



**CONNECTME FUND
GRANT APPLICATION**

TOWN OF BROOKLIN BROADBAND PROJECT

MARCH 22, 2010



Axiom Technologies
3 Water Street
Machias, ME 04654
(207) 255-0679
www.axiom-tech.net

ConnectME Fund
Fourth Round Grant Application
March 2010

1. **Date:** March 22, 2010
2. **Project Title:** Town of Brooklin Broadband Project
3. **Submitting Entity:** Axiom Technologies
4. **Grant Amount Requested:** \$38,070.75
5. **Project Contact Information:**

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6. **Party Who Prepared Application:**

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7. Executive Summary of the Project:

Axiom Technologies, in collaboration with the Town of Brooklin, submits this Grant Application in response to the ConnectME Authority Grant Funding Program for deployment of broadband in rural Maine.

The Town of Brooklin has 697 homes based on the 2009 State Planning Office Projections. Axiom Technologies and the Town of Brooklin have a goal of bringing high-speed broadband access to 90 to 95% of the unserved households. We expect a “take-rate” of 35% in Year One.

At a Town of Blue Hill Selectmen’s meeting on January 14, 2010, (Invited guests were officials from Brooklin) Town officials and the public confirmed that Brooklin has no broadband availability in specific areas and requested Axiom to apply to the ConnectME Authority for funding. This meeting was followed with an additional meeting with the region’s Economic Development leaders on February 4, 2010.

Following discussions with Time Warner Cable and Fairpoint Communications, we are unclear of the number of homes that are presently served as it is difficult to attain an accurate assessment of broadband coverage.

Based on maps sent to Axiom by Premium Choice Broadband officials, Axiom recognizes that there may be some broadband coverage from Premium Choice’s tower locations in the Blue Hill Peninsula region. Axiom confirms that when doing site surveys for broadband signal, if the subscriber can be better served by a pre-existing access point on Premium Choice’s network, we will inform Premium Choice and not install a radio at the subscriber’s location. Axiom confirms that it will not use “public funding” if the subscriber can be served by “private funding”. Additionally, in areas that there is a possibility of Premium Choice coverage, Axiom recognizes their use of 900 MHz radio transmitters, and will not deploy 900 MHz radio gear that causes interference on currently utilized channels.

Lack of broadband in several areas of Brooklin were confirmed via the ConnectME Broadband Availability mapping, from discussions with officials and economic development leaders from the Town of Brooklin, and from the multiple Brooklin residents who have contacted Axiom requesting to be included in Axiom’s database for Internet service. Axiom confirms with the residents that they are not able to receive broadband service from another Internet Service Provider and documents this confirmation in our database. Based on this data, we have included a map in this grant application depicting the locations of the homes that have no broadband capability.

This due diligence assessment demonstrated the essential need for broadband capability in the *unserved* areas in Brooklin, Maine. We are estimating that this town has approximately 60% existing broadband coverage, and therefore are submitting

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this ConnectME grant request to bring broadband service to approximately 40% of the population of this town.

The Board of Selectmen and residents of Brooklin strongly support the approval of Axiom's grant application to the ConnectME Authority for funding.

Axiom has conducted a study of the Blue Hill/Sedgwick area pursuant to a build-out of broadband infrastructure, targeting the unserved portions of this town. Several new and challenging aspects to service delivery in the area have been identified. These challenges reduce the effectiveness of our classic tower + mini-PoP multipoint wireless deliver mechanism. The first issue is the shape of the inhabited coastline. Traditionally, mini-PoPs on opposing shorelines would be utilized to serve the residents on the other shore, however due to the unique geography of the region, this is not an option. Additionally, the foliage varies from thick to very thick. Our lowest frequency radio systems (900 MHz), even with their improved foliage penetration characteristics, could not delve deep enough into the canopy over the regions of interest to be effective. Finally, mileage is extensive along many of the access roads as they wind toward the inhabited sections of the coast; many individual roads travelling three to five miles to reach the first home clusters. While we had been considering remote-terminal DSL service as a possible solution, the significant mileage of the area's roadways also limits the effectiveness of this method.

To address these unique delivery challenges, Axiom is developing a new technology delivery system. Utilizing both our experience and knowledge of cross platform technologies and leveraging our excellent relationship with several other regional vendors, we have created a hybrid wireless/wireline solution that can deliver even more targeted service than our mini-PoP methodology. These "micro-PoPs" are still outdoor systems and are able to target service areas down to the individual home, while effectively uplinking to the enterprise network.

We are excited to deploy this new technology to the benefit of area residents in Brooklin. We believe that the specific challenges of reaching the most difficult unserved locations in those communities will be representative of those final-percentile households across the state, both in the difficulties presented by extreme geographical features and ultra dense forestation. It will take innovative design and application to bridge those final percentage points and we believe our new delivery mechanism will be a useful tool in that application.*

(*See Confidential Engineering Design Attached)

Axiom's engineers and Town of Brooklin officials will utilize existing towers pending approval of this grant application. Non-construction of a tower reduces the overall cost of the budget for this project. This tower will transmit service to 5 "mini-PoPs and micro-PoPs" that will be deployed in Brooklin.

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Axiom has a Resellers Agreement with Fairpoint Communications. Fairpoint is planning on bringing DSL high-speed capability to many of its Remote Terminal locations throughout Maine in 2010. Brooklin has not been identified as a potential site as of this date. However, should Fairpoint bring DSL service to a Remote Terminal in Brooklin, Axiom will also offer DSL service, moving its wireless subscribers off of the wireless network. This serves two purposes; first it supports Axiom's business model of collaboration and blending technologies; and second, it allows the "recycled" subscriber radio to be deployed to an area that is unserved, stretching public and private investment.

Axiom has contacted Tom Federle, attorney for Time Warner Cable, regarding overlap of service in the proposed service area of Brooklin. Axiom has stated to Time Warner Cable that they will sign an "Overlap Avoidance Agreement" and not deploy wireless service if the subscriber can get Time Warner's cable Internet service. Time Warner Cable understands that wireless service knows no boundaries and that there will be crossover of Axiom's wireless network over Time Warner's existing coverage.

In April 2010, Stinson Seafood Plant in Gouldsboro will close its doors and 128 workers will lose their jobs. This plant has been operating in Prospect Harbor for more than 100 years and is the last sardine cannery in the United States. Axiom is collaborating with Eastern Maine Development Corporation and Machias and Ellsworth Career Centers to recruit two to four displaced Stinson employees for ConnectME grant projects. If awarded this grant, Axiom will train these individuals as Field Technicians to install subscriber radio units in Brooklin and the surrounding area.

8. **A description of the geographic area proposed to be served by the project and sufficient information to establish that it is an unserved area, preferably at street-level granularity, and not likely to be served in the foreseeable future. (Most applicants conduct independent research to determine if a community has broadband or are sufficiently familiar with the community to know that there isn't any terrestrial broadband available).**

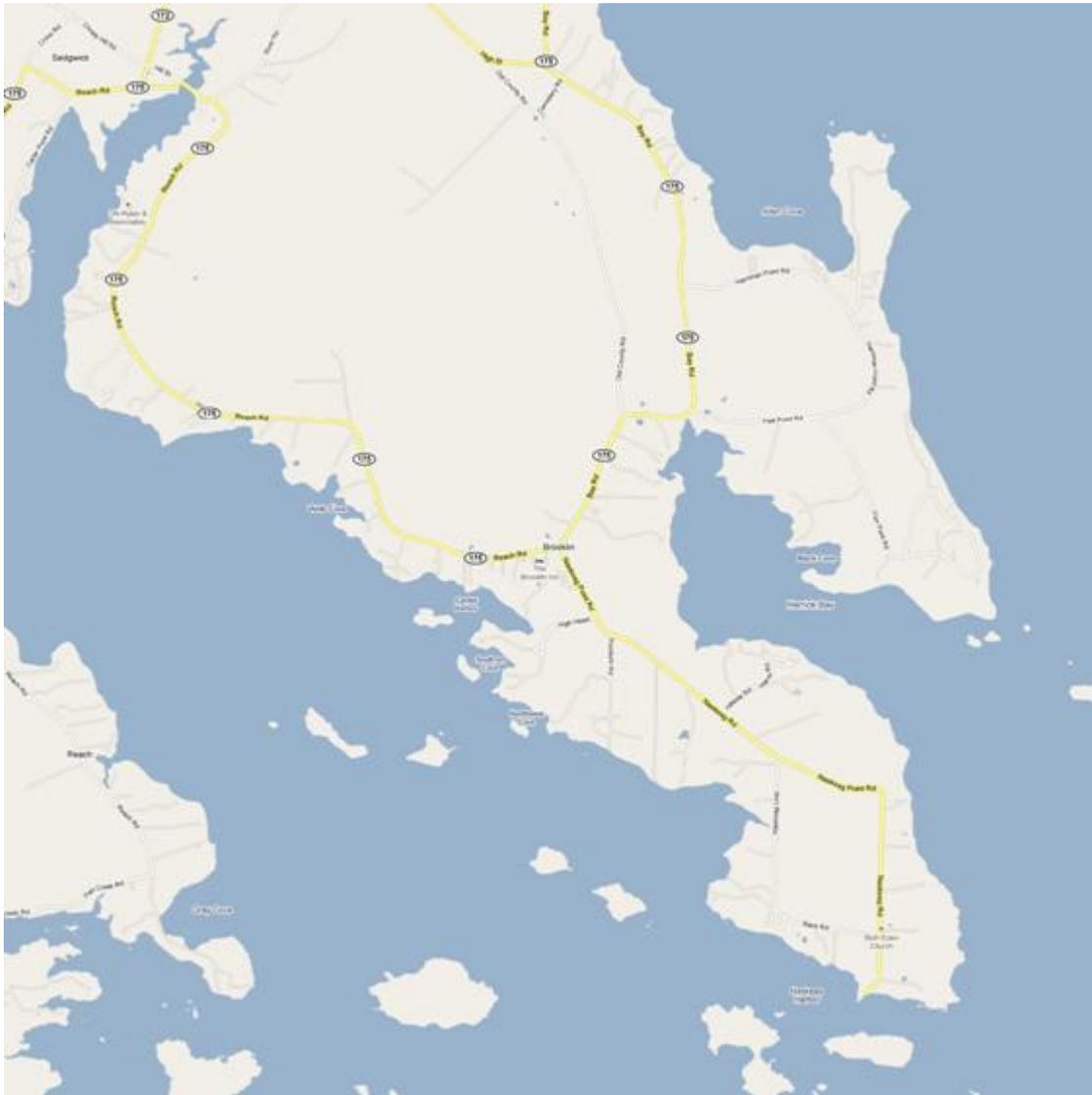
Applicants must be aware of recent legislative changes that require the ConnectME Authority to give priority to grant proposals that, relative to other proposals, seek to extend access to broadband internet service to a higher percentage of an "unserved" area within a municipality or other appropriate geographic area. The legislation requires the Authority to also consider the percentage of households with access to broadband service when establishing criteria to define unserved and "underserved" areas;

Brooklin are located in Hancock County. Brooklin covers 18.6 square miles, has 697 homes and 841 residents.

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At the Blue Hill Selectmen's meeting on January 14, 2010, Brooklin Town officials and the public confirmed that Brooklin has areas of no broadband availability and requested Axiom to apply to the ConnectME Authority for funding. Lack of broadband in the unserved areas of Brooklin, Maine was confirmed via the ConnectME Broadband Availability mapping and through a due diligence assessment. These reports demonstrated the essential need for broadband capability in the *unserved* areas of the Town of Brooklin.



9. A description of the proposed project, including:

a. public-private partnerships that have been established;

Axiom Technologies, in collaboration with the Town of Brooklin, desires to bring high-speed Internet service to the residents and businesses of Brooklin, Maine. A letter of support from Brooklin Selectmen are attached.

b. evidence that the private partner in the project is eligible to receive funding from the Authority;

Axiom Technologies, LLC was founded and incorporated in the fall of 2001. It reorganized as a Maine Limited Liability Corporation October 13, 2004, and Articles of Incorporation were filed with the Secretary of State. All Members unanimously adopted a revised Operating Agreement in October 2005. Axiom Technologies, LLC maintains its business office at 3 Water Street, Machias, ME 04654.

Axiom Technologies is a Maine for-profit corporation. It has been the recipient of three ConnectME grants since 2007 and has a proven track record in public-private partnerships. It is through the collaboration of municipalities, economic development groups, businesses and residents that Axiom's business model has proven successful. Of the 80+ Access Points that have been installed by Axiom to date, all but the mountain sites (four towers) are at no rent. This is a testimony to the support and commitment of the communities.

c. the type of service to be provided, indicating the technology used and the upstream and downstream speeds of the service to be provided;

Service is provided to the customer's premises (either business or residential) via wireless technology. The systems utilized are fixed point to multipoint radio networks whereby multiple subscriber radios at the customer's premises connect to master transmitter sites on towers, hilltops and buildings that possess geographical advantages including height and clear sight lines. In this manner, site selection for these "Access Points" (includes "mini-Pops") is similar in process to that of a cellular phone carrier; however, our cost to deploy transmitters is much lower, allowing more transmitters to be installed within a geographical area, thereby improving coverage and accessibility. Additionally, because of the implementation of "micro-PoPs"*, we will be able to utilize "low-gain" subscriber radio units, which are lower in cost. In the traditional "Line of Site" system, a "high-gain" subscriber radio unit is considered the preferred technology.

(*See Confidential Engineering Design Attached)

Axiom utilizes several different radio frequencies, 900 MHz, 2.4 GHz and 5.8 GHz which have proven very effective in high-speed broadband deployment. We have added 3.6 GHz radio gear to transmitter sites which enables the availability of a 10Mbit symmetrical product that is cost effective.

Axiom has obtained the necessary FCC licensing to field and operate radio electronics in the 3.65 GHz band. The technologies utilized are capable of over-the-air data transmission rates up to 100mbit. Axiom's subscriber plans set customer bandwidth at between 1 and 10mbit downstream and 500k – 1.5mbit upstream for residential service. Up to 10mbit symmetrical service is available for businesses requiring increased upstream bandwidth for server hosting or similar applications. In addition to the advanced radio systems, Axiom will also be installing augmented power systems for protection against AC grid outages; the primary cause for service interruption in the Downeast region. These power systems utilize deep battery arrays.

There will be a direct link from Axiom's transmitter site at Black Cap Mountain in Eddington, Maine, which receives its signal from Oxford Network's location in Bangor, Maine. This microwave system brings bulk bandwidth via Oxford's fiber network to Axiom's wireless infrastructure. Additionally, a Fairpoint DS3 Circuit located at Axiom's headquarters in Machias will provide a redundant link via its existing wireless network.

d. an estimate of the time required to complete the proposed project;

The Town of Brooklin Broadband project will take an estimated twelve months, depending on weather.

e. the number and percentage of households and businesses within the area to be served by the project (i.e. who can be served given technical limitations);

The project is projected to reach 90 to 95% of the unserved homes and businesses in Brooklin.

f. the estimated price per customer of the service to be provided by the proposed project; and

Estimated cost per household is \$136.55.

g. a map (preferably GIS compatible) or list of municipalities or parts of municipalities that may be covered by the proposed project with GEO Codes.

Geo Codes are: 09050. Map is attached.

10. The total amount of funding requested from the Authority;

The total grant request is: \$38,070.75.

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11. The applicant's financial commitment to the project in addition to the funding requested from the Authority;

Axiom is committed to financing the remainder of the expenses of the project.

12. The estimated number of customers/households who will directly benefit from the project who are currently unserved (provide lists or numbers of potential customers that have indicated a strong commitment to subscribe);

It is estimated that 90 to 95% of the unserved homes and businesses in Brooklin will have access to wireless broadband availability.

13. Evidence of community support for the proposed project, which may include letters or signatures of residents or businesses located within the area of the proposed project (also, provide letters of interest from landowners for placement of facilities and support commitments from municipalities or community groups);

See the attached letter of support from Town officials from the Town of Brooklin. Since the Selectmen's meeting on 1/21/10, multiple Brooklin residents and businesses have contacted Axiom to be included in Axiom's database. When adding potential subscribers to our data base, Axiom confirms with the residents that they are not able to receive broadband service from another Internet Service Provider.

14. A description of the applicant's experience relevant to the proposed project; and

Axiom Technologies is a telecommunications company located in Machias, Maine that has been creating, researching and developing a wireless technology for broadband deployment in rural Maine. Axiom has been working diligently for the past five years in researching and developing wireless networks, and has installed over 80 Access Points serving 80 previously unserved geographical areas, representing 40 Towns in Washington County. Access Point installation work is ongoing as of this grant application.

Axiom is the recipient of three ConnectME grant awards in 2008/2009 (\$657,665.00 in total grant funding) and is continuing to deploy broadband using its existing business model to Towns and territories in Washington County throughout 2010. At the completion of the ConnectME Washington County Broadband Project, Axiom will have a wireless infrastructure with approximately 100 Access Points, creating an umbrella over the entire County.

15. A demonstration of financial viability provided by pro-forma financial statements for the project and company financial statements. Confidential information may be submitted and should be so marked.

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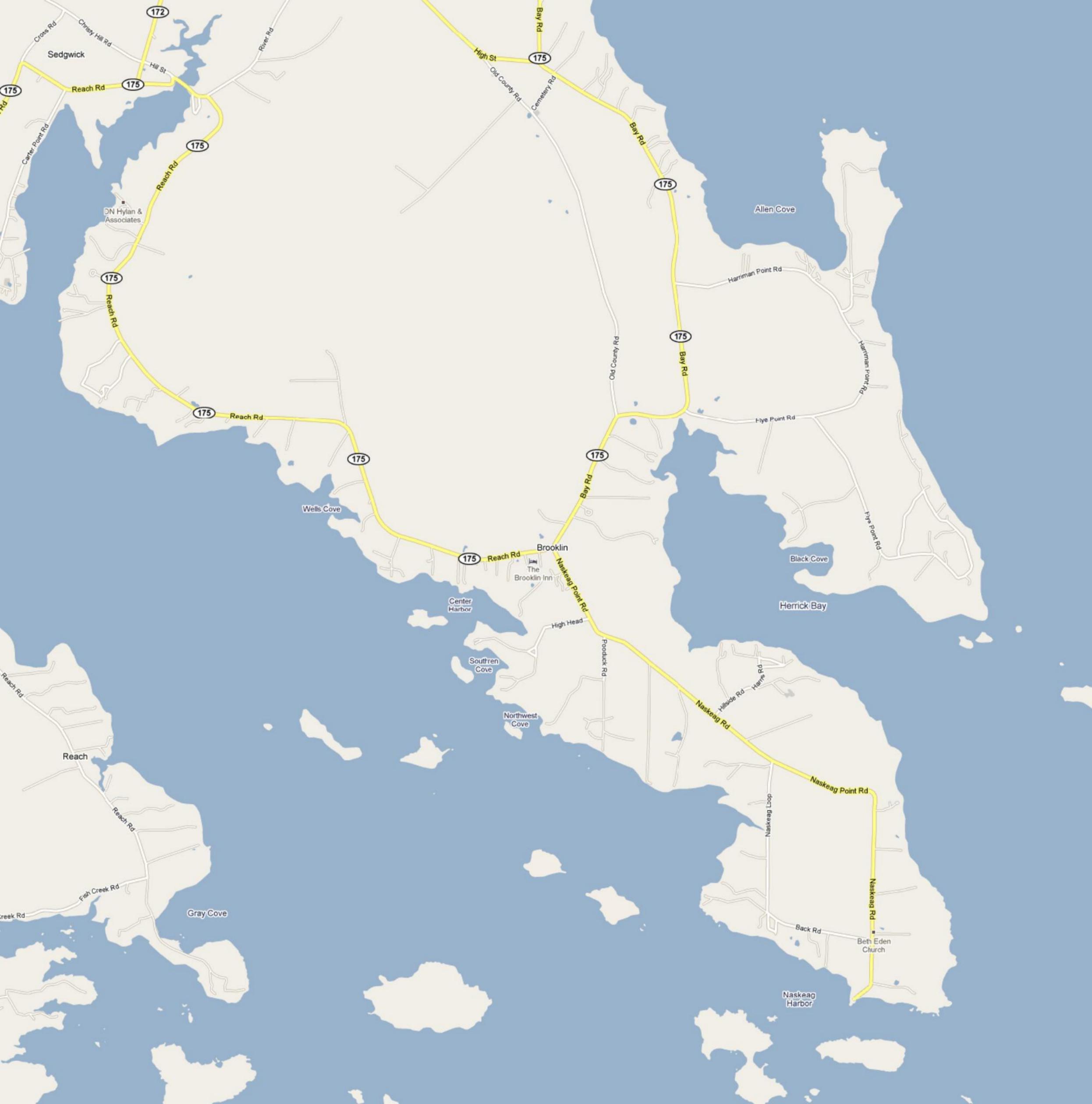
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Financial Analysis and Budget

The budget will be reviewed on reasonableness and accuracy. Provide the following financial information with as much detail as possible:

| | ConnectME Grant Funding | Cash Match | In-Kind Match | Other Funding Sources | Total |
|---|-------------------------------|---------------------|------------------|-----------------------------|---------------------|
| Personnel | \$.00 | \$22,304.00 | | | \$ 22,304.00 |
| Contractual Services: | | | | | |
| Tower Lease | \$ 4,200.00 | \$.00 | | | \$ 4,200.00 |
| Start up Expenses and Capital Expenditures: | | | | | |
| Access Points | \$17,500 | \$.00 | | | \$ 17,500.00 |
| Supplies and Materials: | | | | | |
| Radio Receivers for Subscribers | \$ 12,197.50 | \$.00 | | | \$ 12,197.50 |
| Job Supplies | \$ 4,173.25 | \$ 6,978.75 | | | \$ 11,152.00 |
| Telecommunications | \$.00 | \$ 6,000.00 | | | \$ 6,000.00 |
| Training | | | | | |
| Travel | \$.00 | \$ 2,788.00 | | | \$ 2,788.00 |
| Total | \$ 38,070.75 | \$ 38,070.75 | | | \$ 76,141.50 |

*See attached financial statements and reports.



Sedgwick

175

Reach Rd

175

175

Reach Rd

175

Reach Rd

175

Reach Rd

175

Wells Cove

175

Reach Rd

Brooklin

The Brooklin Inn

Center Harbor

Southern Cove

Northwest Cove

Reach

Reach Rd

Gray Cove

High St

Old County Rd

Cemetery Rd

175

Bay Rd

175

Allen Cove

Harriman Point Rd

175

Bay Rd

Five Point Rd

175

Bay Rd

Black Cove

Herrick Bay

High Head

Prooduck Rd

Naskeag Rd

Hillside Rd

Harris Rd

Naskeag Point Rd

Naskeag Loop

Back Rd

Beth Eden Church

Naskeag Harbor

Town of Brooklin

Incorporated June 2, 1849
23 Bay Road – P O Box 219
Brooklin, Maine 04616

Phone: 207-359-8394

Fax: 207-359-9824

January 26, 2010

Mr. Philip Lindley
Executive Director
Connect ME Authority
138 State House Station
Augusta, Maine 04333-0138

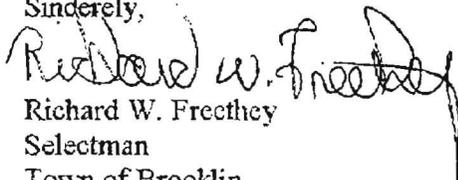
Dear Mr. Lindley:

Please consider this letter as a preliminary application for resources available under the current round of Connect ME Authority Grant Funds. Funding that is designated to provide broadband access to "under-" and "no service" area of rural Maine. Brooklin, like many rural communities has many constituents who cannot access the internet in a manner that allows their children to use laptop technology to assist in their education, as is the norm in other parts of the State. Further, we have many small businesses that are disadvantaged and other potential business interests who reject moving their activities to an area without broadband access. Additionally, the inability to become aware of information in a timely fashion deter our citizens' ability to acquire employment, apply for services and take advantage of materials formerly found in printed matter.

These are just some of the reasons we support the collaboration with Axiom Technologies to apply for Grant assistance from your authority.

Thank you for your consideration in this matter.

Sincerely,



Richard W. Freethey
Selectman
Town of Brooklin
For the Selectboard