

MSLN Annual Report

March 28

2019

Report from the Maine State Library and the Maine
Department of Education to the Maine Public Utilities
Commission for Funding Year 19 (July 1, 2019 through
June 30, 2020)

Maine School
and Library
Network

Table of Contents

Introduction	3
Activity Report	3
Summary	4
Recommendations for Funding Year 2019-2020	5
I. Continued Funding for Services	5
A. Transport Services	5
B. Internet Access Services	6
C. CIPA Compliant Content Filtering	6
D. Electronic Content and E-Discovery Solution	7
E. Technical Services	8
F. Operational Services	8
II. Administrative Services	9
A. Fund Administrator	9
B. E-Rate Support	9
C. Contract Management	10
D. Invoicing	10
E. Budgeting and Financial Management	10
Appendix A	11
Comparison of MTEAF Funding: Funding Years 2012 - 2019	11
Appendix B	12
MSLN Project Budgets - Funding Years 2010 – 2019	12
Appendix C	13
Networkmaine Council Members	13

Introduction

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 Education 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 and MSL along with the State of Maine's Office of Information Technology and the University of Maine System in 2009 to support participating Maine schools and libraries efficiently. This effort is known as the Maine School and Library Network (MSLN).

Networkmaine operates through a coordinating council that is comprised of representatives from each of the collaborating organizations as well as 2 representatives from each community. The Networkmaine Council sets the outcomes, delivery strategies, annual budget, and approves the annual reports and funding requests. It also defines its funding priorities, procurement strategies and sets any fees that are assessed to consortium members.

Schools, school districts, and libraries voluntarily elect to participate in the Networkmaine consortium by signing participation agreements and letters of agency allowing the consortium to contract for services and file for E-Rate subsidies on their behalf. Employees of the University of Maine System carry out the day-to-day functions of Networkmaine. Networkmaine's primary focus is the operation of Maine's research and education network with one of its most visible and important roles being ensuring that Maine's K12 schools and libraries have access to Internet connectivity through the MSLN project.

The Executive Director of Networkmaine was tasked by the Networkmaine Council with submitting this Annual Report for FY 2019-2020 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's and MSL's request for funding from the Maine Telecommunications Educational Access Fund (MTEAF).

Activity Report

In October of 2017 Networkmaine released a Request for Proposals (RFP) for data transport services on behalf of Maine's K12 schools, public libraries and the University of Maine System. In February of 2018 contracts were signed with eight (8) vendors¹ to provide a total of seven hundred ninety-eight (798) data transport circuits serving nine hundred and five (905) K12 schools and libraries that participate in MSLN starting on July 1, 2018. This past year's focus has been on implementing the changes resulting from the new data transport contracts.

The newly executed contracts resulted in one hundred seventy-seven (177) schools and libraries changing transport service providers. Over three hundred (300) schools and libraries received bandwidth upgrades and nine (9) new schools and libraries joined the MSLN project. It was particularly exciting to receive a bid to provide 100 Mbps connections to both Ashley Bryan School and Islesford Library located on Little Cranberry Island from Axiom Technologies. The best offer ever received for these two sites has been for 5 Mbps connections. However, the island now has the infrastructure required to support robust, low-latency, high-speed broadband.

¹ Consolidated Communications, Spectrum, Maine Fiber Company, First Light, Lincolnville Communications, UniTel, Axiom, and OTELCO

The town of Cranberry Isles with the help of the Island Institute recently received a USDA Community Connect Program grant to construct a fiber-optic based network on three of the five islands that make up the municipality². Axiom Technology was hired to construct and operate the new network.

Summary

Reliable, fast, low-latency, and symmetric network connectivity is an absolute necessity for Maine's schools and libraries. It is what enables everything from the most traditional of services and functions to the most modern and forward thinking to these institutions. The Networkmaine Council has spent countless hours working to ensure that Maine's K12 schools and public libraries have this essential need met through the MSLN project. The MTEAF was created by the Maine Legislature 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. This year's MTEAF funding request of \$3.9M, in combination with funding from the MDOE (\$445K), and anticipated Federal E-Rate funding (\$3.7M) will contribute to the delivery of the essential services described later in this report.

FY18-19 has been a transitional year for the MSLN project with most attention focused on addressing the deferred replacement of aging network equipment and installing new transport services for hundreds of schools and libraries. Despite the costs associated with these efforts the expected overall cost of the MSLN project for FY19-20 is essentially the same (\$8.0M) as it was back in 2010 (\$8.4M).

² (2018, March 28). *Cranberry Isles wins \$1.3 million for internet upgrade*. Retrieved from <http://www.islandinstitute.org/working-waterfront/cranberry-isles-wins-13-million-internet-upgrade>

Recommendations for Funding Year 2019-2020

The MDOE and MSL are confident that the plans and adjustments they have made for FY 2019-2020 will position the MSLN project to meet the connectivity needs of Maine's K12 schools and public libraries. Therefore, for Funding Year 2019-2020 (July 1, 2019 – June 30, 2020), the MSL and MDOE respectfully submit the following recommendations for funding to the Commission for its consideration.

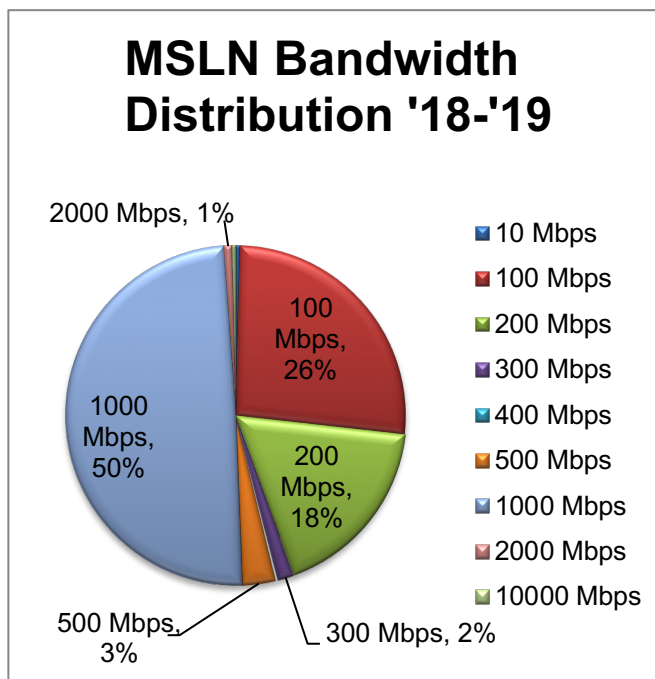
I. Continued Funding for Services

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

In October of 2017 Networkmaine released an RFP for Transport Services starting July 1, 2018 which resulted in awards to eight (8) transport providers. This funding request is for the second year of the resulting contracts. The new contracts provide for much higher transport bandwidth at a lower overall cost than what Networkmaine incurred with the previous contracts. The total expenditure on Transport Services, both MTEAF and E-Rate funds, is expected to be \$5.5M for FY19-20.

This Transport Services funding request for FY19-20 is \$67,600 higher than what was requested for FY18-19 rather than being lower as originally anticipated and described in last year's report. The overall cost of transport services will be lower in FY 19-20 (\$5.5M) than FY 18-19 (\$6.1M) as FY18-19 costs included one-time installations charges related to the new contracts.



However, Networkmaine has yet to receive E-Rate funding commitments for the majority of the FY18-19 funding requests submitted to USAC back in March 2018. Without these commitments it is difficult to know what E-Rate discount percentage to expect for FY-19-20. As such a very conservative projection is being used for the average E-Rate program discount percentage (67%) in this year's request in comparison to last year (71%).

Anticipated impact on MTEAF is \$1,836,600

B. Internet Access Services

Networkmaine currently contracts for Internet access from three (3) separate providers in three (3) different cities; Cogent Communications in Cambridge, MA, Hurricane Electric in Portland, ME and FirstLight in Orono, Maine. These Internet connections are augmented with direct connections to Internet2, the national Research and Education Network, and to major content providers through Internet Exchange Points. The MSLN project benefits from the decreasing unit cost of Internet Access Service, Networkmaine's increasing use of settlement-free peering with major content providers, and Networkmaine's on-net Content Delivery Network (CDN) caches.

In the past year Networkmaine joined the Massachusetts Internet Exchange (Mass-IX) and has established a direct peering connection with Microsoft through the exchange. Content from any of Microsoft's cloud-based services destined to MSLN participants now prefers to travel over this direct connection rather than over the Internet connections. Direct peering connections to additional major content providers are planned for the coming year.

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 Internet exchange points and CDN caches.

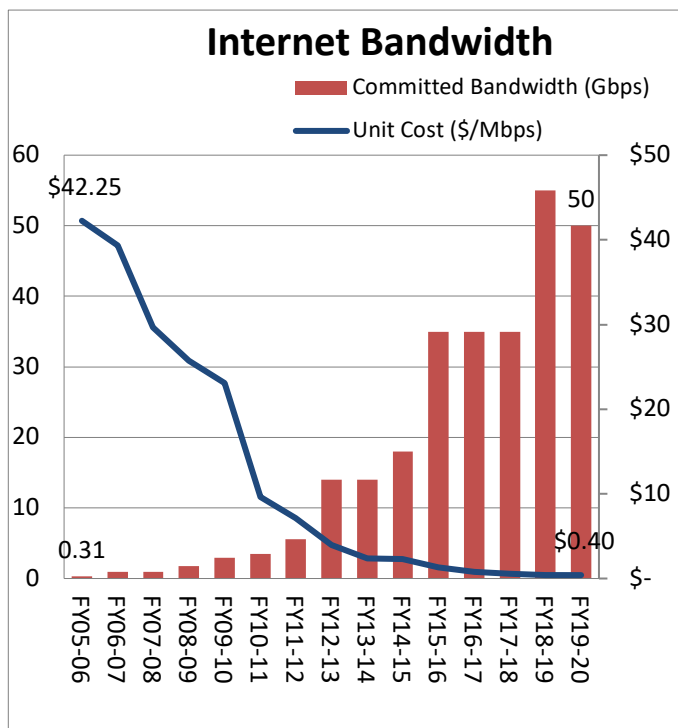
Networkmaine is using settlement-free peering to help manage the growth in Internet Access Services needed to support the MSLN project. Despite an annual average growth of 30% in bandwidth consumption by the MSLN project, Networkmaine has been able to more than offset that growth with these other types of connections.

The MSL and the MDOE request that MTEAF funds be made available for acquiring Internet Access Service for FY 2019-2020

Anticipated impact on MTEAF is \$67,500

C. CIPA Compliant Content Filtering

The MTEAF currently supports the full cost of providing a cloud-based, locally managed content filtering solution that helps meet the requirements of the federal Children's Internet Protection 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 eligible services, solutions for meeting the requirement are not eligible for E-Rate funding.



Networkmaine has contracted for a cloud-based solution from Cisco to provide content filtering for the schools and libraries. Cisco Umbrella not only provides content filtering it also helps protect the schools and libraries from known malware and phishing sites. For the FY 2019-2020 funding year two new features will be available to MSLN participants. The first is integration with local Active Directory environments allowing MSLN participants to apply filtering policies to individual end-user accounts rather than to IP addresses. The second is support for content filtering on devices when they are not at the school or library. With this new roaming feature, portable devices, including Chromebooks, that are brought to students' homes will be able to have the same filtering policies that are applied when they are within the school building.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of content filtering for FY 2019-2020.

Anticipated impact on MTEAF is \$156,000

D. Electronic Content and E-Discovery Solution

The MSL and the MDOE recommend the continued subscriptions of electronic content and an E-Discovery solution to provide statewide access for citizens as through the Digital Maine Library, permitted by 35-A M.R.S.A. § 7104-B.

Digital Maine Library

The Digital Maine Library provides all library types and every Maine resident access to online content and resources that include a collection of full text articles and abstracts from magazines, newspapers, journals and reference books. It also provides students, business people, public library patrons, and higher education students and educators the ability to use online learning tools.

Funding for the Digital Maine Library content comes from a variety of sources. MTEAF provides funding on behalf of the public libraries and K12 schools. Additional funding is provided by the Maine State Library (state general fund and LSTA federal funds), the University of Maine System, Bates, Bowdoin and Colby colleges. The paid content included in this online resource is not available through search services like Google or freely available on the Internet.



New Content

Last year's RFP process provided savings that enabled the addition of new and requested online content. This includes *Pronunciator*, an online language learning tool, offering self-paced language learning for 98 languages and ESL for 50 non-English languages; National Geographic Kids, that includes all magazines from 2009 to the present and books, images and videos; the Chilton Library, a collection of automotive maintenance repair manuals and technical information; and MyHeritage-Library Edition, a collection of genealogy databases with access to billions of historical documents, millions of historical

photos and resources that span the last 5 centuries. The Digital Maine Library contains a combination of over 100 paid and free resources easily accessed from anywhere in Maine via geolocation/authentication.

E-Discovery

A product called *EBSCO Discovery Service*™ (EDS) is a “single search” solution used for the Digital Maine Library content. The system indexes metadata and content from the disparate Digital Maine Library resources, normalizes the data and provides a simple interface for users. EDS provides a fast, streamlined, user-centric approach to searching the Digital Maine Library databases and resources with the MaineCat statewide catalog. 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 a simple interface and results page for users.

The MSL and the MDOE recommend continued funding for the Digital Maine Library content databases, online resources and the *EBSCO Discovery Service*™ single search product for FY 2019-2020.

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 Community Anchor Program (CAP) fees, IPv4 address space, volumetric distributed denial of service (DDoS) protections, hardware and software maintenance for core networking equipment, and core network equipment upgrades and replacements. In this request, funding for both site and core network equipment is requested to address the deferred replacement of this equipment over the past few years.

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. In FY18-19, approximately 27% of MSLN participants connected directly to MaineREN either over leased dark fiber or via regional Transport Providers that deliver MSLN participants to the nearest MaineREN point of presence. Participating schools and libraries also share multiple 10 Gbps optical transports with other MaineREN participants to connect to both Internet2 and contracted Internet Service Providers out of Cambridge, MA.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of Technical Services for FY 2019-2020.

Anticipated impact on MTEAF is \$585,000

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

In addition, Networkmaine provides schools and libraries with network design consultation, website hosting, 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 2019-2020.

Anticipated impact on MTEAF is \$538,000

II. Administrative Services

The MDOE funds the administrative costs of MSLN through a Cooperative Agreement with the University of Maine System. 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 \$ 34,300

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 K12 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.

As in the past, Networkmaine is leveraging its web-based consortium enrollment site³ 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

³ <https://enroll.networkmaine.net>

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 contracts for transport services with eight services providers; Consolidated Communications, FirstLight, Spectrum, Maine Fiber Company, Lincolnville Communications, UniTel, Axiom Technologies and OTELCO and contracts for Internet Access Services with Cogent Communications, FirstLight and Hurricane Electric. 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 these contracts, its Strategic Procurement Office will continue to ensure that the contracts are adhered to and will maintain all required documentation related to the contracts 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 2012 - 2019

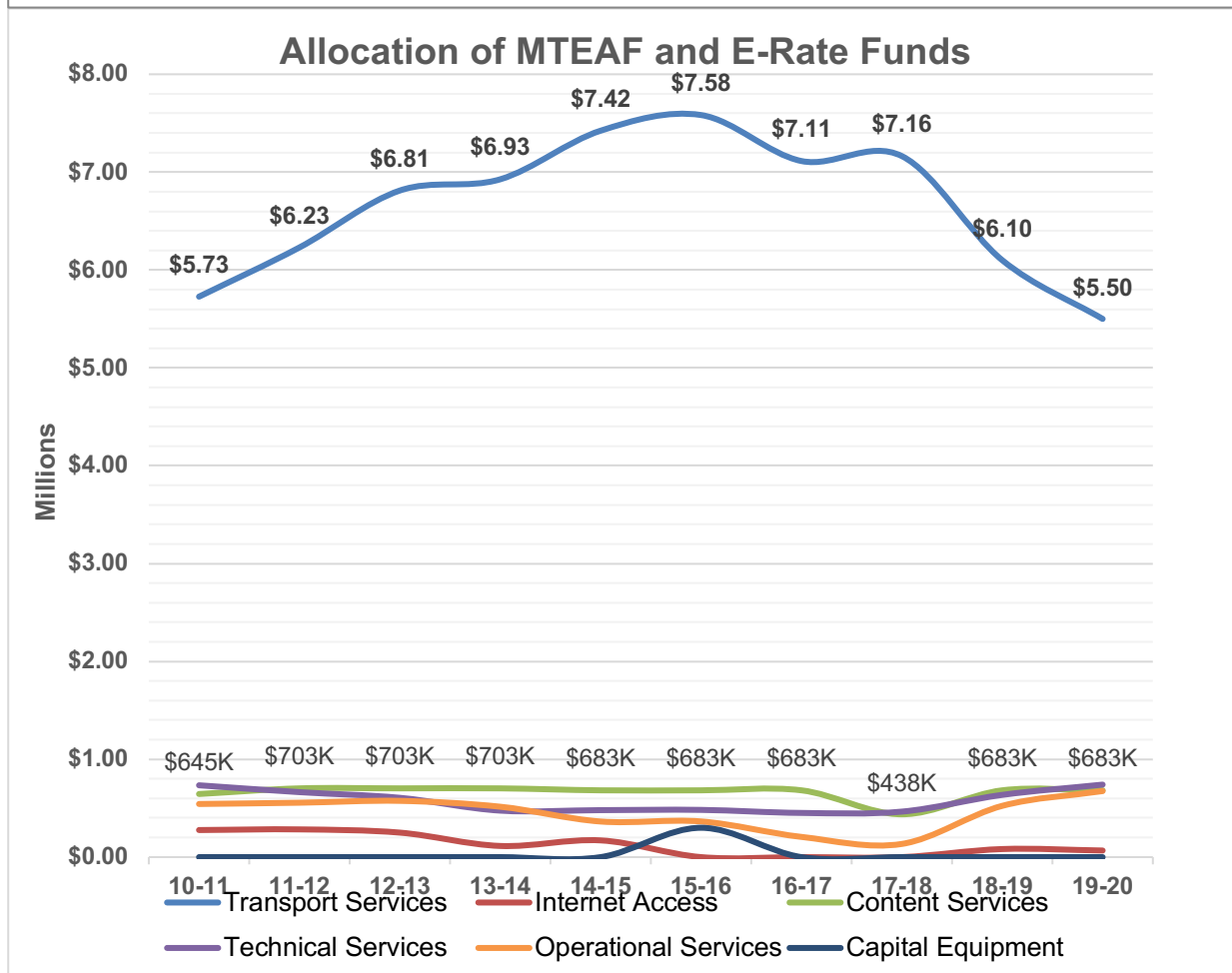
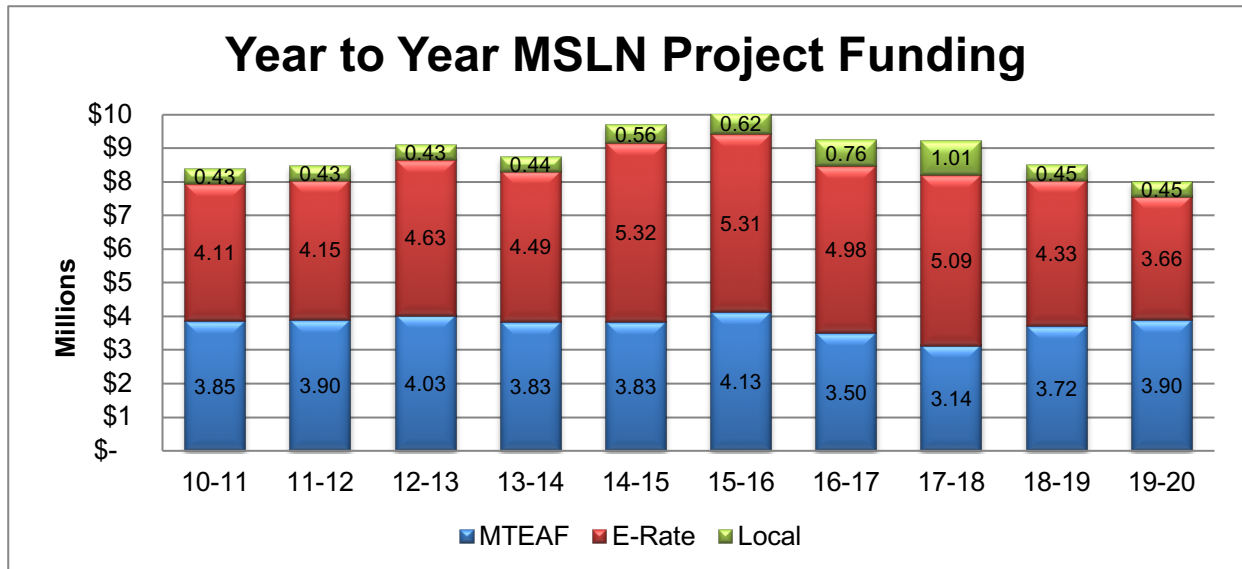
Services	2012-2013 Actual	2013-2014 Actual	2014-2015 Actual	2015-2016 Actual ⁴	2016-2017 Actual	2017-2018 Actual	2018-2019 Budgeted	2019-2020 Requested
Transport Service ⁵	\$2,013,394	\$2,094,252	\$2,167,813	\$2,356,357	\$1,956,533	\$2,029,231	\$1,769,000	\$1,836,600
Internet Service	\$ 78,675	\$ 37,431	\$ 44,020	\$ 0	\$ 0	\$ 0	\$ 82,500	\$ 67,500
CIPA Compliant Content Filter	\$ 87,552	\$ 87,552	\$ 87,552	\$ 85,922	\$ 100,658	\$ 100,658	\$ 101,000	\$ 156,000
Electronic Content & E-Discovery	\$ 702,599	\$ 657,116	\$ 682,600	\$ 580,000	\$ 682,600	\$ 500,000	\$ 682,600	\$ 682,600
Technical Services	\$ 515,508	\$ 349,994	\$ 404,470	\$ 523,769	\$ 309,927	\$ 339,658	\$ 535,000	\$ 585,000
MTEAF Fund Administrator	\$ 26,400	\$ 25,080	\$ 25,100	\$ 24,660	\$ 25,100	\$ 25,100	\$ 25,100	\$ 34,300
Operational Services	\$ 539,197	\$ 557,495	\$ 415,342	\$ 461,925	\$ 425,094	\$ 144,678	\$ 524,000	\$ 538,000
Totals:	\$3,963,325	\$3,808,920	\$3,826,897	\$4,032,633	\$3,499,912	\$3,139,325	\$3,719,200	\$3,900,000

⁴ Includes \$300,000 in one-time costs associated with the new Transport Services contracts

⁵ Total cost prior to expected E-Rate reimbursement: 2019-2020 - \$5,500,000

Appendix B

MSLN Project Budgets - Funding Years 2010 – 2019



*Networkmaine established in FY 10-11

Appendix C

Networkmaine Council Members

- Maine State Library – James Ritter, State Librarian
- Maine Dept. of Education – Beth Lambert, Coord. of Sec. Ed. & Int. Instruction
- Maine Office of Information Technology – Louise Paradis
- University of Maine System – David Demers, Chief Information Officer
- Library – Anne Davis, Gardiner Public Library
- Library – Open
- K12 School – Will Backman*, Waterville, Winslow, Vassalboro Public Schools
- K12 School – Crystal Priest, Cornville Regional Charter School
- Ex-officio – Jeff Letourneau, Executive Director, Networkmaine (non-voting)

*Chairman