

**MSLN
Annual
Report**

March 15

2016

**Report from the Maine State Library and the Maine Department
of Education to the Maine Public Utilities Commission for
Funding Year 16 (July 1, 2016 through June 30, 2017)**

**Maine School
and Library
Network**

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Overview

The Maine Public Utilities Commission (MPUC) requires that the Maine State Library (MSL) and the Maine Department of Education (MDOE) present to the MPUC an annual plan that addresses how Maine Telecommunications Educational Access Fund (MTEAF) funds will be spent to address the connectivity needs of Maine schools and libraries. Networkmaine is a consortium formed by the MDOE, MSL, the State of Maine's Office of Information Technology and the University of Maine System to support participating Maine schools and libraries efficiently. This effort is known as the Maine School and Library Network (MSLN).

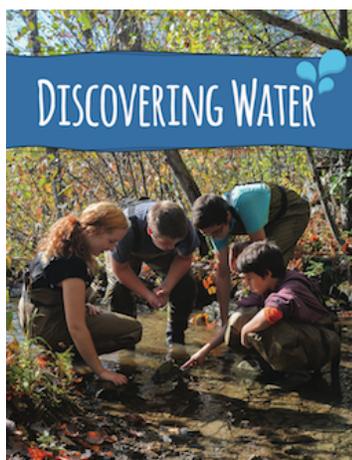
The Executive Director of Networkmaine was tasked by the Networkmaine Council with submitting this Annual Report for FY 2016-2017 on behalf of the MDOE and MSL. This report highlights the events impacting the Maine School and Library Network Project over the past year, details how the requested funds will be spent to address the connectivity needs of Maine Schools and Libraries in the year to come, and includes the MDOE and MSL's request for Maine Telecommunications Educational Access Fund (MTEAF) funds.

Activity Report

Maine's K-12 schools and public libraries continue to make use of the connectivity provided through the MSLN Project in new and exciting ways. Perhaps it is due to the good old Yankee ingenuity that is inherent in so many of us or perhaps it is because the MSLN Project has provided a level of connectivity that enables rather than limits their creativity and imagination. Whatever the reason, they continue to amaze. A couple recent examples of this creativity follow.



Camden-Rockport Middle School uses a remote-control robot as an avatar so that a child, stricken with leukemia, may continue her schooling, and be an active participant in her classes, from home. "Through Bob the robot, Katherine can maneuver around her class and talk with her peers. They can see her face on a screen and talk back, even when they're doing group work."¹



The students in Windham High School's Earth Science class that have researched, written, illustrated, taken photographs for, and designed a book, "Discovering Water²". The recently published book is being used as a learning tool for middle school students engaged in the Portland Water District's environmental education programs. Staff and students are grateful for reliable and improved connectivity at Windham as it played a significant role in the creation and distribution of the book.

Maine, public libraries are the most frequent sites of broadband access outside the home. More of the information and services

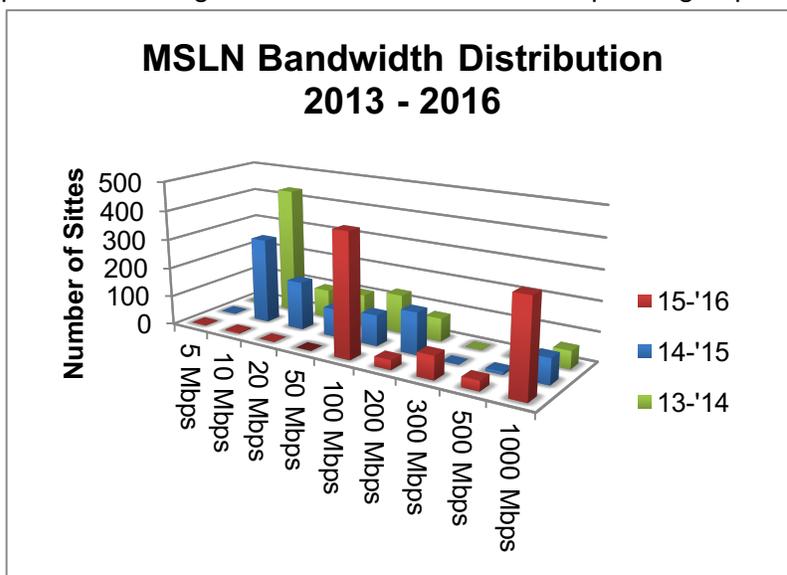
¹ <http://bangordailynews.com/2015/11/13/news/midcoast/i-call-it-bob-robot-helps-cancer-stricken-girl-stay-in-school/>

² https://www.pwd.org/sites/default/files/pdf/discovering_water_2nd_edition_online_highres.pdf

Mainers seek and use are delivered and shared via Internet access through the Maine School and Library Network’s wired and wireless broadband service. At the heart of public library connectivity in Maine is digital inclusion and digital equity. Last year, Maine public libraries reported 1,176,378 Internet sessions in our libraries. Not all Maine libraries can measure wireless use yet but those that do illustrate immense growth in the use of public library wireless service. In Belfast, Scarborough and Blue Hill, the number of wireless users are greater than the use of wired computers in the library! New databases and online providers are serving up content that is increasingly video-based. Library patrons both expect and need access to this content for learning and full participation in the digital world and our libraries require high speed broadband to meet those community needs.

Connectivity Improvements

There is much to celebrate this year. After a successful competitive bidding process in the Winter of 2014-15, 99% of the 880 schools and libraries that participate in MSLN, all but 4 schools and 3 libraries, have been connected over fiber-optic cables at 100 Mbps and up to 1 Gbps speeds. Previously only 39% of schools and libraries connected at 100 Mbps and greater.



In addition, the average bandwidth increased from 187 Mbps to 515 Mbps per school and from 62 Mbps to 288 Mbps per library at a lower cost than previous years.

The achieved level of connectivity is consistent with SETDA’s recommended *minimum* level of connectivity for schools³ and the connectivity goals of the White House’s ConnectedED initiative⁴. Despite the savings in transport costs, the Networkmaine Consortium continues to be challenged by shrinking MTEAF assessments.

Budget Reduction

Based on MDOE’s and MSL guidance, the Networkmaine Council reduced the annual budget for the MSLN project by \$513K. This budget reduction was achieved by realizing the cost savings on both Transport and Internet Services along with the elimination of the Broadband Sustainability Fee and by lengthening the refresh cycle on network equipment. Along with these cost reductions the Networkmaine Council needed additional revenue from various sources to balance the project’s budget. MDOE redirected \$100K that has previously supported video conferencing services towards the operating costs of the project. A new *optional* video conferencing service fee will instead be assessed to K-12 schools and public libraries that

³ Fox, C., Waters, J., Fletcher, G., & Levin, D. (2012). The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs. Washington, DC: State Educational Technology Directors Association (SETDA).

⁴ <https://www.whitehouse.gov/issues/education/k-12/connected>

choose to make use of that service. In addition, a Participation Fee is being assessed to public libraries for the first time in the MSLN Project's twenty (20) year history.

Participation Fee

The Networkmaine Council voted to establish a tiered consortium Participation Fee assessed to public libraries based on the size of the annual budget of each library. The annual fee ranges from \$100 to \$3,750 with the MSL also assessed at the highest level. The Participation Fees assessed to the public libraries are expected to generate approximately \$76,000 in funding.

The Networkmaine Council voted to maintain the Participation Fee assessed K-12 schools at the same level for the FY 2016-2017 funding year. The annual fee continues at \$1 per student and is anticipated to generate up to \$180,000 in funding.

These consortium Participation Fees will be used to help cover the Internet Access Service and Operating Services costs of the MSLN Project.

Recognition

The Networkmaine Consortium and MSLN Project continue to receive national recognition for the level of connectivity it has been able to provide Maine's K-12 schools and public libraries and the cost effectiveness at which it is able to acquire these services. Education Superhighway, a non-profit focused on upgrading the Internet access in every public school classroom in America, has recently ranked Maine in the top five states in the nation on three of four criteria measuring the connectivity of a state's K-12 schools.⁵

1. *Percentage of school districts meeting 100 Kbps per student goal*
2. *Percentage of schools with fiber connections needed to meet bandwidth targets*
3. *Percentage of school districts meeting the \$3/Mbps Internet Access target*

In addition, Maine public libraries now rank in the top 10% nationally based on national figures from a Digital Inclusion Survey, conducted by the Information Policy & Access Center at the University of Maryland.

It is worth mentioning that the FCC and others have long heralded the consortia model used here in Maine as the most efficient and effective method of obtaining high-speed broadband connectivity for K12 schools and libraries. In fact, FCC staff and a number of third-parties looking to help schools and libraries across the country take best advantage of the E-Rate program continue to engage with various Networkmaine Council members to learn more about how we are structured and operate.

Thanks very much for the fully transparent [fee setting process]. While the \$1,000 will be a ding in our calendar year 2017 budget, I think the fee also represents quite a bargain based on the service received and what they would cost on the open market. Public libraries have been treated so well in terms of connectivity as to be able to be able to take MSLN service for granted since the 1990s. I hope this is a wakeup call to all of us about the value of the service.

Rich Boulet, Director
Blue Hill Public Library

⁵ <http://stateofthstates.educationsuperhighway.org/>

Looking Forward

Reliable, fast, low-latency network connectivity is an absolute necessity for our schools and libraries. It enables just about everything they do from the most traditional of services to the most modern and forward thinking. The Networkmaine Council has spent countless hours working to ensure that Maine's K-12 schools and public libraries have this necessity met through the MSLN Project. The MTEAF was created by the Maine Legislature in order to carry out the policy goals of universal access, economic development and information access established by section 7101, subsections 1, 2 and 4, of Maine Revised Statutes. However, the continued decrease in MTEAF funds available each year is putting significant strain on the MSLN project.

This year's MTEAF funding request of \$3.5M is sized based on the total amount PUC staff anticipates the MTEAF assessment will generate. It is not large enough to meet the funding needs of the MSLN Project. The \$3.5M request represents the smallest MTEAF funding request since 2008 (see Appendix B) yet is the maximum amount that the MTEAF can be expected to provide. It is anticipated that next year's MTEAF assessment will be even smaller.

The Networkmaine Council has taken many steps over the past five years to streamline services wherever possible along with reducing internal expenses and service costs. Despite these efforts, and as a last resort, the Council has had to charge participation fees to both schools and libraries.

The cost of the MSLN project is essentially the same today (\$9.24M) as it was back in 2009 (\$9.30M). The primary difference is that in 2009 the MTEAF and federal E-Rate program covered the entire cost of the MSLN project where now in 2016 schools, libraries, MDOE, and MSL contribute \$760K to close the budget gap created by the lack of MTEAF funding. (See Appendix B)

The Networkmaine Council has recognized that continuing to increase the fees charged to the schools and libraries is not sustainable. Furthermore, the Networkmaine Council also recognizes that the current revenue from MTEAF is on a trajectory that puts the entire MSLN project at risk.

I need to give thanks to MSLN and you for all the years of no-local-cost internet service. Lubec probably would not have had any internet when MSLN first offered it much less high speed now. It definitely impresses out-of-state summer visitors and convinces them that though small we are a REAL library (in addition to great books, great reader's advisory, children's services and all the rest).

I always tell people who are surprised at just how good the library is for such a small town that much of the reason is the way the state of Maine looks out for and includes its small libraries. MSL knows that one person (or part person) libraries haven't time to keep up with all the changes happening... The fact that participation fees are scaled to the size of the library is also a life saver.

Thank you all for everything you do to enable Maine's libraries to serve our communities.

Suzanne Plaut, Director
Lubec Memorial Library

Recommendations for Funding Year 2016-2017

The MDOE and MSL are confident that the plans and adjustments they have made for FY 2016-2017 will position the MSLN Project to meet the connectivity needs of Maine's K12 schools and libraries. Therefore, for Funding Year 2016-2017 (July 1, 2016 – June 30, 2017), the MSL and MDOE respectfully submit the following recommendations for funding to the Commission for its consideration.

I. Continued Funding for Services

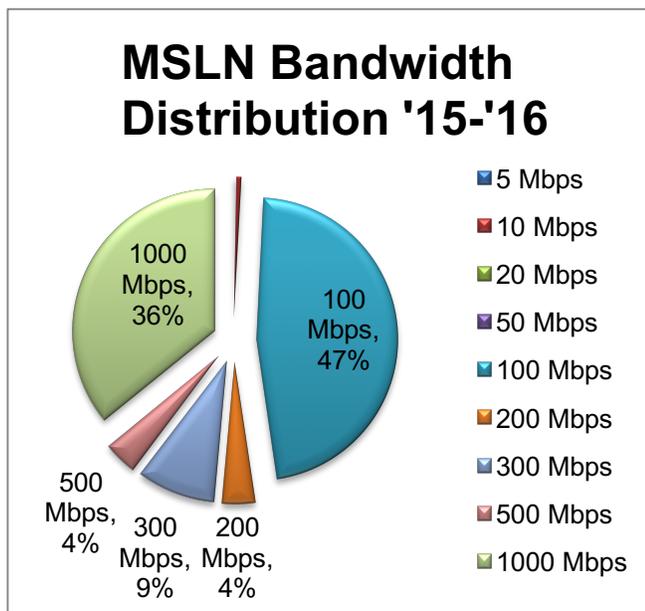
The MSL and the MDOE request continued funding for services to all qualified schools and libraries pursuant to 35-A M.R.S.A. § 7104-B(1) (referred to as MSLN) as further described below.

A. Transport Services

Opening up the MSLN Project to multiple transport providers in 2009 created a more competitive bidding process that enabled Networkmaine to secure more aggressive pricing for transport services. This same approach was taken last year when Networkmaine released a RFP for Transport Services. The RFP resulted in awards to five (5) Transport Providers⁶. This funding request is for the second year of the transport contracts. The current contracts provide for much higher transport bandwidth at lower costs. In fact, one has to go back a full three (3) years to the FY2013-2014 funding year to find a funding year in which less was spent on Transport Services.

Assuming that Federal E-Rate will pay a minimum of 70% for approved schools and libraries, it

is anticipated that Transport Services will be provided at a cost to the MTEAF that is at or below the budgeted costs for the *FY2014-2015* funding year.



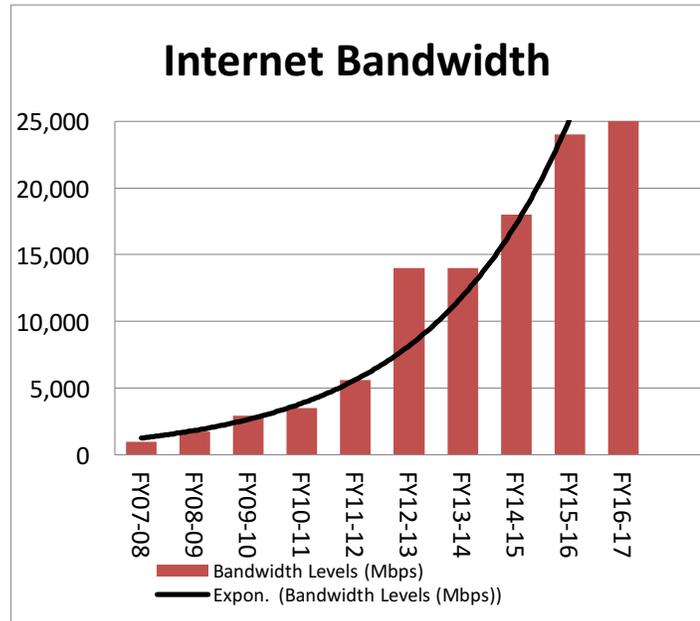
Anticipated impact on MTEAF is \$2,134,000

⁶ Transport service providers awarded contracts were FairPoint Communications, Time Warner Cable, Maine Fiber Company, Oxford Networks, and Lincolnville Communications

B. Internet Access Services

Networkmaine's contracts for Internet Access expired June 30, 2015, as such; Networkmaine released an RFP for Internet Access Service starting in FY2015-2016. The MSLN Project is benefiting from the decreasing unit cost of Internet Access Service, Networkmaine continues to increase its use of settlement free peering with major content providers and Networkmaine's on-net Content Delivery Network caching farms.

The use of settlement free peering and on-net CDN caches slows the rate of growth in the needed Internet Access Services by redirecting traffic from content providers to multiple private peering points and CDN caches rather than across the commodity Internet. Networkmaine is leveraging Internet-2's Commodity Peering Service (CPS) to help manage the growth in Internet Access



Services needed to support the MSLN Project. Roughly 75% of traffic coming into MSLN currently comes from these other sources.

Networkmaine contracts for Internet Access Service are at a lower rate per megabit rate than on the previous contracts. For Funding Year 2016-2017, the cost of acquiring Internet Access Service, \$53,000, for the MSLN Project will be funded by the annual Participation Fee paid by the schools and libraries.

Anticipated impact on MTEAF is \$0

C. CIPA Compliant Content Filtering

The MTEAF currently supports the full cost of providing a centrally managed content filtering solution that helps meet the requirements of the federal Children's Internet Protect Act (CIPA) while minimizing the administrative and technical burden on the schools and libraries. While CIPA compliance is a requirement to receive E-Rate reimbursement for Internet Access Service, solutions for meeting the requirement are not eligible for E-Rate funding.

Networkmaine is using a cloud-based solution offered by OpenDNS to provide content filtering for the schools and libraries. This service eliminates both the fiscal and administrative burdens of maintaining servers to run content filtering software.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of content filtering for FY 2016-2017.

Anticipated impact on MTEAF is \$87,600

D. Content Databases and E-Discovery Solution

The MSL and the MDOE recommend the continued subscription of electronic databases and E-Discovery solution to provide statewide access for citizens through MARVEL, Maine's Virtual Library, as permitted by 35-A M.R.S.A. § 7104-B.

MARVEL!

Funding for the MARVEL databases comes from most of its patron base. MTEAF provides funding on behalf of the public libraries and K12 schools. The University of Maine System, Bates, Bowdoin and Colby colleges, and the state general fund through the Maine State Library also provide additional funding.

E-Discovery

A product called EBSCO Discovery Service™ (EDS) is "single search" solution used for the MARVEL databases. The system indexes metadata and content from the disparate MARVEL resources, normalizes the data and provides a simple interface for users. This provides a fast, streamlined, user-centric approach to searching the MARVEL databases and resources with the MaineCat statewide catalog. Prior to the implementation of a single search tool, located online at <http://libraries.maine.edu/mainedatabases/>, library users in Maine faced challenges in selecting the appropriate resource for their research – to the average user, the MARVEL online resources presented an often confusing array of options. EDS provides residents of the state a much-needed 'Google-like' single starting point from which the full depth and breadth of the collection of online resources available while also offering an easier interface and results page for novice users.

The MSL and the MDOE recommend continued funding for the MARVEL content databases, online resources and the EBSCO Discovery Service™ single search product for FY 2016-2017.

Anticipated impact on MTEAF is \$682,600

E. Technical Services

Expenses for third-party services, equipment, software, and maintenance that are not E-Rate eligible are included as part of this Technical Services category if they are not specifically requested in a separate funding request. These services include but are not limited to, constituent premise equipment (CPE), Internet 2 Secondary Group Participant fees, IPv4 address space, hardware and software maintenance for core networking equipment, colocation fees, core network equipment and software upgrades and replacements.

In addition, the MSL and the MDOE leverage MaineREN, Maine's Research and Education Network, as the optical backbone for MSLN. Multiple 10 Gbps optical transports are dedicated for aggregating the traffic to/from the K12 schools and public libraries between MaineREN's optical nodes. Over 100 MSLN participants now connect directly to MaineREN. Participating schools and libraries also share three 10 Gbps optical transports with other MaineREN participants to connect to both Internet 2 and contracted Internet Service Providers out of Cambridge, MA and Albany, NY.

The elimination of the Broadband Sustainability Fee and the elongated refresh cycle of both CPE and core network electronics previously mentioned have resulted in a significantly lower funding request for Technical Services this year than in years past.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of Technical Services for FY 2016-2017.

Anticipated impact on MTEAF is \$364,000

F. Operational Services

Networkmaine provides the day-to-day operation and end user support for MSLN. These Operational Services involve Network Operations Center support services including but not limited to:

- Network monitoring
- Problem tracking and resolution
- Constituent premise equipment (CPE) configuration
- Transport and Internet access vendor management
- Network upgrade and installation management
- Technical security services
- Onsite technical support through the “Circuit Rider” program

In addition, Networkmaine provides schools and libraries with network design consultation, unlimited e-mail accounts with spam and anti-virus scanning, web site hosting, web content filtering, Domain Name Services, DHCP services, and IP address management.

The MSL and the MDOE request that MTEAF funds be made available to contribute towards the costs to operate MSLN for FY 2016-2017. This year’s request is approximately \$250K less than last year’s request. The reduction in this request is simply an adjustment in funding sources for Operational Services. A larger portion of the Networkmaine Participation Fees will go towards Operational Services. As noted above, the MSL and MDOE expect to use this year’s Participation Fees to fund Internet Access Services and a larger portion of the Operational Services. This request will be matched with \$203K in Participation Fees being collected from K12 schools and public libraries and \$100K from the MDOE.

Anticipated impact on MTEAF is \$206,700

II. Administrative Services

The MDOE funds the administrative costs of MSLN through a Cooperative Agreement with the University. Along with this direct financial contribution by the MDOE, MSL provides in-kind contributions through staffing the State E-Rate Coordinator position for libraries. No MTEAF funds are spent administering the MSLN Project except for the fees paid by the PUC to the MTEAF fund administrator. The Administrative Services provided to the MSLN Project are detailed below.

A. Fund Administrator

The MSL and the MDOE ask that the Commission re-authorize the expenditure of funds to pay for a fund administrator to assess carriers, collect funds from carriers and make payments from the Fund (as permitted by 35-A M.R.S.A. §§ 7104-B(2) and 7104(3)).

Anticipated impact on MTEAF is \$ 25,100

B. E-Rate Support

Networkmaine acts as the E-Rate Filing Consortium lead on behalf of participants in the MSLN Project for all eligible services associated with the project. In that role, Networkmaine manages the entire filing process and certification of the federal E-Rate paperwork. In addition, Networkmaine fulfills the role of State E-Rate Coordinator for Maine's schools. Networkmaine's involvement in assisting schools with the E-Rate filing process for both MSLN Project and non-project E-Rate eligible services include providing training, information dissemination, answering questions about the E-Rate filing process, and assisting schools with Program Integrity Assurance requests from USAC. Due, in part, to Networkmaine's assistance, approximately \$12 Million of E-Rate funds have been committed to Maine in the 2015-2016 funding year.

As in the past, Networkmaine is leveraging its web-based consortium enrollment site⁷ to ease the E-Rate process for the K12 schools and libraries. This site allows Networkmaine to greatly computerize and automate the data collection and form completion process. No longer are the schools and libraries asked to manually fill out information on paper forms that are readily available in both federal and state government data sources. Instead this data is automatically incorporated into the forms greatly reducing the chance of human error. The participating schools and libraries only need to fill out their site-specific information on the web site and confirm various certifications. Once completed the schools and libraries download the various forms (Letters of Agencies, Form 479s, etc.) from the web site which are already filled out with all the appropriate and provided information ready for them to sign and return to Networkmaine.

The consortium enrollment site has been well received over the years. Networkmaine makes improvements each year to incorporate feedback received in the previous year. Modifications are also made to reflect regulatory or process changes in the E-Rate Program for the coming funding year.

Anticipated impact on MTEAF is \$ 0

C. Contract Management

Networkmaine successfully negotiated 3 year contracts for transport services with five services providers; FairPoint Communications, Oxford Networks, Time Warner Cable New England, Maine Fiber Company, and Lincolnville Communications and two year contracts for Internet Access Services with Cogent Communications and FirstLight. The entire procurement process from writing the RFPs to final contract negotiations is managed by the University of Maine System's Strategic Procurement Office. As the University of Maine System is the customer of record on all of these contracts, its Strategic Procurement Office will continue to ensure that the contracts are adhered to and will maintain all

⁷ <https://enroll.networkmaine.net>

required documentation related to the contacts for ten years after their service term as required by the E-Rate program rules.

Anticipated impact on MTEAF is \$ 0

D. Invoicing

Networkmaine handles all invoicing activities related to MSLN. These activities include receiving the invoices from the contracted service providers, verifying their accuracy, submitting the invoices for reimbursement from both the MTEAF and the E-Rate Program, reconciling payments, and maintaining records for the time frame required by the E-Rate Program rules. Networkmaine leverages UMS' Accounts Payable department and their electronic document management and imaging system for many of these activities.

Anticipated impact on MTEAF is \$ 0

E. Budgeting and Financial Management

The MSLN project budget is regularly reviewed and managed by the Executive Director of Networkmaine and the Networkmaine Council consisting of members from MDOE, MSL, OIT, UMS and appointed public school and library representatives. The University of Maine System's Director of Sponsored Programs and Administration monitors and accounts for the project budget.

Anticipated impact on MTEAF is \$ 0

Appendix A

Comparison of MTEAF Funding: Funding Years 2011 - 2016

Services	2011-2012 Actual	2012-2013 Actual	2013-2014 Actual ⁸	2014-2015 Actual	2015-2016 Budgeted ⁹	2016-2017 Requested
Transport Service ¹⁰	\$1,819,344	\$2,013,394	\$2,094,252	\$2,167,813	\$2,275,000	\$2,134,000
Internet Service	\$ 73,115	\$ 78,675	\$ 37,431	\$ 44,020	\$ 0	\$ 0
CIPA Compliant Content Filter	\$ 87,552	\$ 87,552	\$ 87,552	\$ 87,552	\$ 87,600	\$ 87,600
Content Databases & E-Discovery	\$ 699,110	\$ 702,599	\$ 657,116	\$ 682,600	\$ 682,600	\$ 682,600
Technical Services	\$ 470,975	\$ 515,508	\$ 349,994	\$ 404,470	\$ 600,000	\$ 364,000
MTEAF Fund Administrator	\$ 25,080	\$ 26,400	\$ 25,080	\$ 25,100	\$ 25,100	\$ 25,100
Operational Services	\$ 531,371	\$ 539,197	\$ 557,495	\$ 415,342	\$ 459,700	\$ 206,700
Totals:	\$3,706,547	\$3,963,325	\$3,808,920	\$3,826,897	\$4,130,000	\$3,500,000

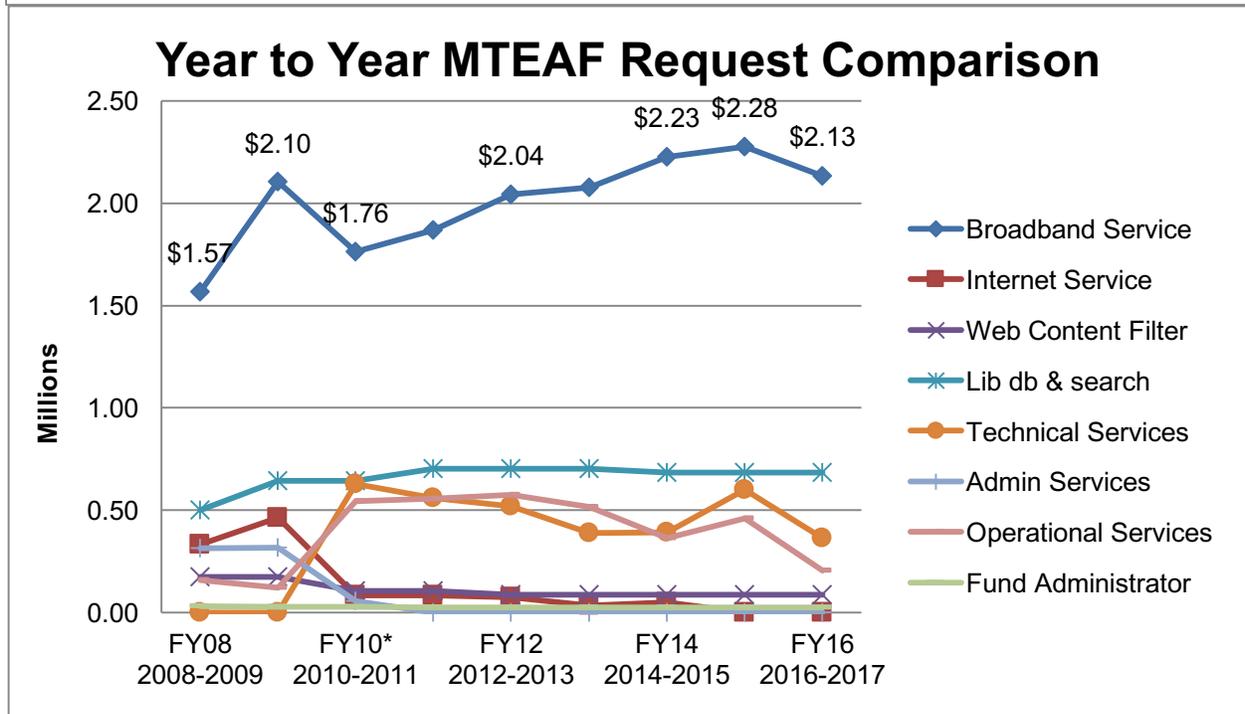
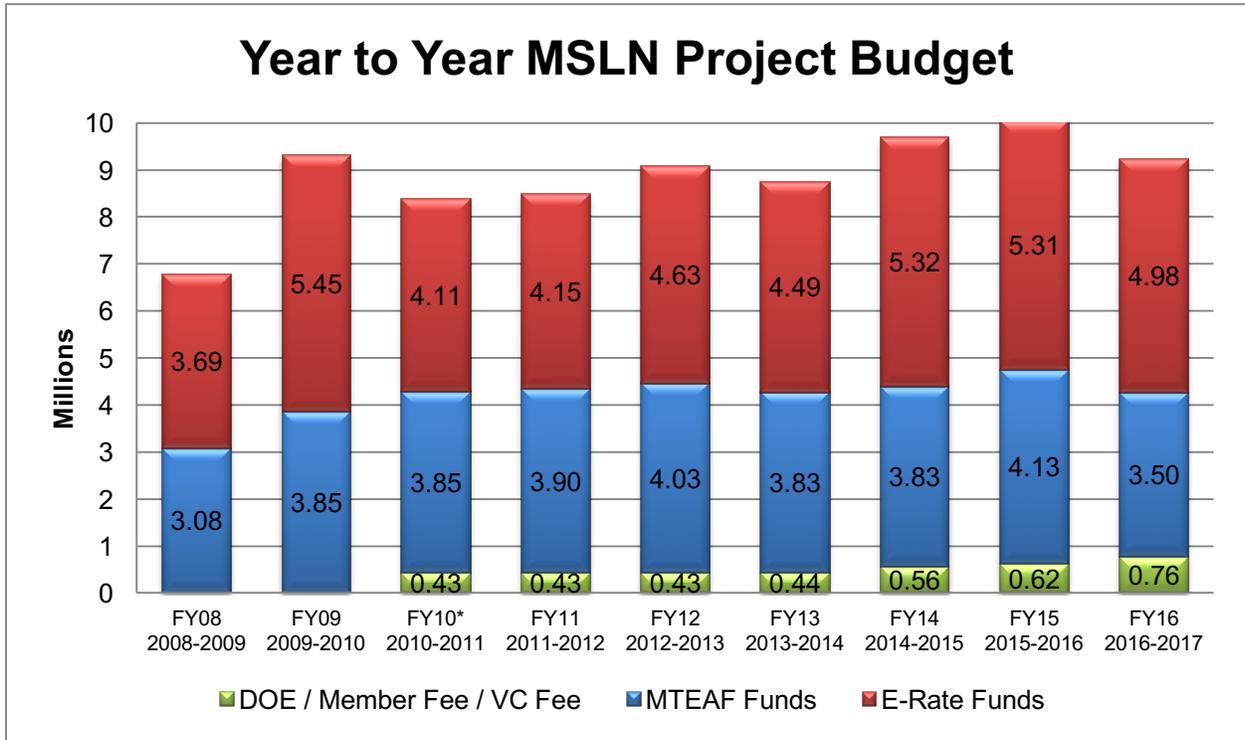
⁸ Adjusted down from requested amount of \$4.136 M due to projected lack of MTEAF funding

⁹ Includes \$300,000 in one-time costs associated with the new Transport Services contracts

¹⁰ Total cost prior to expected E-Rate reimbursement: 2016-2017 - \$7,113,460

Appendix B

MSLN Project Budgets - Funding Years 2008 – 2016



*Networkmaine established in FY 10

Appendix C

Networkmaine Council Members

- Maine State Library – Jamie Ritter, State Librarian
- Maine Dept. of Education – Mike Muir, Policy Director - Teaching Through Technology Team
- Maine Office of Information Technology – Appointed by the Chief Information Officer
- University of Maine System – Dick Thompson, Chief Information Officer
- Library – Anne Davis, Gardiner Public Library
- Library – George, Portland Public Library
- School – Will Backman*, AOS 92
- School – Crystal Priest, RSU 80 / MSAD 4
- Ex-officio – Jeff Letourneau, Executive Director, Networkmaine (non-voting)

*Chairman