%	1
Square Lake Township	0.17%	1
St. Agatha	5.32%	31
Unorganized Territories	1.03%	6
Van Buren	3.43%	20
Wallagrass	2.57%	15
Winterville Plantation	1.03%	6
Other (please specify)	24.87%	145
<b>TOTAL</b>		<b>583</b>

Almost 95% of respondents had internet, 5% did not (30).

Q3 Asks if this is your home, business or both?



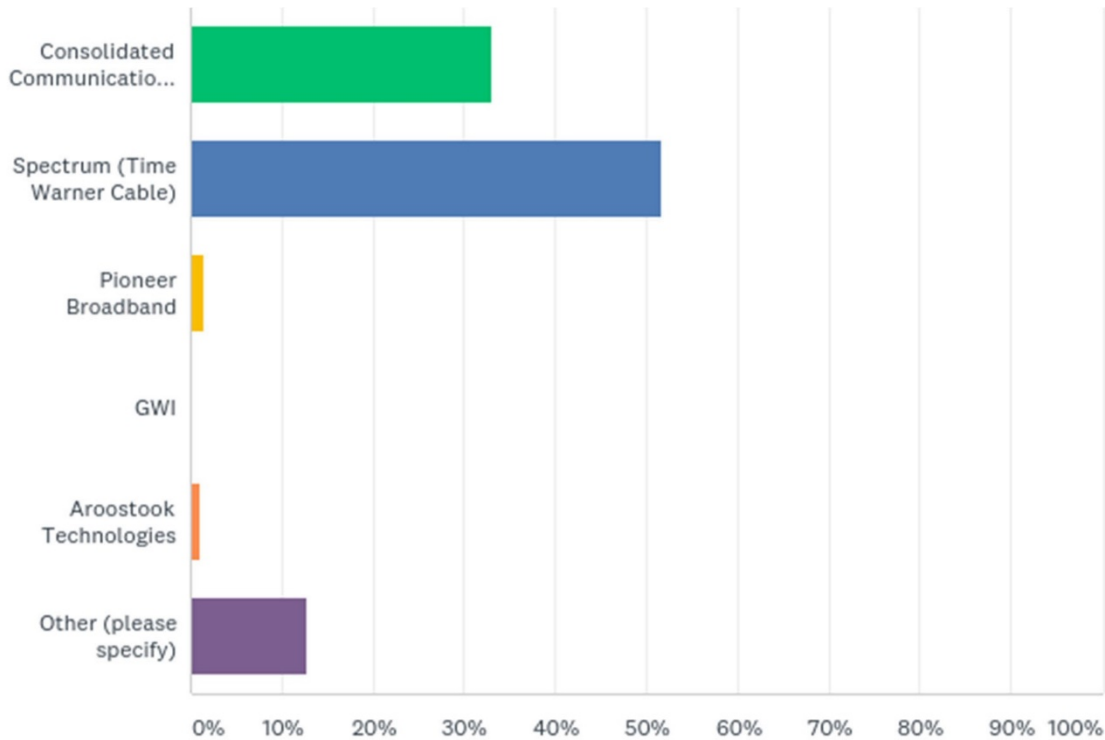
As would be expected in rural communities, significant numbers of folks work from home, making an emphasis on residential service more critical.

Q4: What is your monthly cost?

ANSWER CHOICES	RESPONSES	
\$9.99- \$19.99	1.26%	7
\$19.99- \$29.99	1.97%	11
\$29.99- \$39.99	4.49%	25
\$39.99- \$49.99	13.11%	73
\$49.99- \$59.99	15.26%	85
More than \$59.99	29.08%	162
Do you have Bundled Service (TV, phone, internet) and if so, what is the cost per month?	34.83%	194
<b>TOTAL</b>		<b>557</b>

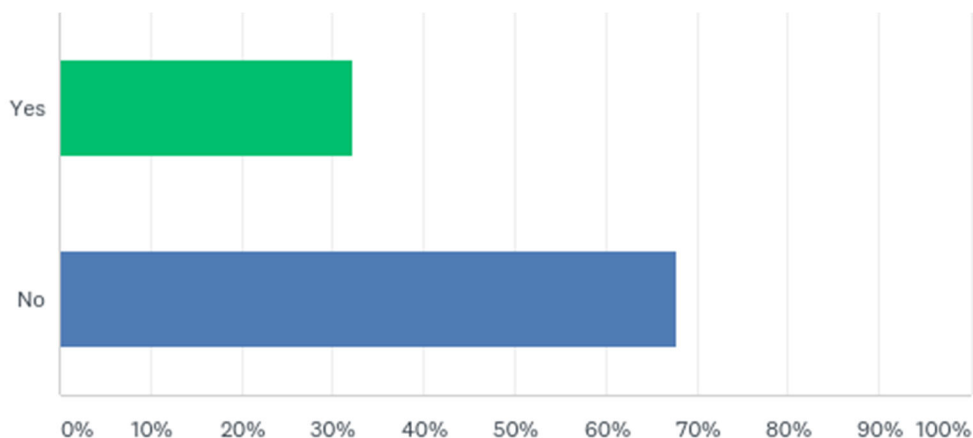
Over 45% pay more than \$50 a month for internet service.

Q5: Who is your provider?



Most citizens have two choices for providers, many have only Consolidated if you are not in the denser urban areas of the larger communities.

Q6: Are you happy with your current service?



ANSWER CHOICES	RESPONSES	
Yes	32.32%	181
No	67.68%	379
<b>TOTAL</b>		<b>560</b>

Highlights of comments on why people are not happy:

*"I am paying for 7 megs and getting about 3 and weekends 1.5 and we keep being disconnected all the time. not worth \$35/month. I have contacted Spectrum several times but have never gotten a response. Lot of us have complained to consolidated and no response there either. They have us in a choke hold."*

*Consolidated customer in UT*

*"Ever since the new digital change over for TVs, when watching TV there is a lot of hang-ups it seems where the show picture gets distorted, but it usually comes back. Recently I had a channel go out completely and a message showed up that the connection could not be made at that time but not long after the show came back on."*

*Spectrum Customer in Madawaska*

*"Price is too high"*

*Spectrum customer in Wallagrass*

*Bundled service from Spectrum in Fort Kent- \$119*

*In Madawaska- \$180*

*In St. Agatha- \$85*

*"SO Slowwww!~*

*Consolidated Customer in Cross Lake*

*"To costly, and interrupted service often"*

*Spectrum Customer is UT*

*“The cost is ridiculously high and the service sucks and forget it if there’s so much as a flake of snow or drop of rain we lose service”  
HughesNet Customer in St. David*

*“We have the poorest quality of internet in town. On Violette Settlement, we only have options of FairPoint or dish. Allagash has better internet and options than we do here in town. VS doesn’t have the fiberoptic capability for any other service. My family has tried getting time Warner and we’d have to pay thousands of dollars of our own money to get it to our house.”  
Consolidated Communications customer in Fort Kent*

*“It lags, kicks off, can't stream a movie and play video games. I need the internet to prep for the class I teach, sometimes I can't prep.”  
Consolidated customer in Winterville Plantation*

*“This is the only one available here. No choice. Nothing else is available here.”  
HughesNet customer in Madawaska*

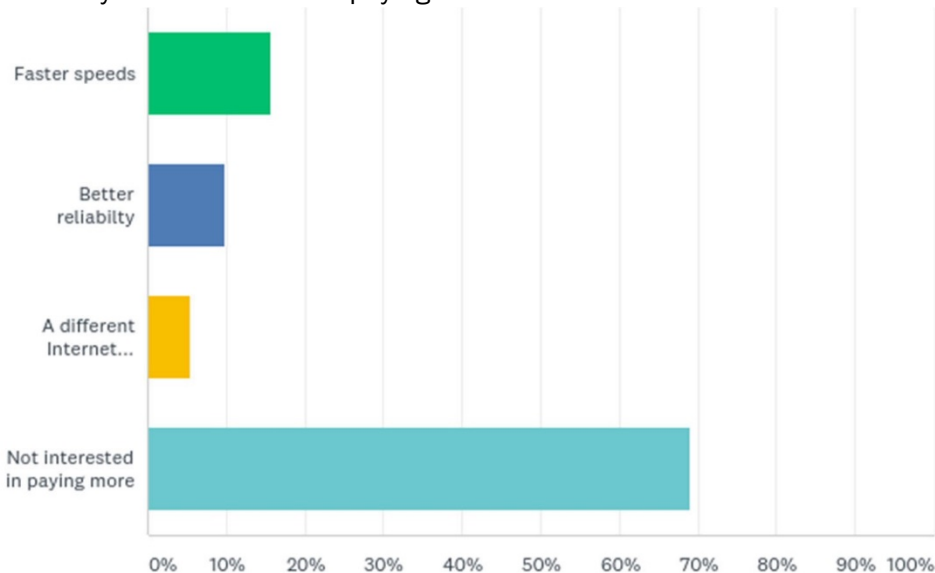
*“I wish here in Van Buren we could get faster internet I work from home 2 days a week. I have the fastest they offer would love it to be faster”  
Consolidated customer in Van Buren*

*“The reason we are dissatisfied is because we pay full price and our internet is slow. Due to them not being able to upgrade the lines this is how it will be for a long time.”  
Consolidated customer in Cross Lake*

*“Cost, speed reliability and service is marginal.”  
Consolidated customer in Eagle Lake*

*“Very slow, does not work often and at random times”  
Pioneer Customer in Long Lake*

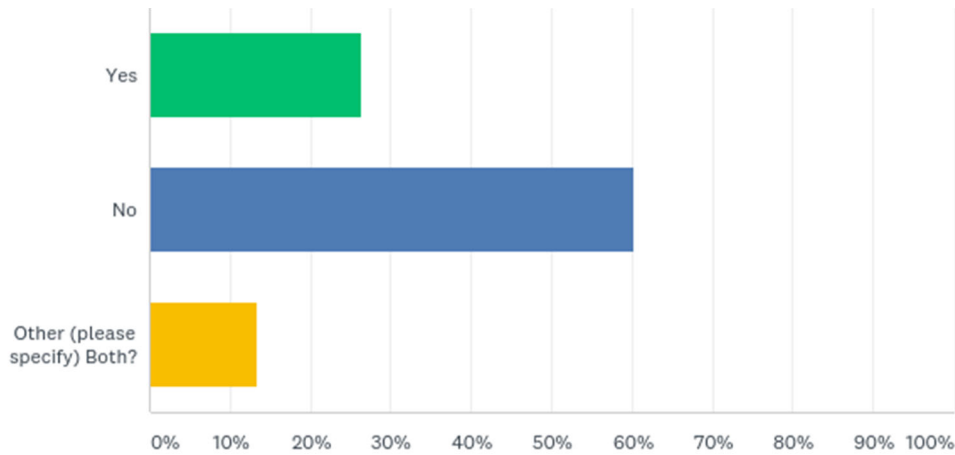
Q8: Would you be interested in paying more for better service?



Understandably, subscribers are very price sensitive, especially with Spectrum service.



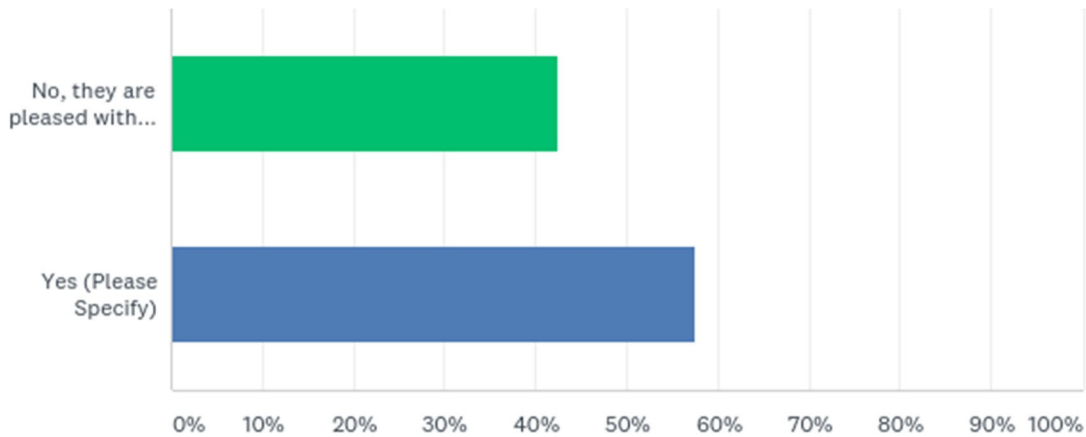
Q10: Do you or anyone in your household work from home?



ANSWER CHOICES	RESPONSES	
Yes	26.41%	150
No	60.21%	342
Other (please specify) Both?	13.38%	76
<b>TOTAL</b>		<b>568</b>

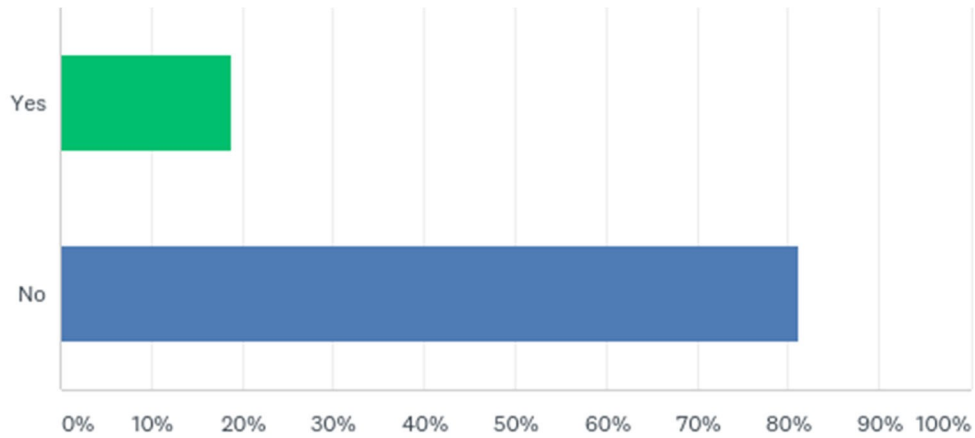
This reinforces the focus on residential services being addressed in poorly served areas.

Q11: If applicable, are the people working from home frustrated with their internet connection?



57.5% (169 responses) indicated they were frustrated with their connection at home that was used for work.

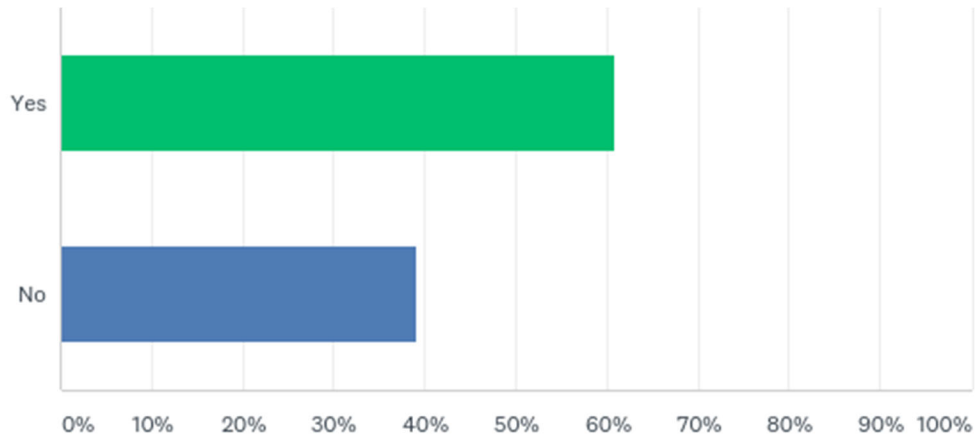
Do you telecommute?



ANSWER CHOICES	RESPONSES	
Yes	18.78%	102
No	81.22%	441
<b>TOTAL</b>		<b>543</b>

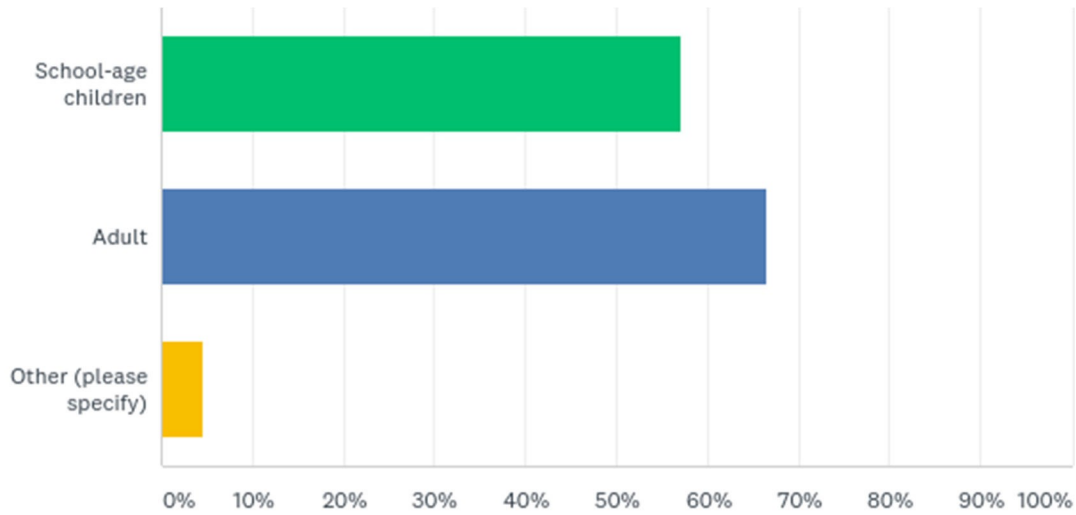
It is Interesting that the NMLR had a significant number of telecommuters, people who work exclusively from home for a company that may not be located in the region at all.

Q13: Do you have children or adults in your household who use the internet for homework or education?



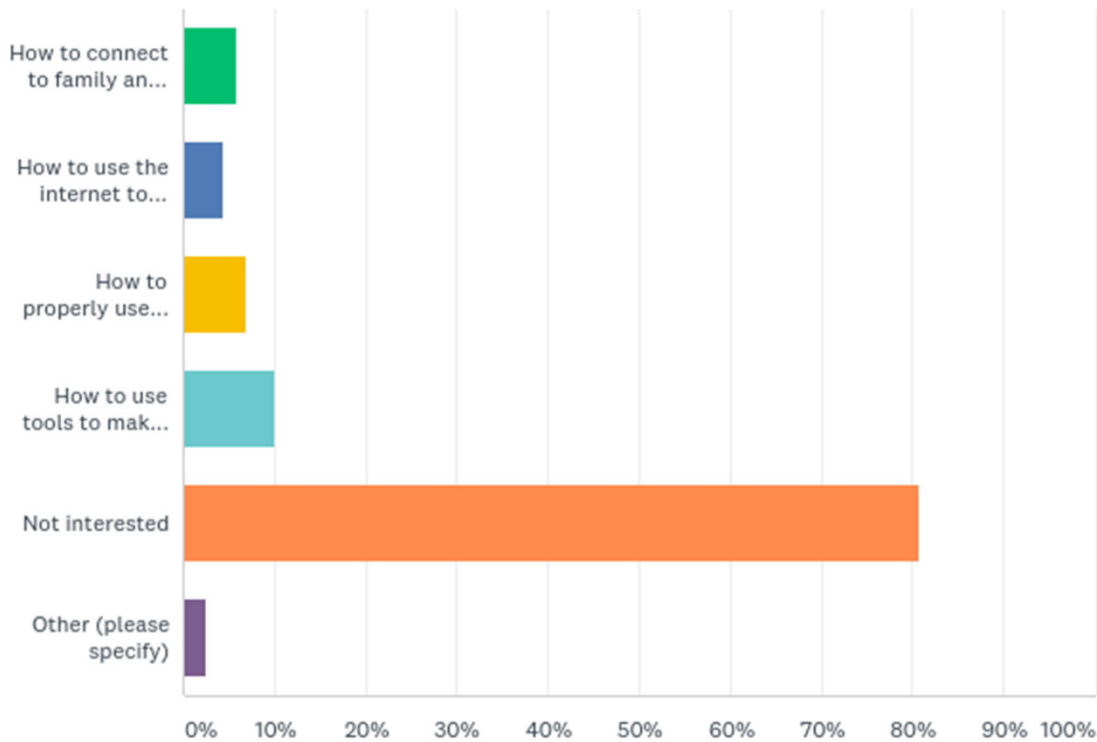
ANSWER CHOICES	RESPONSES	
Yes	60.85%	342
No	39.15%	220
<b>TOTAL</b>		<b>562</b>

Q14: Are the users' children or adults?



Significant adult population using the internet to gain skills.

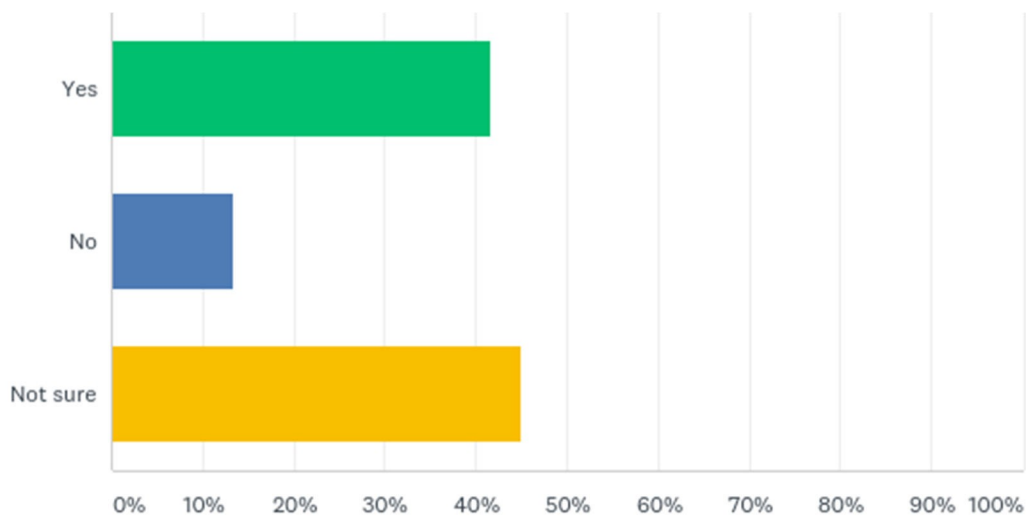
Q15: Would you be interested in training on how to use the internet?



If you were going to move forward with a Digital Equity and Digital inclusion plan, it would need to be carefully crafted. It is always difficult for individuals to take time, this points to an underappreciation of the value and power of a good internet connection.

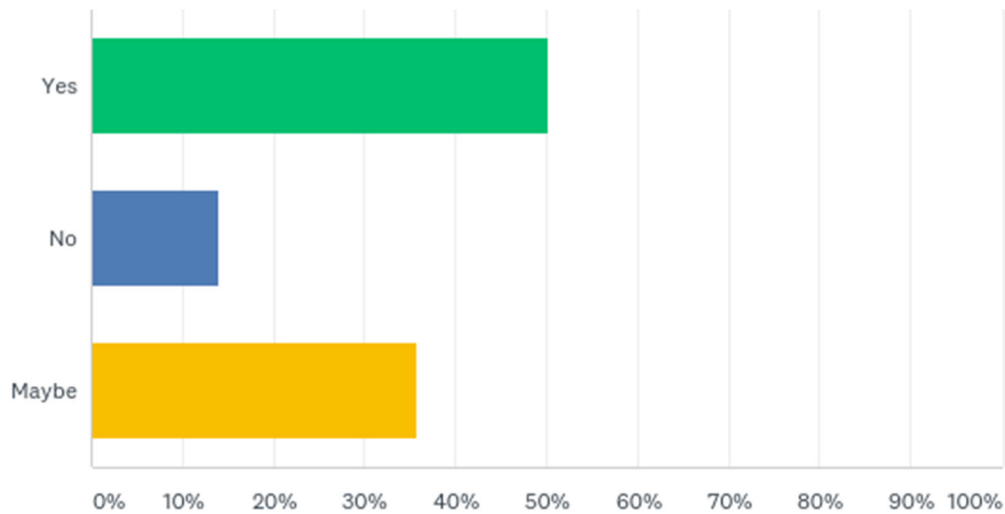
ANSWER CHOICES	RESPONSES	
How to connect to family and friends (Skype, FaceTime)	5.79%	31
How to use the internet to promote my business (Website creation, FaceBook, etc.)	4.30%	23
How to properly use Social Media (FaceBook, Twitter, LinkedIn, Instagram, etc.)	6.92%	37
How to use tools to make me more productive in my home or business (Word, Excel, PowerPoint, QuickBooks)	10.09%	54
Not interested	80.75%	432
Other (please specify)	2.43%	13
Total Respondents: 535		

Q17: Do you think more people would live in your town if there was better internet service available to them?



ANSWER CHOICES	RESPONSES	
Yes	41.64%	234
No	13.35%	75
Not sure	45.02%	253
<b>TOTAL</b>		<b>562</b>

Q18: Do you think visitors would stay longer if good internet connections were available where they were staying?



ANSWER CHOICES	RESPONSES	
Yes	50.18%	283
No	14.01%	79
Maybe	35.82%	202
<b>TOTAL</b>		<b>564</b>

Other comments:

The internet is a very important tool in our society today. People from other areas of the country are used to easy access and fast speeds. To be an attractive place for talent from outside the St. John Valley area, good internet and cell service is as imperative to us as it was for electricity to rural areas in the 1930's.

There are only two options for internet and phone, both are overpriced for the services they provide. Another reliable option would be amazing.

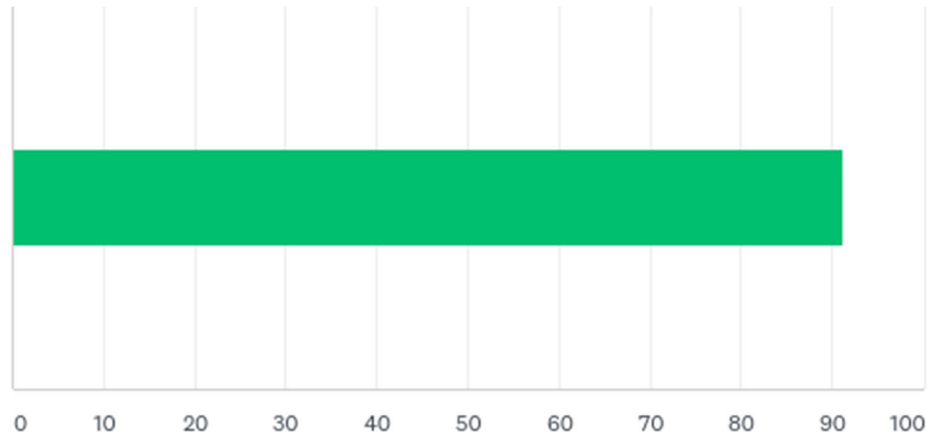
Stuck with 2 providers that do not provide good customer service.

Our town is drying up! Business is not starting up. Possibly good internet might be a factor that would encourage commerce of some kind!

The only place I know is the library and with 4 computers and very limited work hours that's a joke. Fast reliable and widely available low-cost internet service is necessity not a luxury at this day and age it's time our communities get with the plan!

I'm more concerned about the high costs its unaffordable for poor people.

Q20: Do you support NMDC's efforts to assist with internet improvements?



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	91	51,837	568
Total Respondents: 568			

## Current Provider Meetings

As part of the pre-application checklist, NMDC facilitated a meeting with Consolidated Communications and Aroostook Technologies. Pioneer (discussion of their potential expansion into the region) and Spectrum were not present at this meeting. Subsequently, a meeting with Spectrum was conducted. By far the largest providers of service in the Northern Maine Lakes Region communities are Spectrum and Consolidated Communications.

Current mapping from ConnectME was reviewed and there were several disputed areas of service that were either not reported or were reported but seemed inaccurate.

### Aroostook Technologies

They currently do not provide service in the area but are investigating the possibility of providing service in the area. Axiom met with Aroostook Technologies as a follow up and interest remains high for potential partnerships to provide service.

### Consolidated Communications (CCI)

Consolidated has met with regional leaders and provided coverage and take rate information to the NMDC and Axiom. They are committed to providing maps for any community that is trying to determine gaps in coverage.

### Spectrum

Spectrum provided coverage maps for the communities they serve and indicated that Residential Gigabit service was now available across its network including in the Northern Maine Lakes Region. Discussion around low-cost offerings were also discussed, and a Spectrum flyer is available for distribution to make that information available. Surveys revealed that typical issues with Spectrum service (cost), while a concern, seemed to be more focused on reliability issues. This is unusual and requires further investigation with Spectrum. Several requests to Spectrum over several months have not produced the Spectrum coverage maps. However, we believe we will receive them as we move through Phase II.

### Summary

There was not a strong indication from either of the two major providers that upgrades, or expansion were in the future. It appears that more localized providers do have interest in expansion, and as plans are developed, both Pioneer and Aroostook Technologies will be kept in the loop to gauge ongoing interest.

## Regional Approach

NMDC and Axiom have begun conversations with County Government to explore a regional approach to better internet connectivity. This part of the report will begin to frame the strategic pathway to better explore this option.

For many small rural communities, the thought of improving internet connectivity on their own is a daunting task. With little municipal infrastructure or professional staff, these communities are hard pressed to assemble the right community leaders together to evaluate what needs to be done and agree on how to fix the problem.

One option facing the communities would be to consider banding together and forming a Regional Broadband Utility. This type of structure would create a legal entity that would manage and operate a fiber optic broadband system that would connect to communities in Northern Aroostook (or potentially beyond) under one unified set of rules and that would ensure representation to participating communities. This approach would create a system whereby a community would not be forced to act on their own nor be left behind. Collectively they would share resources, learning and a common broadband infrastructure, as well as some percentage of revenues.

Typically, a Regional Broadband Utility is organized by creating an independent board of community members from each of the participating communities that would have oversight over the new fiber optic infrastructure. In this arrangement, the Utility can take several forms, but would most likely partner or contract with a Broadband provider to run the day to day operations and all of the different aspects of a fiber network.

### Collaboration

One important element to successfully implement a regional approach is to have strong regional institutions that can help pull towns and resources together to develop the plan to form a utility.

NMDC is a respected partner in the region and works closely with communities across Aroostook County. NMDC's mission is to bring a variety of local, state and federal resources to help create sustainable economic growth. Broadband internet, and the lack of connectivity is suppressing economic growth and affects retaining or attracting young people to the region- key mission drivers.

County Government is also a key collaborator, as the administrator for UT services. With several areas of the UT included in the planning, together, NMDC and Aroostook County government will be two key collaborators to a regional approach.

### Forming a Municipal Broadband District

The Maine legislature has expanded the uses for forming a utility district beyond the familiar water, sewer and electricity to also include broadband. Municipal Broadband Districts can be modeled like other Municipal Utility Districts (MUDs) and would be formed to give communities maximum flexibility and control over public assets, while using revenues from new internet subscribers to help partially defray the capital cost of building and upkeeping the network.



A Municipal Broadband District would form a Board of Directors elected or appointed by the participating communities. The Board would oversee all aspects of construction and operations.

Broadly speaking, a Municipal Broadband District would have authority to:

- Form a Board of Directors, based on a set of criteria developed by participating communities
- Issue Bonds or other municipal finance instruments
- Develop and approve RFP(s) to manage or support various aspects of the fiber assets
- Accept payments to support debt payments or ongoing maintenance of the system
- Negotiate contracts with Internet Service Providers or other experts to operate the network on behalf of the Municipal Broadband District
- Set rates and oversee all or some of the utility district operations

### Where do you start?

There are a series of questions that come with forming these types of districts and participating communities often can be hung up on representation issues, smaller communities feel they would want equal representation, and larger communities typically prefer proportional representation. As the communities explore working together, they might want to access resources available to them from other communities that have done this before. In Maine, there is one current Municipal Broadband Utility- Downeast Broadband Utility. It was formed for Calais and Baileyville. Contacting them would help you understand the details of how they came together. Their email is [downeastbroadband@gmail.com](mailto:downeastbroadband@gmail.com).

The Institute for Local Self-Reliance (ILSR) is a strong proponent of communities advancing their own future by investing and owning their own internet infrastructure. They have developed a Community Connectivity Toolkit and have highlighted a series of example communities around the United States that can help communities considering this approach learn what other communities around the United States are doing. Go to [muninetworks.org](http://muninetworks.org) to gather a host of information, click on the Initiatives tab/Broadband for a list of example towns and their experience.

The ConnectME Authority also has a myriad of support and resources that may help guide thinking at [maine.gov/ConnectME/home](http://maine.gov/ConnectME/home).

### Utility Formation Steps

A Municipal Broadband Utility District is a special-purpose district that provides internet service to residents of the defined district. Forming a new district takes time and money and requires the commitment of the involved communities and its elected officials.

- Start with champions- a group that will spearhead the effort
- Feasibility Study to determine if BB Utility is feasible and has community support
- Evaluate financing alternatives and feasibility- bonds or borrow
- Legal Analysis- Investigate the dos and don'ts of current statute
- Individual Community education and vote to support effort
  - Should the town be authorized to join the Broadband Utility?
  - Should the Utility be governed by an independent board?
- Negotiations with Internet Service Providers

## Benefits of regional approach

### Own your own

Creating publicly owned broadband infrastructure is typically a response to market failure, where the incumbent providers believe that they will not make a return on any new investments. Currently, the companies that serve the region do so based on market forces and their ability to maximize a profit. These leaves the region with uneven coverage, with the coverage area, price and amount of speed and reliability all dictated by current providers. Owning your own creates a new reality where the communities, speaking through the Utility, now can negotiate better terms, create more competition and be better positioned to provide access to the network on their terms.

### Equal Access to All

Current internet connectivity is dictated by the provider of service, leading to inequitable service based on where a subscriber might live. In some areas, there is no service at all. In others, a home can receive 100Mbps of service. When you publicly own the service, you can dictate that all homes are able to receive the same type of service and pricing, no matter where you live.

### Cost Savings

Banding together can save cost as economies of scale are achieved. Larger projects can be less expensive when materials are bought in bulk or construction labor can do the full job all at once and not have to come back. It is hard to say how much savings, as so much is determined by market forces at the time of the construction project, but generally we would think that a 10% savings is achievable.

### Open Access

Owning your own infrastructure allows you to offer access to multiple ISPs that can compete for subscribers and drive costs down. By banding together multiple towns, it creates enough scale to likely attract multiple providers to the network.

<https://muninetworks.org/sites/www.muninetworks.org/files/2017-07-Muni-Fiber-Models-Fact-Sheet-FINAL.pdf>

This fact sheet from the Institute for Local Reliance describes the ways in which communities are thinking about and implementing publicly owned networks.

And while all are viable, scale will matter. Meaning that the larger the number of homes and businesses that are passed with this new system, the more likely you are to attract multiple providers, or build a really good relationship with a single provider, willing to share revenue back to the regional entity.

# Assets and Municipal Procedures

An exploration by regional town officials and the Broadband Committee revealed no barriers that would preclude a new broadband system from being installed. No restrictions on utility right of way access is contained in local ordinances including in the UT.

## Next Steps

This region is complicated by a significant presence of Spectrum in the more urban areas and the relative remoteness from internet assets that can help serve the smaller communities. It appears through surveys and verbal discussions with town officials, there are many “pockets” of unserved or poorly served areas. Getting these areas better service will be a challenge, given the cost of providing service over a large geographical area, while contending with Spectrum in the more lucrative areas and Consolidated across a good part of the potential service area.

We believe there is good reason to proceed to Phase II with all of these communities.

- First, those communities that are more remote and lack robust governmental structures and resources need strong support to develop a plan and goals
  - The communities will need the full support of NMDC, Axiom and County Government which helps support the UT administratively
- Second, the more urban communities are suffering from poor service from Spectrum and Consolidated and were the largest survey responders
  - Madawaska, Fort Kent and St. Agatha are aware of what better internet service would mean to help their citizens
  - These communities banning together- and potentially bringing together some of the more rural parts of the planning footprint- might be a good strategy to explore
    - Possibly forming a community owned Broadband Utility that would own and oversee providers that would operate on the newly built network
    - Or a regional partnership that might be under County Government

## Phase II

Phase II will be an important milestone to understand the technology choices and the cost of a new service and the potential partnerships. The committee and Axiom are ready to begin Phase II work as soon as this Final Report is accepted by the ConnectME Authority and Phase II funding is released.

For more information or questions for the authors, please contact Mark Ouellette at [mark@connectwithaxiom.com](mailto:mark@connectwithaxiom.com).