Annual Report on the Activities of the ConnectME Authority

Report to the Maine State Legislature Joint Standing Committee on Utilities and Energy

January 15, 2008

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Executive Summary

The November 2005 report of the Maine Broadband Access Infrastructure Board concluded:

> The competitiveness of any state in the union depends in no small part on its ability to promote the growth of high technology business and commerce that accompanies high-speed data connectivity …. Only a state that is a supremely attractive place to conduct business, to shop, and to participate in an increasingly online culture will be able to staunch the exodus of youth and brainpower that is of such concern in Maine.

The first recommendation of the Board was to create a permanent development authority to implement State broadband policy. In 2006, the Legislature created the ConnectME Authority (Authority) to identify unserved areas of the State; develop proposals for broadband expansion projects, demonstration projects and other initiatives; and administer the process for selecting specific broadband projects and providing funding, resources, and incentives.

This report describes the Authority's activities for 2006 and 2007; outlines the Authority's plans for 2008; and makes recommendations for the State's long-term broadband initiatives. Highlights from the report include:

- In 2005, 14% of Maine households representing 170,000 Maine citizens and businesses did not have access to broadband service.

- In 2007 the ConnectME Authority received 17 grant applications requesting over $2.4 million in gap funding, for projects totaling over $6.7 million.

- The Authority awarded seven grants totaling nearly $800,000, for total project amounts of over $1.7 million.

- The grant projects range in size from $38,000 to $368,000--from Chebeague Island to 26 communities in Piscataquis County; from single projects in Somerville and Monson, to a project serving 18 communities in Washington County; and to a project that provides wireless service to Mount Desert and Cranberry Islands.

- The grants fund broadband service to over fifty unserved communities representing 14,400 households and businesses—a 2.8% increase in broadband availability.

- According to a recent Brookings Institution Report, "for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year." Based on this finding, employment in Maine can be increased by up to 1% from the Authority's 2007 projects.

- Over the past two years, broadband take rate or penetration increased from 31% to 39%, an 8% increase.

2008 ConnectME Authority Activities

- Second round of ConnectME grants this summer;

- Oversee education and implementation of the 2007 grants;

- Develop resource guides for communities for grant projects;

- Matchmaker between communities and potential providers to obtain broadband;

- Work to increase take rates. Maine is improving but still ranks 38th among states in "take rates." Work with providers and communities to develop demonstration projects designed to give individuals and businesses first hand experience with the benefits of high-speed, always-on Internet services.

- Have the Executive Director participate and contribute to efforts to identify and broker solutions to regulatory, policy, and structural barriers to expanding broadband. Plans included contacting all providers of broadband services and operators of infrastructure projects in Maine to participate to develop cooperative venture and take advantage of potential synergies.

Long Term Recommendations

- ConnectME Authority currently scheduled to sunset in January 2009. Successes should make the Authority a long term investment.

- Have the Executive Director potentially serve as a point-person or clearing house for all of Maine's broadband initiatives such as recent telecommunications stipulations that provide millions of dollars of funding to expand broadband; joint agreements between the University System and private industry to boost economic growth in research and development through broadband; efforts by the Maine School and Library Network to connect every K-12 public school and public library to the internet; recent broadband activities to address needs in agriculture, forestry, pulp and paper, fishing, as well as environmental protection, wildlife management, public health and safety and rural health care pilot program funding for telehealth broadband connections.

INTRODUCTION

Title 35-A M.R.S.A. Chapter 93 which governs the operation and activities of the ConnectME Authority (Authority) requires the Authority to provide the Utilities and Energy Committee with an annual report describing the Authority's activities. This report describes the Authority's activities for 2006 and 2007. The report is divided into five sections: I. Background; II. Summary of Authority's Activities; III. State and Federal Broadband Activities and Initiatives; IV. 2008 Planned Activities; and V. Conclusion.

I. BACKGROUND

A. The Importance of Broadband in Maine

As early as 1995, the Maine Legislature recognized the value of broadband when it stated:

> The Legislature further declares and finds that computer-based information services and information networks are important economic and educational resources that should be available to all Maine citizens at affordable rates. It is the policy of the State that affordable access to those information services that require a computer and rely on the use of the telecommunications network should be made available in all communities of the State without regard to geographic location.[1]

In the past few years, numerous state and federal studies and reports emphasize the need for advanced communications services in the state, especially for those areas that may be economically less well off. Access to broadband services is recognized as a significant economic development tool for small businesses and home-based businesses, and to enable telecommuting, rural education, and telemedicine.

A recent study by the Brookings Institution strongly emphasizes the benefits of broadband services.[2] The report states: "(n)onfarm private employment and employment in several industries is positively associated with broadband use. … (f)or every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year. The finding of the strong link between broadband use and state-level employment has important policy implications, both on the demand-side and the supply-side. In particular, these results suggest that

[1] Title 35-A M.R.S.A. §7101(4). Also, Former Governor King stated in his 1999 State of the State address, "In the age of e-commerce, bandwidth is the essential commodity – just as the roads and railroads defined economic opportunity a century ago, these wires – or the lack of them – will spell the economic difference between businesses, towns, and states in the new century."

[2] "The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data," July 2007, The Brookings Institution.

all levels of government should follow policies that encourage broadband competition, which will lead to lower prices and hence greater use."[3]

Maine studies that highlight the necessity of broadband services:

- "Final Report of the Presiding Officers' Advisory Task Force on Creating a Future For Youth in Maine" (January 2004), found that the lack of broadband access in rural areas of the state poses a barrier to young professionals wanting to live and work in Maine.

- "Washington County Telecommunications Infrastructure Assessment and Plan" (May 2005). "In the 21st century affordable broadband access is no longer simply a competitive advantage to a region's economy, but infrastructure that will dictate its viability."[4]

- "Report on an Economic Development Strategy for Washington County" (November 17, 2005), "For any business engaged in interstate and/or international commerce, a comprehensive network of broadband and wireless interconnection is as necessary as the telephone – as the computer and cell phone have become indispensible to business."[5]

- "Measures of Growth In Focus," Thirteenth Report of the Maine Economic Growth Council, (2007). "The internet and telecommunication technology in general facilitates economic activity by allowing people to access information easily and communicate with others. Investments in all forms of connectivity infrastructure are critical as Maine seeks to integrate and compete in the global economy."[6]

B. Governor Baldacci's Connect Maine Initiative

In his 2005 State of the State address, Governor John E. Baldacci stated, "Tonight I am announcing 'Connect Maine;' a broad and aggressive telecommunications strategy for this State. Connect Maine will give nearly every Mainer the opportunity to plug into the global economy from their community. It will ensure that 90% of Maine communities have broadband access by 2010…"

The "Connect Maine" initiative was a direct result of the conclusions and recommendations in the "Draft Report of the Maine Broadband Access Infrastructure

[3] Ibid. page 2.

[4] Page 7.

[5] Page 52.

[6] Page 12.

Board."[7] The report stated that access to broadband services is a necessity for Maine's citizens and businesses to be able to participate in the global economy, especially those areas of the more rural parts of the state. The report also stated:

> Given these limitations (of obtaining accurate, granular data), a best effort estimate is that as of September 1, 2005, over 170,000 Maine residents do not have access to broadband service, which equates to nearly 75,000 households. This means that approximately 14% of Maine households do not have access to basic broadband service. This 14% is spread over the entire state, largely in sparsely populated areas. The largest census blocks with absolutely no broadband are in Jonesport, Holden, Mexico, Howland, and Paris. There are also several towns with virtually no service, such as: Appleton, Somerville, Northport, Georgetown, Orland, Penobscot, Eastbrook, Lebanon, Industry, Weld, and Athens. As important is the information regarding households without broadband access, the information also indicates that most businesses in the same areas do not have access to affordable broadband services.[8]

Finally, the report concludes:

> The competitiveness of any state in the union depends in no small part on its ability to promote the growth of high technology business and commerce that accompanies high-speed data connectivity, a crucial component of which is universally available, secure, affordable, scalable, high-bandwidth access to the internet. Only a state that is a supremely attractive place to conduct business, to shop, and to participate in an increasingly online culture will be able to staunch the exodus of youth and brainpower that is of such concern in Maine.[9]

The first recommendation of the Broadband Access Infrastructure Board was that the Legislature create a permanent development authority to implement State broadband policy.

In 2006, the Legislature created the ConnectME Authority to identify unserved areas of the State; develop proposals for broadband expansion projects, demonstration projects and other initiatives; and administer the process for selecting specific broadband projects and providing funding, resources, and incentives.[10]

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[7] www.maine.gov/mpuc/broadband/activities/BAIB_DraftReport 110905 revised112805.pdf.

[8] Page 8

[9] Page 19

[10] P.L. 2005, ch 665.

II. SUMMARY OF AUTHORITY ACTIVITIES FOR 2006 AND 2007 FIRST REPORT

A. Budget.

The funding mechanism for the Authority is a 0.25% (one quarter of one percent) surcharge on all communications, video, and internet service bills for retail in-state service.[11] It is expected to generate between $750,000 and $1 million per year. The quarterly assessments are paid to an independent fund administrator the month after the end of the quarter.[12] The fund received $500,000 in "seed money" from the Maine Universal Service Fund. [13] Based on the expected cash-flows and the estimated expenses, the Authority awarded $787,174 to seven grant applicants for payout over the next few months. While the fund balance as of December 31, 2007 is $574,797, almost $200,000 is expected to be received in January 2008 due to the ramp-up process that began in September 2007, which will allow the Authority to make the grant payments as they are requested. (See Attachment B for fund detail)

B. Activities of the Authority.

The Authority met five times in 2006 to conduct the major substantive rulemaking process. The rule was provisionally adopted in December 2006 and after review and revisions by the Legislature, the Authority finally adopted the rule effective on June 2007.

After completing the rulemaking process, the Authority immediately began developing its grant program. While the ConnectME statute says that the "Authority is established to stimulate investment in advanced communications technology infrastructure in unserved or *underserved* areas,"[14] the Authority decided to begin with the goal to fund the expansion of broadband access in the most rural, *unserved* areas of the state that have little prospect of broadband service from a traditional or existing provider.

Activities in 2007 were primarily concerned with setting up the operation of the Authority, appointing an Acting Executive Director, and developing the grant application process. The ConnectME Advisory

[11] Also included are retail revenues received or collected from mobile communications services (i.e. cellular telephone) that voluntarily agree to be assessed by the Authority.

[12] Solix Inc. is the fund administrator for the ConnectME Fund as well as the Maine Universal Service Fund and the Maine Telecommunications Education Access Fund.

[13] P.L. 2005, ch 665, Section 6, "Temporary transfer of funds authorized."

[14] 35-A, M.R.S.A. § 9203(1).

Council met three times to assist with the grant pre-application process and to draft grant applications.

In July 2007, the Authority requested pre-application letters of interest. In August, the Authority issued a request for full application packages. The Authority received 17 very good grant applications requesting over $2.4 million in gap funding, for projects totaling over $6.7 million. The grant applications were reviewed by three non-industry members of the Authority, the Acting Executive Director, and one additional staff member. The applications were reviewed and scored on the four criteria specified in the statute and rule: cost-benefit; community support; project scope; and project value. The public-private partnership concept was one of the critical considerations in the review; however, "getting the most for the money" was a high priority because of the limited funds available.

The Authority awarded seven grants totaling nearly $800,000, for total project amounts of over $1.7 million. The grants range in size from $38,000 to nearly $370,000. The grants serve over fifty communities, with the potential of providing broadband service to over 14,400 households and businesses: From Chebeague Island to 26 communities in Piscataquis County; from single projects in the towns of Somerville and Monson, to a project serving 18 communities in Washington County; wireless service will be provided to Mount Desert and Cranberry Islands. (See Attachment C for a complete list of the grants.) Work on these grants has begun and most are expected to be completed by then end of 2008. When completed, **the grants will represent an approximate 2.8% increase in broadband availability**.[15]

The Authority expects to ask for a second round of grant applications this summer to be awarded before the end of 2008.

The Authority and its Advisory Council with input from potential grant recipients developed a monitoring process and reporting for the grant recipients to use to documenting the expenditure of Authority funds and to ensure that the funds are used only for appropriate purposes. A number of basic reporting forms were developed with the assistance of the Advisory Council:

- The first form is the "Notice of Commencement," which requires a schedule of project milestones and the expected date of completion. Each vendor for the funded project is identified on

[15] 2000 Census (Maine State Planning Office), total occupied housing units = 518,200, population = 1.275 million, 2.39 = average household size.

the form. The grant recipient will provide appropriate reports and documentation such as invoices and purchase orders before receiving any funds from the Authority.[16]

- A second form is a progress report that provides a project update to demonstrate to the Authority that the funded project is on track. The Executive Director will monitor each project's progress and use of funds.

- The last form is a final completion report that documents the completion of the project with attached financial spreadsheets and a listing of the communities newly served with broadband service as a result of the project.

The ConnectME statute also provides for reimbursement up to $500,000 annually of Maine sales and use taxes in connection with the purchase of machinery and equipment for use primarily in the development of advanced communications infrastructure.[17] Authority staff is working with the Maine Revenues Services to develop the necessary forms and criteria for the reimbursement process. The Authority's Annual Report for 2008 will include information on this initiative.

C. Investments.

The ConnectME Fund is administered by an independent fiscal agent who manages the assessment process, invests the unused funds, and makes payments as directed by the Authority. As stated above, Solix Inc. is the current fund administrator who operates under contract at the direction of the Executive Director. Interest generated by the fund is added to the fund balance. Assessments are currently the only other investment into the ConnectME Fund.[18]

D. Market conditions.

[16] As of the date of this report, one of the seven grantees has requested partial funds based on the Notice of Commencement, with supporting invoices and purchase orders: ChebeagueNet.

[17] 36, M.R.S.A., §2018.

[18] In MPUC Docket No. 2007-67, known as the Verizon-Fairpoint merger case, a stipulation was filed December 12, 2007 (amended 12/21/07), containing a provision that stated, "…within 30 days of closing Verizon will make a one-time cash contribution in the amount of $2.5 million to the ConnectME Authority in furtherance of the Authority's statutory objectives." While the case has been deliberated by the MPUC, a final order has not been issued.

As stated earlier, the primary goal of the ConnectME Authority is to expand broadband access in the most rural, unserved areas of the state that have little prospect of service from a traditional provider. The Authority's activities confirm that not only are communications services, especially broadband services, in Maine not "reasonably comparable" with services provided regionally and nationally, but are not reasonably comparable within the State.

According to studies conducted by the Federal Communications Commission (FCC), more urbanized areas of the state have multiple providers of broadband service (typically in the southern areas), while rural areas are fortunate to have even one provider, with sizeable areas with no terrestrial providers. While the FCC reports provide a reasonable comparison picture across the states, it tends to overstate the availability of broadband services by virtue of the method used (i.e. availability by zip codes). It does provide data on the types of providers and their coverage by state. For example in Maine, there is 67% DSL availability where incumbent telephone companies provide service and 93% cable modem availability where cable systems offer cable TV service.[19]

A study conducted in 2005 by the Broadband Access Infrastructure Board (referenced above) found that while the areas with no broadband service provider were spread over the whole state, it was largely in sparsely populated areas. This problem continues today and the recent grant applications received by the Authority provide some verification because they were all for service in sparsely populated areas.

Competitive providers are prolific in Portland, Lewiston/Auburn, Augusta, and Bangor, providing responsive pricing, services, and features. The underserved areas of Maine (defined as having only one broadband service provider), do not benefit from competitive pressures. For example, in non-Verizon areas, DSL prices are significantly higher, cable providers do not offer packages that include telephone service, and competitive providers are virtually non existent.

While Maine appears to be improving in its broadband availability and penetration, according to one study it still ranks 38th among states in penetration (or "take rate").[20] The same report shows that at the beginning of 2006 Maine had a 31.2% broadband penetration and at the beginning of 2007 that had increased to 39.2%.

[19] "High-Speed Services for Internet Access: Status as of 12/31/06," FCC.

[20] "Broadband Across the U.S.," 2007, Leichtman Research.

The Authority believes that increasing the demand for broadband services is as important as increasing the availability or supply.[21] The Brookings Institution report previously noted emphasizes the importance of increased penetration on the economy. Other states' programs have also experienced the benefits of increasing the awareness and use of broadband services:

For example, "the mission of the Vermont Broadband Council is to promote the use and availability of broadband services throughout the state. Our approach is to do this through demonstration projects that are designed to give individuals and businesses first hand experience with the benefits of high-speed, always-on Internet services."[22]

The "Connect Kentucky" and "Connected Nation"[23] programs focus on increasing adoption rates and demonstrating how technology can impact the quality of life locally. Connect Kentucky recently reported that the rate of Kentucky's high-tech job growth is outpacing the national average.

All of these initiatives and studies conclude that states that take actions to support the implementation of broadband have potential economic benefits. Maine can likewise benefit from the experience and conclusion of these activities by continuing to support broadband activity throughout the State. This is particularly true in rural areas such as Northern and Western Maine who have seen a decline in other more traditional industries.

E. Resolution of the Authority

The existing ConnectME public law requires that the Authority submit a plan, together with necessary implementing legislation, for the winding up of the authority's affairs, the disposition of assets and other matters pertaining to the affairs of the authority.[24] If the Legislature decides that the goals and tasks of the ConnectME Authority have been accomplished and completed by the 2009 repeal date contained in the statute, no other legislation is necessary. The current operation of the Authority has not yet resulted in the acquisition of tangible assets other than the revenues in the ConnectME Fund. The current

[21] As stated under Additional Duties in 35-A, M.R.S.A, § 9204(3)(F), "Create and facilitate public awareness and educational programs to encourage the use of broadband services."

[22] http://www.vtbroadband.org/

[23] www.connectednation.com

[24] P.L. 2005, ch 665, Section 7.

intent of the Authority is to provide funds and resources to broadband development projects and not to actually purchase or own broadband infrastructure. If the Authority alters that intent in the future, any plans of acquisition would include a disposal or transfer of ownership process. The Authority would seek to ensure that any remaining funds are fully expended before the repeal date and that grant funded projects are completed. The staffing authority also expires with the repeal which means that there would be no oversight of the grant implementation process or accountability for the 2008 grants.

F. June 2007 Utilities and Energy Committee Request

The Committee issued a letter asking the Authority to take the following two steps and report back to the Committee in this annual report.

1. Evaluate existing models and relevant options for community networks. Below are examples of models that have been proposed to provide broadband services in unserved communities in Maine, and another model which could be used in Maine:

   - Community owned and/or operated.
     HermonNet is a locally funded community network that is hosted and operated by the staff and students of the Hermon School Department. For the past decade it has offered internet access to the Hermon academic community, municipal employees, and the public. HermonNet epitomizes the concept of "community involvement." The Executive Director will work with the operators of HermonNet to assist in developing a resource guide. (See Attachment D for details on the operation and configuration of HermonNet.)

   - Community initiative and partnership with private provider.
     Chebeague.net is a successor to an earlier project. Chebeague.net was initially fourteen island residents that formed for the sole purpose of providing broadband service to Chebeague Island. The islanders are now working with an established wireless internet provider who has the expertise to install and run the service. Chebeague.net is working with the town, providing free equipment and internet service to the town office and public safety department.

   - Private provider-owned with community partner.
     An exploratory committee in Edgecomb formed to determine how best to provide broadband service to the community. The town is providing tower siting, research and modest funding to the grant recipient. The private provider will own and operate the wireless broadband system.

- Private provider operation.
  This is the typical competitive or incumbent model where a private company determines that an investment in a particular area can provide the necessary return. While this model provides the bulk of broadband services in Maine and should continue to be encouraged, it does leave the more rural areas without service, in part because the financial return is not there.

- Cooperative. This model could be very useful in areas, like rural Maine, where homes are much dispersed. Towns and groups of citizens could form a cooperative to purchase infrastructure and then operate or contract-out the services to a private entity.

2. Suggest a framework for the ConnectME Authority to support the development and implementation of community networks, including suggestions for funding sources and levels; organizational and staffing requirements; and definitions of terminology (Glossary, Attachment E).

   The current, and evolving, ConnectME Authority grant process framework should be more fully utilized with the models above. While these are more grass-roots or ground-up models, they could be the most efficient way to determine actual need and to get community involvement using the current funding level, with an efficient use of funds.

   Broadband availability and penetration could benefit from increased funding levels which would allow for more grants to be disbursed and the possibility of a revolving loan program. The ConnectME Authority organization with its volunteer members and advisory council is a very frugal and limited method for expanding broadband availability.

   We recognize that ConnectME is one of numerous worthwhile initiatives competing for scarce resources. There are many opportunities for cooperation around the state, regionally, and nationally that the Authority could "join" and even serve as the point-person. The next section discusses opportunities for cooperative efforts that may result in economies of scale and enhanced use of resources.

III. STATE AND FEDERAL BROADBAND ACTIVITIES AND INITIATIVES

A. Verizon AFOR Stipulation.

As part of a Stipulation between Verizon Maine and the OPA in Docket No. 2005-155, Verizon Maine agreed to spend $12 million to purchase and install

the equipment and related infrastructure necessary to expand the availability of its digital subscriber line (DSL) services to locations within Maine that are currently unserved or underserved for broadband service ("underserved" means that at least one other provider of broadband service is currently providing service in the same area). Twenty central offices and seventy remote terminals will be upgraded under the Stipulation, to be completed by February 1, 2008.

B. University of Maine System Research and Education Data Network.

Joint agreements between the University System, Jackson Laboratory, and Mid-Maine Communications. These are agreements to establish an advanced, high-speed, fiber-optic network that will service Maine's research and education institutions. Funding is provided by the State and the Jackson Laboratory, and is designed to boost economic growth in Maine through research and development, one of the fastest growing economic sectors.

C. Maine School and Library Network.

A project that had its genesis in a rate case with the predecessor to Verizon. Funds were initially provided from the over-earnings determination by the MPUC over a six year period starting in 1995. Continue funding now comes from an assessment on telecommunications bills and the Federal E-Rate program. Maine was the first state to connect every K-12 public school and public library to the internet. Nearly 900 sites across the state (including islands) are now connected, using a variety of transport mechanisms.

D. Rural Health Care Pilot Program.

Two applicants for funding from the FCC's Rural Health Care Pilot Program received over $30 million in grants to provide broadband healthcare networks in Maine. One is the Franklin Community Health Network that will serve the rural Franklin County area and the other is the New England Telehealth Consortium that will connect 550 rural health care facilities in Maine, New Hampshire, and Vermont. A study conducted by the Maine Public Utilities Commission at the direction of the Committee provided a technology needs assessment for the rural health care centers in Maine.

E. University of Maine Department of Electrical and Computer Engineering.

Broadband Wireless Access and Sensing in Rural Maine (BWISE), proposes the establishment of an effective wireless broadband network that will enable the deployment of wireless sensing and monitoring systems to address the state's needs in industries, such as agriculture, forestry, pulp and paper, fishing, as well as environmental protection, wildlife management, public health and safety.

F. Federal Universal Service Fund.

Recent recommended changes from the Federal-State Joint Board on Universal Service propose significant changes in the method the Federal Universal Service Fund operate under and how the funds are used. The most important change is to fund a Broadband Fund at $300 million to be tasked primarily with providing broadband internet services to unserved areas. The proposal recommends that the states are better suited to know what is needed locally and that a specific state agency should be designated to administer the Federal Broadband Fund to be used for grants and matching funds. The Authority plans to closely watch and participate in these activities even though the results will not come to fruition in the coming year. Instead, this will be a long term effort of promoting broadband actions across the nation.

G. Federal legislation.

There are current federal bills that would increase funding for broadband loans (i.e., USDA/RUS programs) and provide for much improved data collection regarding the availability of broadband services, with potential grants to states for the data collection effort. For example, the "Broadband Census of America Act"[25] provides funding to the National Telecommunications and Information Administration to address the lack of accurate information about broadband service across the country, also providing grants to state agencies.

IV. 2008 PLANNED ACTIVITIES

There are many responsibilities for the ConnectME Authority in 2008.

- Monitor and assist the seven initial grant awardees to ensure that they have the resources necessary to complete their projects, both in terms of education and oversight.

- Conduct a second round of grant applications by summer 2008, at about the same level as the first round of grants (unless the funds from Verizon are received, see footnote number 14, above).

- Obtain meaningful data from all broadband service providers in the state to determine where they provide service, noting type, and quality. Not only will this allow the Authority to know where broadband is, but more importantly, where broadband isn't. The Authority will then know where to concentrate its modest resources to do the most good. The Authority

[25] HR 3919

recently requested and is now receiving information from providers on broadband availability.

- Construct a map (not showing company-specific information) showing the availability of broadband service and the gaps of unserved areas that can be periodically updated and used to determine where to concentrate its efforts.

- Develop resource guides to assist communities in developing grant projects, acting as a matchmaker between communities and potential providers. The Executive Director will also be a "cheerleader" on the benefits of community broadband access. Increasing the penetration or take rate of existing and new broadband access services lowers the economic "tipping point" for investments in broadband infrastructure. Not only does this make the ConnectME Fund stretch further, but it makes rural areas more attractive to private investment activities.

- Have the Executive Director potentially serve as a point-person for all of Maine's broadband initiatives such as those described above. The Executive Director will participate and contribute to efforts to indentify and broker solutions to regulatory, policy, and structural barriers to expanding the availability of advanced communications infrastructure in Maine. All providers of broadband services and operators of infrastructure projects in Maine, including those involved in the initiatives described in this report, will be contacted for participation in ongoing communications to develop cooperation and potential synergies.

- ConnectME Authority currently scheduled to sunset in January 2009. Successes should make the Authority a long term investment.

V. CONCLUSION

Much remains to be done over the next few years if Maine is to take its place among those states that recognize the value of advanced communications infrastructure and that take serious steps to implement programs to enhance long-term capabilities. Maine has recognized that access to broadband services is a necessity for our future economic growth--It is critical to Maine's citizens, businesses, and institutions to participate in our global economy, to create, enhance, and preserve local economic development and employment opportunities, and to retain our human capital. We need to continue our active pursuit of increasing the access to, and take rates of, broadband. We also need to coordinate all of the State's activities to ensure that we take advantage of these and other opportunities.

Attachments Following:

Attachment A – ConnectME Authority and Advisory Council Members
Attachment B – ConnectME Fund Report
Attachment C – ConnectME Grant Awards
Attachment D – HermonNet
Attachment E – Glossary
Attachment F – Map of Grant Awards and Unserved Areas

ConnectME Authority and Advisory Council

Authority Members:

1. Jean Wilson, Vice President of Information Services at LL Bean, Chair
2. Mitch Davis, Chief Information Officer for Bowdoin College
3. Dick Thompson, Chief Information Officer for Maine State Government
4. Kurt Adams, Chairman of the Maine Public Utilities Commission

Advisory Council:

1. Fletcher Kittredge, GWI, Chair
2. Reggie Palmer, TDS Telecom and President of TAM, Deputy Chair
3. Keith Burkley, President of Time Warner Cable
4. Gary Nichols, Maine State Librarian
5. Ralph Caruso, CIO University of Maine at Orono
6. Jeff Wheeler, HermonNet
7. Scott Thibeau, Project Manager MSLN (MTEAF)
8. Steve Hand, Maine Technology Institute
9. John Burns, Small Enterprise Growth Fund
10. Pat Scully, Bernstein, Shur
11. Wayne Jortner, Office of the Public Advocate

Staff Support

1. Phil Lindley, Executive Director, ConnectME Authority
2. Amy Spelke, Utilities Analyst, Maine Public Utilities Commission
3. Kelly Arata, Legislative & Policy Coordinator, Governor's Office

ConnectME Authority

Attachment B

ConnectME Fund				
		2007-2008 est.		2008-2009 est.
Assessments/Revenues				
Assessments		$800,000		$1,000,000
Transfer from MUSF		$500,000		$0
Transfer to MUSF		($250,000)		($250,000)
Other Income		$0		$0
Interest Income		$10,000		$5,000
Deficit/Surplus from previous year		$0		$112,910
Total		$1,060,000		$867,910
Disbursements				
Expenses				
Secretary of State (Rulemaking Ads)		$964		$0
Salaries		$100,000		$100,000
Travel		$1,500		$1,000
Operating Expenses		$1,000		$1,000
Fund Administration		$55,452		$45,000
Misc Expenses		$1,000		$1,000
Grant Awards		$787,174		$700,000
Total		$947,090		$848,000
Balance		$112,910		$19,910
Notes:				
Fund Balance as of 12/31/07		$574,797		
Starting assessment approx. $60,000 per month.				

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Applicant	Community Partner or Eligible Partner	Communities Served	Number of Households Served	Unserved Area	Technology	Percent Area To Be Served	Total Project Cost	Grant Request	Percent Grant	Grant $ per Household	Estimated Project Complete Date	Notes
2	Axiom Technologies	Washington County: One Community	Addison, Beals, Centerville, Cherryfield, Columbia, Columbia Falls, East Machias, Jonesboro, Jonesport, Machias, Machiasport, Marshfield, Roque Bluffs, Whitneyfille, Calais, Eastport, Milbridge, Pleasant Point Res.	7,614	Yes	Wireless	70%	$284,369	$79,947	28%	$11	12 months.	Mitton Mountain Zone Project.
3	Chebeague.net, Inc.	Chebeague Is.	Chebeague Is.	499	60%	Wireless	100%	$175,392	$75,000	43%	$150	8 weeks	Mainely Wired
4	Cornerstone Communications, LLC	Piscataquis County Economic Development Council	Abbot, Atkinson, Barnard Twp, Blanchard Twp, Bowerbank, Bradford, Brownville, Charleston, Corinth, Dexter, Dover-Foxcroft, Elliotsville Twp, Guilford, Hudson, LaGrange, Lakeview Plantation, Milo, Monson, Orneville Twp, Parkman, Sangerville, Sebec, T5 R9 NWP, Williamsburg Twp, Willimantic	4,000	Yes	DSL & wireless	90%	$518,875	$368,377	71%	$92	270 days	$20,780 deducted for 1/3 overlap with Monson project.
5	Midcoast Internet Solutions	Edgecomb	Edgecomb	572	90%	Wireless		$211,650	$48,450	23%	$85	180 days.	
6	Monson, Town of	Cornerstone Comm.	Monson, Blanchard	634	Yes	DSL & wireless		$83,200	$62,400	75%	$98	76-110 days of award.	
7	Redzone Wireless	Mount Desert and Cranberry Isles	Cranberry Isles, Seal Harbor, Somesville, Pretty Marsh, Great Cranberry, Islesford, Sutton, Baker Is.	810	Yes	Wireless	80%	$325,000	$115,000	35%	$142	1/1/2008	
8	Somerville, Town of	Midcoast Internet Solutions	Somerville	279	Yes	Wireless	95%	$143,500	$38,000	26%	$136	90 days of award.	
9													
10	Totals			14,408				$1,741,986	$787,174	45%	$55		

HermonNet

Over the last ten years, the Town of Hermon and its school district have created an remarkably innovative approach to high-speed computing and internet service that has made it possible to provide both services to all students (K-12, both in the school and at home), to other residents of Hermon, to municipal offices, to the library and to Hermon businesses. Hermon and HermonNet offer an exemplary model for other communities in Maine of what a community network can achieve.

HermonNet began as an initiative in the Hermon schools and as a partnership between schools and community. The Hermon schools continue to be at the heart of the network. HermonNet employs Linux terminal services. These include central Linux terminal servers (housed in the schools) and user terminals (essentially free). Within the school system user terminals are accessible to all students, faculty, and staff, K-12. Servers and terminals provide access to a common computing desktop and to the internet. They allow all students, faculty, and staff to participate in a networked academic community. Through the network, the common computing desktop and internet service are available at anytime from anywhere, on the school campus and off. All members of the educational community can access Linux servers from home, and the same access has been made available to all residents of Hermon, all businesses, and all municipal offices as well. Terminals have been installed in every available area throughout the school district, including homes, though in homes existing personal computers (old or new) can also be configured to serve simultaneously as terminals by using NX Client. Of approximately 2,000 homes in Hermon, more than1,500 are now connected to HermonNet.[1] Network resources and services are available around the clock throughout the year, thus optimizing community investment in the network. Schools, municipal offices, and business account for most of the traffic during the day, while public and home academic use account for the utilization of the services in the evening. The network utilization runs cyclical usage patterns that reflect the daily routines of the academic and working communities like the passing of the tides.[2]

HermonNet uses Fedora Core Linux and public domain software. It uses Citrix to connect the Linux desktop to Windows applications when needed. The use of Linux and public domain software represents a significant savings for the network and the community that funds it (because it is in the public domain, it can be made available to every resident of Hermon at no cost). Each server can run 40 terminals simultaneously. The cost of a server is approximately $2,000. Terminals are essentially free because they are made from obsolete personal computers (donated by Maine businesses, the general public, and State and Federal agencies) that have been converted into Linux user terminals

[1] An additional 400 home accounts in serve the Glenburn community through Glenburn.net which also serves the Glenburn's municipal office.

[2] HermonNet amplifies the workings of a typical rural community. Municipal services and communications become more accessible to a larger group of taxpayers. Students find that academic resources and learning extend beyond traditional brick walls and strict schedules. Members of the public find that maintaining online "yard sales" and simply keeping in touch with the neighbors has never been easier.

(many of these terminals in Hermon have been provided by the Windham Prison's Computers for Schools program). Conversion costs an average of $10 a unit. Where 40 personal computers with licensed software cost many thousands of dollars to own and operate, HermonNet can provide comparable service for about $3,000. At the same time, where personal computers become obsolete in between 3-5 years, HermonNet hardware is long-lived. In the decade in which HermonNet has been using Linux servers, all have been inexpensively updated and none have needed to be replaced.[3]

HermonNet is a high-speed local area network (LAN) interconnected via a high-speed fiber optic campus backbone that includes the town municipal office and library. This backbone is extended throughout the community via enhanced dial-up and, increasingly, through meshed high speed wireless Internet access that is being installed through a public-private partnership with the RedZone Corporation. Dial-up has been offered free to all Hermon residents for over a decade. High speed wireless access has been offered for the last three years and its current deployment is extended at a modest rate (for most residents at approximately $15 a month). While the wireless service is preferable for many residents, the dial-up service is much faster and more powerful than might be expected and has offered a transitional, if temporary, answer for community needs. Because computing takes place in the central server rather than the user terminal, phone lines are only required to transmit the user's screen, keyboard, and mouse commands. As a result even dial-up can provide usable access to the high-speed services of the common desktop and the internet. At the same time, wireless services are also enhanced by the relatively small amount of data that needs to travel over the wireless network from terminals to Linux server. In this regard, a community of personal computers would be far more demanding of available broadband services.

Because the schools are at the heart of the network, HermonNet has not encountered a problem that has hampered community networks in other parts of the United States: a lack of users. In Hermon the students have sold the network to the community as a whole. Because HermonNet value has been demonstrable to the community, and because of savings in technology through the use of Linux servers and terminals, the Hermon School District has been able to create a robust information technology department that not only serves the schools but also the town as a whole. Centralized computing allows for centralize support services in which server upgrades and enhancements immediately become available throughout the network.[4]

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[3] Even though terminals do not require upgrades every three years, it should be noted that donated equipment still pours in on a three year schedule making terminal upgrades to faster processors with greater audio/video circuitry a no-cost reality. At present HermonNet is in the process of supplementing its stock of desktop terminals with wireless terminals. Wireless terminals will be deployed in the spring of 2008 that will allow students to maximize the use of relatively slow wireless network services in the same way that terminal services leverages the use of dial-up. Additionally, because wireless terminals will be connecting to central Linux services hosted within the school district, questions of web content filtration, malware prevention (e.g. antivirus and antiadware protection) will be provides by the same services that protect students when utilizing Linux within the classroom. With wireless terminals all students (K-12) in all classes will have access to a computer at anytime and at a fraction of the cost of laptops.

[4] The implementation of Linux technology in other Maine communities will require IT training for staff in those communities' school districts. Consolidation should make this manageable since each

The HermonNet philosophy means looking out for and taking care of your community. For example, when a backup generator was purchased to support the network, the decision was made to purchase a sufficiently large generator so that it could support the high school as an emergency shelter for the town. As the next logical step, HermonNet became the technological backbone for the town's comprehensive emergency management systems.

HermonNet has made the Town of Hermon an ideal community partner for private internet providers like RedZone Wireless, since these providers work through the school IT department which in turn handles most support services required by the community.[5] Far from being anti-competitive, partnerships with HermonNet are deeply competitive for the vendors who seek to do business in Hermon. Because the community has aggregated itself as HermonNet, it is in a strong position to negotiate partnership agreements. Vendors work with HermonNet which then becomes responsible for individual customers in community as the last-mile provider. In addition to RedZone, HermonNet works in collaboration with such companies as Verizon and Oxford Networks. At the same time the school has become a telecommunications hub for the community. It not only houses HermonNet, but facilities for Unicel and Rainstorm Consulting, a web hosting and development company.

The Joint Standing Committee on Utilities and Energy has asked for ConnectME to suggest a framework for supporting the development and implementation of community networks. One lesson to be learned from HermonNet is the way a community like Hermon (and by extension the State) can pool resources. The HermonNet model offers a remarkably innovative approach to community networking because it simultaneously addresses two vital needs that all communities in Maine must address: the need for high-speed computing (K-12) in the schools and the need for broadband as well as high-speed computing throughout the community. The two needs have tended to be addressed separately by the State; funding in one area has not tended to address the other. For example, funding for laptops and MSLN has not supported the broader community needs that ConnectME has a mandate to engage. Because Hermon has addressed both needs at once, it has been able to pool scarce resources and realize significant savings. It has discovered that an innovative solution for the schools also provides an innovative solution for the community. As a result funding for technology in the schools has also supported a robust computing network that serves both the schools and the broader community. The schools realize their potential as an economic and cultural engine for the town. Wherever possible this kind of pooling of resources should be actively encouraged throughout Maine so that the same funding can simultaneously address school and community technology

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of the 80 or so districts will need and should have an IT department. The University of Maine is prepared to develop a training program for IT coordinators.

[5] Support services extended from the academic community to municipal offices, general public, and the business community result in continuous learning opportunities for the schools' IT staff. These skills immediately translate into better service and greater opportunities for the schools and the community in an upward spiral of innovation and service. Student interns involved in this support structure find themselves working shoulder to shoulder with real-world professionals solving real-world problems. This typically results in the student interns becoming well-known as valuable technical resources to the overall community network.

requirements.[6] The HermonNet model suggests that the Department of Education, the Department of Economic and Community Development, and ConnectME should work collaboratively wherever possible. Not only will this save increasingly scarce resources. It will encourage Maine communities to address their needs *as* communities. In this way it will strengthen the vital social, economic, and cultural fabric of our state.

[6] In order to provide a computer desktop and internet service to Hermon citizens, businesses and municipal offices, HermonNet has opted out of the Maine School and Library Network and pay for T1 cable access from private providers. While any school district in Maine could install Linux servers and terminals on the school campus and still connect to MSLN, to serve the students off-campus and the larger community, it would need to purchase additional T1 service from private providers as well. In the future Hermon should be able to reconnect to MSLN for on-campus services as well and use other T1 lines only for off campus services.

GLOSSARY

BPL broadband over power lines, a technique for delivering high-speed Internet access over electrical power lines, with the ability to use house wiring to connect to computers.

Broadband, an elastic term describing high-bandwidth data connections. The wider the pipe, the more data can be moved at the same time and hence the higher the effective speed. The FCC defines any connection greater than 200 kilobytes per second in one direction as "broadband" and a connection with 200kbps in both directions as "advanced broadband," but these figures are almost universally deemed to be out-of-date. A typical broadband connection today is closer to 512kbps upstream and 2Mbps down and moves upward from there. In a few years, that number is likely to be significantly higher. The term "broadband" is often used as shorthand for "high-speed Internet access."

business user, a user in a business setting constituting a broad "middle class" in terms of bandwidth, reliability, and security needs. See also *home user, enterprise user.*

cable internet, a means of delivering broadband via coaxial cables, almost always simultaneously with cable television service.

Central Office, a switching station maintained by an ILEC where DSLAMs are generally deployed and from which the maximum range of DSL service (reckoned in "circuit feet," distances over twisted-pair copper lines, not "as the crow flies") can be determined.

CLEC, Competitive Local Exchange Carrier

DS3, a digital signal carrier with a rate of 44.736Mbps.

DSL, digital subscriber line. There are many subtypes of DSL (VDSL, HDSL, etc.) of varying speed, range, and technical characteristics.

DSLAM, digital subscriber access multiplexer.

enterprise user, the most demanding, industrial strength broadband consumer that usually represents large, technology-intensive organizations.

fixed wireless, a non-mobile method of delivering broadband service.

FTTH/FTTP, fiber to the premises, home, et al. a method of connectivity using fiber optic cabling.

home user, the class of broadband consumer with the least demanding broadband needs but which also faces total unavailability of service in many areas

ILEC, Incumbent Local Exchange Carrier

last mile, a term for the most remote and sparsely populated areas that are among the most challenging to provide with broadband, also known as the "local loop" for telecommunications services that makes the final connection to the premises.

municipal network, a broadband network owned and operated by a city or town, often by lease arrangement with an ILEC/CLEC. The right of Maine communities to establish these networks was reaffirmed by the State Legislature.

Narrowband, low-speed data connections (such as dialup Internet access, which tops out at 56kbps and is generally even lower in real-world applications).

OCx, Optical Carrier service provided over fiber optic cable

PON passive optical networking, a family of networking standards using a point-to-multi-point architecture for delivering last-mile connectivity without any active (i.e., powered) components in the distribution network. PON may provide hope for a last-mile solution because it involves fewer upgrades to the current infrastructure than competing technologies.

Remote Terminal, a remote switching station, or "sub-station" maintained by an ILEC where DSLAMs are generally deployed and from which the maximum range of DSL service (reckoned in "circuit feet," distances over twisted-pair copper lines, not "as the crow flies") can be determined.

symmetrical/asymmetrical, describes whether a data connection operates at the same speed or bandwidth when traveling upstream as it does when traveling downstream. A symmetrical connection is the same speed up or down; an asymmetrical connection is usually slower on the upload than on the download.

synchronous/asynchronous, describes whether a communications stream is completely continuous (synchronous), or can occur at any time and at irregular intervals (asynchronous). Most connections between computers, including those connected via broadband, are asynchronous.

take rate or penetration rate, a measure of the ratio of potential subscribers to whom service is available to those who actually sign up for that service.

triple play, the application of broadband that delivers voice, data, and video service over the same transport pipe.

WiFi wireless fidelity, a form of wireless networking in the IEEE 802.11x family of standards that is generally used for connectivity of wireless large-area networks (WLANs) inside buildings and small outdoor areas, but which has shown remarkable usefulness as a way of providing high-speed Internet over wider distances via towers,

high-gain antennae, and mesh-network technologies that significant exceeds what WiFi was originally intended to do.

WiMAX Wireless Interoperability for Microwave Access, a newly ratified form of fixed wireless broadband access in the IEEE 802.16x family of standards. The licensed version has a theoretical range and distance of up to 30 miles and 50Mbps or higher but is only available to the larger carriers. WiMAX is able to overcome some of the topographical issues faced by other forms of wireless broadband.

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