

Phase I
Technology Plan

Monhegan Plantation

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Executive Summary- Phase I

The ConnectME Authority approved a grant for Monhegan Plantation that consists of 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, recognize any municipal ordinances or procedures that would affect the broadband planning and finally, a Digital Inclusion report 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 community undertook an extensive survey in the community to understand the needs and desires around better internet connectivity. Overwhelming results were the willingness of the community to move forward with a plan and to implement a solution.

Current Providers

The Broadband Committee met with broadband providers to better understand their willingness to invest, upgrade or enhance the current internet situation on the island. The committee was not encouraged with those conversations, and believes the community needs to move in a different direction, away from current providers.

Assets and Municipal procedures

Axiom has had extensive conversations with the community about what municipal barriers exist to building a new network. We are not aware of any ordinance that would prohibit or impede a network design. The Plantation is open to utilizing any municipal assets, determined by a final design and how a network would be deployed.

Digital Inclusion

The 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 own everyday lives. The Monhegan Plantation Digital Inclusion Report is provided by the National Digital Equity Center.

Taken together, the results of Phase I indicate a strong willingness to move to Phase II and fully develop an internet system design that would serve the community with three important goals:

- **Equal Access for All** - All citizens of the Plantation will be able to access the same service no matter where they live
- **Scalable** - Any internet system must be able to meet increasing demands over a long period of time
- **Reasonably priced** - The cost to the subscriber must be affordable

Surveys

The Monhegan Plantation Broadband committee sent a paper survey to every home on the island. In it, they asked some basic questions about current use, who the provider was and if they were interested in better broadband speeds and reliability.

Over 90 responses were received, from 130 homes and businesses that were mailed to- a 70% return rate.

Summary of Individual Questions Below:

1. Who is your current Internet Service Provider?

Consolidated Communications- 73
Redzone- 18

2. Do you currently have internet service now?

No – 22

3. Of those with no service now, how many have no interest in service in the future?

11

4. Respondents who answered they were:

Seasonal- 61
Year round- 33

5. Please indicate your level of interest in better internet service:

Happy with current service -5
Would pay more for better service or reliability – 76

6. There would be a one-time fee of up to \$200 to connect to the new service?

Acceptable- 82
Not acceptable-3

7. Monhegan citizens are paying- on average:

Between \$45- \$60 per month for their current service

Key take-away from survey results:

Axiom has been administrating, tabulating and reporting on surveys from many regions and towns, and was struck by the number of survey respondents, and the level of dissatisfaction with current service.

- ✓ *Only 5 of the over 90 respondents were satisfied with their current service*
- ✓ *85% of respondents would pay more for better service or reliability*

- ✓ **Close to 90% would pay a one-time connection fee of up to \$200**

These numbers overwhelming point to a desire of the community to move forward into Phase II and to implement a solution that would meet their needs.

Current Provider Meetings

The Plantation had conversations with the two Internet Service Providers that provide service on the island. They needed to determine what the provider's current connectivity was capable of, the willingness of each provider to enhance their current network infrastructure to increase speeds and/or reliability, and finally, the willingness of each of the providers to enter into a partnership to install a new system to support increasing demands for internet access on the island.

Consolidated Communications (CCI)

Consolidated currently feeds Monhegan with a wireless internet connection from a tower in Rockland. They use a microwave dish to supply that bulk bandwidth that is then distributed by DSL copper lines to each home. There are three separate microwave connections that provide different services. One is for phone service, the second is dedicated to Broadband and the third serves the school and library and is currently maxed out and has no remaining capacity.

Consolidated reports that the DSL operates at a maximum capacity of 3/1Mbps, depending on the distance from the on-island equipment that powers the Consolidated system. Most homes are unable to reach even these speeds, however. Previous reports indicate that DSL service covers 85% of year-round residents and 77% of seasonal properties.

Potential path to upgrades:

The microwave radio dedicated to broadband would need to be upgraded to accommodate greater overall capacity of up to 1Gig. The equipment on the island would need to be upgraded as well. To enable the current connections at the library and school to reach or surpass 10Mbps, beyond the upgrade to the current backhaul link, fiber would need to be run on island to support higher speeds.

As far as residential service, beyond the upgrade to the backhaul link, Consolidated would need to research the possibility of adding a second pair of copper lines that could be bonded that would allow speeds of 10Mbps or more. Consolidated was unsure of the condition or status of the current copper lines were on the island and would need to investigate, plan and cost out what needs to be done. The Broadband Committee noted that they had requests through the survey for customers who indicated the need for more than 10Mbps of service. A high-level estimate for the upgrades to the microwave links only are \$125,000- \$200,000. The cost to deal with individual copper lines is not known at this point in time.

Consolidated interest in working with Monhegan:

CCI notes they do not have a lot of experience with microwave technology and operations. CCI indicated interest in working with Monhegan but noted the company's upgrade plans are to focus on 500,000 locations across Maine, New Hampshire and Vermont that are in more populated areas first. In 2-3 years, less populated areas would then be prioritized. Should Monhegan be able to finance the upgrade (with grants or bonds), CCI indicated that they would work with them, but are constrained with personnel available to execute the upgrade, given the company focus in other

areas. CCI suggested Monhegan submit an RFP when they are ready to move forward and have allocated the funding.

Redzone Wireless

The original provider of service was Midcoast Internet Solutions that was acquired by GWI. GWI sold its fixed wireless assets to Redzone in 2016, and those assets included Monhegan Island. The current system includes the original microwave backhaul dish (now 10 years old) that comes from a Redzone owned tower in Rockland. The backhaul internet is fed to the tower by Consolidated Communications (CCI). According to Redzone, they currently have 13 subscribers on the island, from a high of 25 (according to Monhegan documentation). The equipment has not been serviced or upgraded because of the lack of subscriber base that would justify a capital investment. Speeds of 15/3Mbps are theoretically achievable, but several users report that this is no longer the case. There have been outages that have lasted for several days, the latest being in July of 2017. Redzone technicians have not been on the island since the acquisition.

Potential path to upgrades:

Redzone is deploying LTE 5GX cellular based fixed wireless technology now. They currently have 225,000 homes and 60 communities using this technology in Maine. The Monhegan upgrade would require an upgraded microwave link capable of 300-500Mbps of bunk bandwidth to serve the entire island. The upgraded radio has an estimated cost of less than \$100,000. Each receiving location (residential home or business) would need a receiver that is estimated to cost \$150 per location. The reliability of the system depends on distance/range, but with LTE technology, line-of-sight is not an issue. Given Monhegan's size most locations could receive 20/5Mbps.

Redzone interest in working with Monhegan:

Redzone would need a financially viable subscriber base to take on our upgrade. Should they obtain full financing, this would allow the operating model to work on fewer subscribers. Redzone indicated they would potentially subsidize some portion of the upgrade if the operating model were viable. Redzone's website for municipalities points to a 5-year commitment and a minimum of 150 households. We talked theoretically about 100 households at our meeting. Redzone indicated they would like to continue the discussions post our survey, which will go a long way toward defining how many households that may have interest in a higher speed, more reliable broadband connection.

Summary

Both CCI and Redzone are currently not meeting the demands of individual subscribers. The path for upgrades from either company fell short of what the committee hoped as far as timing, cost or delivering a futureproof network that would not require ongoing upgrades. The committee and Axiom agreed that proceeding to Phase II to develop a plan and explore internet provider options that more closely aligns with the goals of the Broadband Committee would be a good next step.

A map of served and unserved areas and associated speed levels is located at this address:

https://geopower.jws.com/connectme/MapsPage.jsp?folder_currentfolder=156029

There is a search function or scroll down to the Monhegan Plantation map and click on it to view.

Assets and Municipal Procedures

An exploration by town officials and the Broadband Committee revealed no barriers that would preclude a new broadband system from being installed. The town currently has a communications tower that has been in use for many years, and no restrictions on utility right of way access is contained in local ordinances.

As far as assets, Monhegan is willing to work with the installer of any new system and is open to providing on-island labor and equipment to accomplish tasks that would employ islanders, save money and reduce costly barging trips for equipment and other tools necessary to help install a new internet system.

Phase II and what kind of internet system is recommended will ultimately dictate what on-island resources can be leveraged.

Next Steps

The Broadband Committee through countless meetings has worked tirelessly to set goals and move the goal of better broadband connectivity forward. Along the way, they interviewed current providers, surveyed the entire island and have begun to identify a strategic pathway to bring a project to fruition.

The committee is mindful that potential funding sources will likely be available this fall and winter and would like to move to Phase II and develop a plan that could attract federal funding to support all or part of the project.

Goals for the community will be the cornerstone of the Phase II process and dictate technology, service levels and reliability choices that will be made to create an actionable plan to move forward.

Equal Access for all:

Current internet service limitations determine which households can get a signal, the level of speed a home can get and the how reliable that signal is. In addition, there are pockets of the island that have no service at all. This is unacceptable and a solution that gives all islanders equal access, regardless of the home's location is important with any new internet system.

Futureproof Technology:

One of the concerns raised in the meetings with the two providers on the island was the need for continual upgrades and the likelihood that new solutions built on outdated (CCI) or unreliable (Redzone) technology would likely have the island fall behind again in a few years. This would put the residents back in a place where they would likely have to find funding to upgrade again. The committee is keenly interested in using technology that will have a lifespan that would limit upgrades over the next 20 years.

Cost considerations:

The committee recognizes that cost matters to islanders and having a solution that is affordable both to the town, should federal funding resources not be awarded, and to residents, who would be paying the monthly bill of a new service, is an important consideration.

Phase II

Phase II will be an important milestone to understand the technology choices and the cost of a new service. 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.

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