BROADBAND CONNECTIVITY ON BEAVER ISLAND
JOINT TOWNSHIPS TELECOMMUNICATIONS ADVISORY COMMITTEE
FOR PEAINE AND ST JAMES TOWNSHIPS, CHARLEVOIX COUNTY
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The lack of Beaver Island's broadband connectivity (i.e., internet service) is a concern for the 600 year-round residents, 12,500 seasonal residents, 32 year-round businesses, 3,000 seasonal residents and visitors, and 18 seasonal businesses on Beaver Island. Internet users struggle to perform basic computer-based functions given the island's low internet speeds. In some cases, these speeds are 5 Mpbs download and 1 Mbps upload, otherwise described as 5x1. People are reluctant to move to the island given this poor internet service.

The quality of broadband connectivity is a measure of internet speeds. The federal government uses the terms "unserved" and "underserved" to identify communities with poor internet speeds. The communities with either (or both) of these ratings qualify for BEAD grants. BEAD grants are discussed below.

Unserved locations are identified as those with less than 25x3. Underserved locations are identified as those with greater than 25x3 and less than 100x20. The Michigan High-Speed Internet Office (MIHI) has identified Beaver Island being unserved in certain areas and underserved in remaining areas. This identification allows every portion of the island to be eligible for BEAD grants.

Given the technical nature of this report, refer to the last section of this report which reports on the definitions of various internet service terms.

The island is currently served by five internet services, which are described as follows:

1. The island has a buried-cable (cooper wires) internet service based on DSL technology, provided by the incumbent telecom operator (TDS). The island is linked to the mainland via a middle-mile microwave tower service. While there are a few locations on the island where service speed approaches 100x20, many islanders have less than 5x1 service. This is a function of both the DSL technology used by TDS and the bandwidth available on their connection to the mainland.

   The island's visitor-based economy stresses this connection in the summer months. Inclement weather impacts the speed and stability of our mainland connection year-round often resulting in broadband congestion and sometimes outages.

2. While satellite internet service (Starlink) is available on the island, heavy tree cover limits the locations where this service will work while these geosynchronous-based services offer only limited speeds subject to usage caps.

3. Wireless internet service is available on the island from two mobile service providers (AT&T and Verizon) via two cell towers, with both services on each cell tower. Backhaul for those services is provided by the microwave dishes on the same island towers (and

mainland towers). This service is subject to the same bandwidth and service difficulties experienced with the service provided by TDS. Moreover, because most of the backhaul lands on the mainland side in an area where it is served by a single mainland carrier, outages with that carrier result in a disruption to most (and sometimes all) buried cable and mobile service on the island including voice and 9-1-1 service.

4. Island anchor institutions have banded together with the two townships to fund a consortium to construct a high-speed link via a microwave connection to the mainland that will provide 200x200 service. This service should be operational by spring 2023. These anchoring institutions include our community school, the library, our health center, the community center, the historical society, and the two township offices (plus the municipal marinas). The Charlevoix County Road Commission recently requested technical and financial information to consider jointing this consortium.
5. Central Michigan University constructed its own microwave-based broadband link to the mainland to serve its two island campuses two years ago. CMU has access to state of Michigan internet systems that the consortium partners do not have the ability to access.

Pending Action 1: The island plans **to partner with a provider to seek BEAD grant funding for a Fiber to the Home (FTTH) project with the FTTH owned by the two townships**. The BEAD application is due in June 2023.

The Joint Townships Telecommunications Advisory Committee (JTTAC) has begun work on qualifying itself for and preparing BEAD Grant application with a partner for a FTTH project. Part of the work underway is to value engineer the project design to reduce costs to the consumers. Based on research and recent grant awards, we expect the project costs to match an awardable level.

The partner JTTAC has identified is Lit Communities (Lit). JTTAC is in negotiations with this firm for developing a feasibility study over a four-month period. A zoom meeting with Lit, JTTAC, and officials from the two townships will be arranged before any contract is executed. The current broadband feasibility study proposal describes a cost of $24,562, plus another $6,000 for a market support package, for a total cost of $30,562. **If this partnership moves forward, the townships should consider requesting funding support for this project from Charlevoix County via their ARPA funds.**

Pending Action 2: Any above discussed BEAD Grant award may be able to rely on under-lake fiber backhaul provided by Peninsula Fiber Network (PFN). This would be the case if PFN is successful in seeking grant funding for a project to connect the Lower Peninsula of Michigan with the Upper Peninsula with a fiber run that would land on the island (connection by fiber to both the LP and UP). PFN has submitted two applications for full funding of this project (one to a BEAD middle-mile grant program and another to a state ROBIN Grant program).

Pending Action 3: If both of PFN's BEAD and ROBIN Grant applications are denied, we will reconsider our original plan to construct FTTH with Lit using a microwave for backhaul within the BEAD Grant application. After an island FTTH project is completed, revenues from that project combined with grant and other funding would be sought to build an under-lake fiber link to the mainland.

Past Actions: The townships, through the JTTAC and the Beaver Island Association have spent years working to alleviate Beaver Island's connectivity concerns. In addition to assisting with the organization and support of the consortium (by becoming users of the project), they have pursued numerous grant opportunities, including from the NTIA during the summer of 2022, but none of our applications have been granted.

Terms:

Backhaul: A backhaul is the connection from a wireless cell tower to the internet. Island-based microwave units on cell towers connect to mainland microwave units on cell towers to provide this backhaul connection.

BEAD: The Broadband Equity, Access, and Deployment program was funded with the federal government's Infrastructure Investment and Jobs Act which was signed by the president in November 2021. BEAD dedicates $42 billion via grants to construct broadband networks and provide other internet funding.

DSL: Digital Subscriber Line is a buried wireline transmission technology that transmits data faster over traditional copper telephone lines already installed to homes and businesses.

Fiber: Fiber Optic Cable is a superior technology to deliver internet via an optic buried cable. These cables are more robust and reliable than older technology (e.g., copper wire). It provided a much greater bandwidth and speeds to consumers. This provides more robust video, internet, and voice services.

Geosynchronous-based service: A satellite in a geosynchronous orbit is in an earth-centered orbit. This means the satellite remains in the same position, so a satellite dish can be pointed permanently at the fixed satellite location in the sky.

Last-mile: This is the final leg of the telecommunication network delivery components to the end user. On Beaver Island, this would be the system on the island, delivering internet to homes and businesses.

Microwave Internet: This is an internet connection delivered over a high-capacity microwave radio link which is located on a cell tower (or a microwave tower, a tower without cell phone connectivity). Beaver Island has a TDS microwave tower (on Sloptown Rd) and two cell phone towers (on King's Highway and Donegal Bay Rd) each with microwave radio links on them.

Middle-mile: The middle mile in the broadband internet industry is the segment of a telecommunications network linking a networks operating area to the network plant (typically located at the telecom's office). For Beaver Island, the middle mile is the connection over (or under) Lake Michigan from operations on the island to operations at the service provider on the mainland.

NTIA: National Telecommunications and Information Administration which is part of the US Department of Commerce.

ROBIN: Realizing Opportunity with Broadband Infrastructure Networks (ROBIN) is a grant program offering high speed last-mile and middle-mile infrastructure commentative grants. The state of Michigan has $238 million available for this program.

Value Engineering: This is an effort to analyze, in this case analyzing a planned internet network, for the purpose of achieving essential functions at the lower life cycle cost, consistent with required performance, quality, reliability, and safety.