

MSLN Annual Report

March 22

2022

Report from the Maine State Library and the Maine
Department of Education to the Maine Public Utilities
Commission for Funding Year 2022-2023 (July 1, 2022
through June 30, 2023)

Maine School
and Library
Network

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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 in 2009 by the MDOE and MSL along with the State of Maine's Office of Information Technology and the University of Maine System (UMS) 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 two (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 public 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 2022-2023 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

The theme of this past year has been one of increased connectivity. Much of the summer and fall has been focused on turning up increased bandwidth to the schools and libraries enabled by the improved pricing available through the new contracts with five transport providers. All but fourteen (14) schools and libraries are now connected at speeds ranging from one to ten gigabits per second (1 – 10 Gbps). In addition, both the MDOE and MSL have been working on increasing the availability of Internet access for students when they are not at school and for Maine's citizens that may not otherwise have access to high-speed Internet service.

projectConnect

This past year Networkmaine and the Maine State Library partnered with the Information Technology Disaster Resource Center (ITDRC¹), and AT&T to boost connectivity at seventy-one (71) Maine locations, expanding and upgrading Wi-Fi technology at libraries, parks, schools, community centers, town halls, and other locations across the state. Forty-nine (49) of these

¹ <https://www.itdrc.org/>



Figure 1: ITDRC volunteers at Ivan O. Davis Library in Liberty

locations participate in the Maine School and Library Network with many of them being public libraries in rural communities along with some K12 schools.

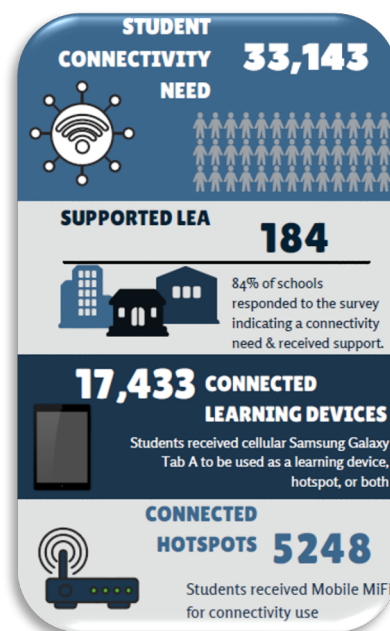
Networkmaine is providing Internet access, network management systems and ongoing technical support for the schools and libraries participating in this project. ITDRC volunteers have made their way across Maine installing new equipment, funded in part by the Maine State Library utilizing LSTA ARPA funds² from the Institute of Museum and Library Services, to boost Wi-Fi signal and extend service into parking lots and surrounding areas.

ITDRC is a volunteer-driven non-profit that has deployed more than 850 Wi-Fi hotspots as part of its COVID-19 operation alone, providing free internet access points, installation, and other IT support for COVID-19 testing sites, emergency operations centers, schools, libraries, community centers, non-profits, and other facilities for the benefit of communities. This support is critical both to address standard IT disaster response needs as well as the significant impact of COVID-19 on communities across the country. With the addition of ITDRC's projectConnect initiative³ locations in Maine, over two hundred and seventy (270) Wi-Fi hotspots hosted by Networkmaine members⁴ have enabled children to participate in online curricula and complete classroom assignments, allowed community members to obtain unemployment and reemployment resources, provided access to digital banking, connected citizens to telemedicine resources, enabled voter registration and census taking, and much more. This internet connectivity additionally helps to bridge the digital divide, especially in rural areas and underserved neighborhoods which often lack broadband options.

#ConnectKidsNow!

As detailed in last year's report, #ConnectKidsNow! is a combined effort between the Maine Department of Education, the Department of Administrative and Financial Services, ConnectMaine, and business and philanthropic entities, that has secured internet access and devices to facilitate at home learning for 100 percent of Maine school children for whom there was a reported need.

In school year 2021-2022 the Maine Department of Education secured contracts with all three cellular vendors so Maine school districts can continue to purchase cellular service and learning devices using the Federal Emergency Connectivity Fund. This will allow districts to purchase what's needed to continue to support remote learning for students and educators who lack connectivity.



² LSTA ARPA State Grants; CFDA Number: 45.310; \$2,294,177.00

³ <https://go.itdrc.org/projectconnect>

⁴ <https://networkmaine.net/wifi>

Additionally, as of the writing of this report, Maine schools and libraries have been awarded over \$6.3 million from the FCC's Emergency Connectivity Fund (ECF) created by Congress as part of the American Rescue Plan Act of 2021. The ECF helps schools and libraries provide the tools and services their communities need for remote learning during the COVID-19 emergency period by covering reasonable costs of laptop and tablet computers; Wi-Fi hotspots; modems; routers; and broadband connectivity purchases for off-campus use by students, school staff, and library patrons.

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 provided to and by these institutions to the most modern and innovative services. The Networkmaine Council and staff 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 roughly \$3.77M, 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.

The plans for FY 2022-2023 described in this report will continue to support the great work of Maine's K12 schools and public libraries.

Recommendations for Funding Year 2022-2023

The MDOE and MSL are confident that the plans and adjustments they have made for FY 2022-2023 will position the MSLN project to meet the connectivity needs of Maine's K12 schools and public libraries. Therefore, for Funding Year 2022-2023 (July 1, 2022 – June 30, 2023), 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

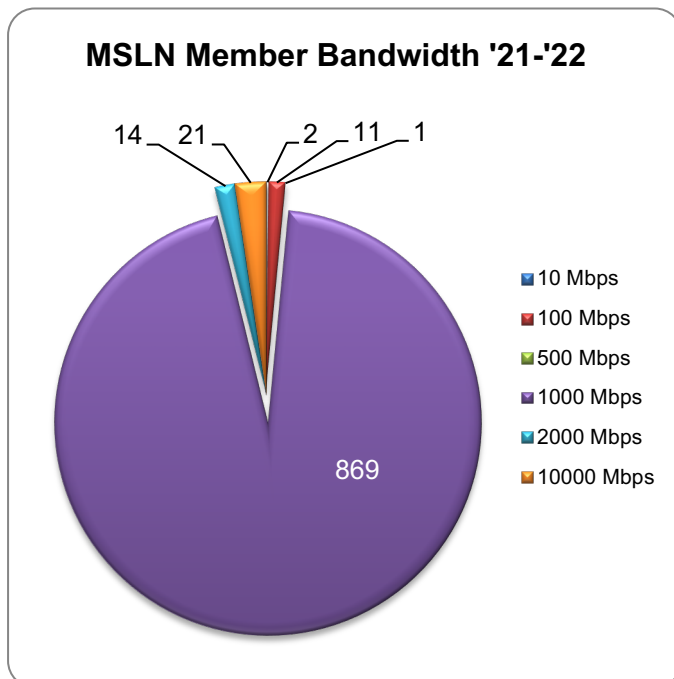
In October of 2020, Networkmaine released an RFP for Transport Services starting July 1, 2021, which resulted in awards to five (5) transport providers. This funding request is for the second year of the resulting contracts. The total expenditure on Transport Services, both MTEAF and E-Rate funds, is expected to be \$5.35M for FY22-23.

This Transport Services funding request for FY22-23 is \$394,000 less than the current year in part due to one-time costs associated with the installation of new services at roughly four hundred (400)

schools and libraries this year. This funding request assumes that the Federal E-Rate program will pay an average of 71% for all approved schools and libraries.

The total expenditure on Transport Services, both MTEAF and E-Rate funds, will be about \$260K (\$5.61M -> \$5.35M) lower in the coming year than it was on July 1, 2021. For FY21-22 we set a minimum connectivity goal for the MSLN Project of 1.0 Gbps and have been successful in achieving this goal for 98% of all MSLN participants. We will continue to work with our providers to bring full 1.0 Gbps connectivity to our remaining fourteen (14) members.

The MSL and the MDOE request that MTEAF funds be made available for acquiring Transport Service for FY 2022-2023



Requested MTEAF Funds: \$1,658,000

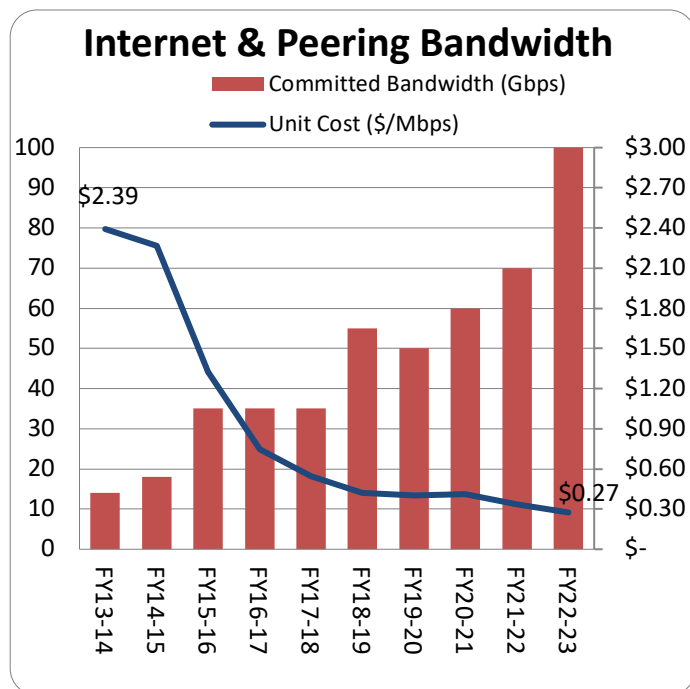
B. Internet Access Services

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.

In the coming year, Networkmaine will be increasing its peering capacity by 30 Gbps at the Massachusetts Internet Exchange (Mass-IX). Content from a variety of content providers destined to MSLN participants now prefers to travel over this direct connection rather than over the Internet providing lower latency and greater resiliency.

The use of settlement-free peering and on-net Content Delivery Network (CDN) caches slows the rate of growth in Internet Access by redirecting traffic from content providers to multiple Internet exchange points and CDN caches. 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 2022-2023.



Requested MTEAF Funds: \$60,000

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 provides more than just content filtering, it also helps protect the schools and libraries from known malware and phishing sites.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of content filtering for FY 2022-2023.

Requested MTEAF Funds: \$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.



Popular Content

The K-5 elementary school students and teachers are enjoying access to National Geographic Kids the World Book Encyclopedia series and Middle and High School students and their teachers are finding the In Context: Middle and High School reference content and great research tools. Expanded access to national and global newspapers as well as access to premium business journal articles and resources for entrepreneurs assists business owners. Career Transitions, a resource for job seekers helps people improve their chances of finding sustainable employment. 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 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. A \$20,000 reduction in the cost of this service was realized through the negotiations of a new contract.

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 2022-2023.

Requested MTEAF Funds: \$662,600

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 typically 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.

This year's request represents a \$26,000 increase over what was requested for FY21-22. This additional funding will be used for both CPE and core network equipment necessary to support the increasing numbers of schools and libraries requiring more than 1.0 Gbps capacity on their MSLN provided connection. Currently there are thirty-five (35) schools and libraries connected at either 2 Gbps or 10 Gbps. That number is expected to almost double in the FY22-23 funding year.

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 to aggregating the traffic to/from the K12 schools and public libraries between MainerEN's optical nodes. In FY21-22, 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 2022-2023.

Requested MTEAF Funds: \$586,000

F. Operational Services

Networkmaine provides the day-to-day operation and member support for MSLN. These Operational Services involve Network Operations Center and on-site 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
- On-Line Security Services

In addition, Networkmaine provides schools and libraries with network design consultation, website hosting, Domain Name Services, DHCP services, and IP address management.

Requested MTEAF Funds: \$615,960

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 \$35,900

B. Financial and Contract Management

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 site⁵ 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

⁵ <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.

Contract Management

Networkmaine successfully negotiated contracts for transport services with five service providers for the next three years: Consolidated Communications, FirstLight, Lincolnville Communications, UniTel, 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.

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.

Budget 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.

Requested MTEAF Funds: \$ 0

Appendix A

Comparison of MTEAF Funding: Funding Years 2017/2018 – 2022/2023

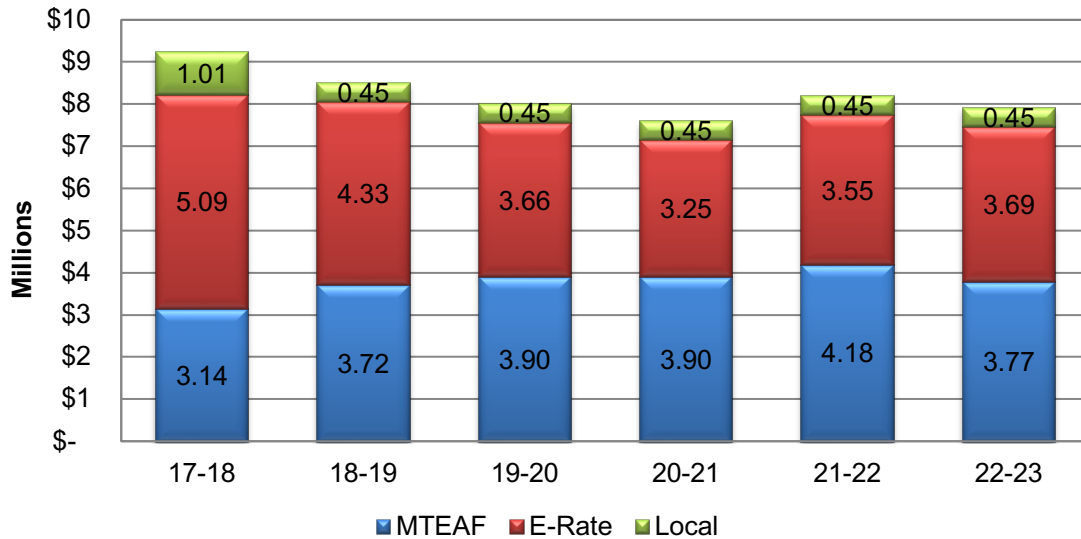
Services	2017-2018 Actual	2018-2019 Actual	2019-2020 Actual	2020-2021 Actual	2021-2022 Amended	2022-2023 Requested
Transport Service ⁶	\$2,029,231	\$2,178,461	\$2,212,547	\$1,783,730	\$2,051,880	\$1,658,000
Internet Service	\$ 0	\$ 77,500	\$ 67,500	\$ 64,383	\$ 56,300	\$ 60,000
CIPA Compliant Content Filter	\$ 100,658	\$ 155,520	\$ 155,520	\$ 155,520	\$ 156,000	\$ 156,000
Electronic Content & E-Discovery	\$ 500,000	\$ 682,600	\$ 662,600	\$ 662,600	\$ 662,600	\$ 662,600
Technical Services	\$ 339,658	\$ 252,716	\$ 154,821	\$ 444,682	\$ 560,000	\$ 586,000
MTEAF Fund Administrator	\$ 25,100	\$ 25,100	\$ 34,300	\$ 34,900	\$ 35,900	\$ 35,900
Operational Services	\$ 144,678	\$ 346,867	\$ 412,183	\$ 519,100	\$ 558,620	\$ 615,960
Bendable Maine	N/A	N/A	N/A	N/A	\$ 100,000	N/A
Totals:	\$3,139,325	\$3,718,764	\$3,699,471	\$3,664,915	\$4,181,300	\$3,774,460

⁶ Total cost prior to expected E-Rate reimbursement: 2022-2023 - \$5,350,000

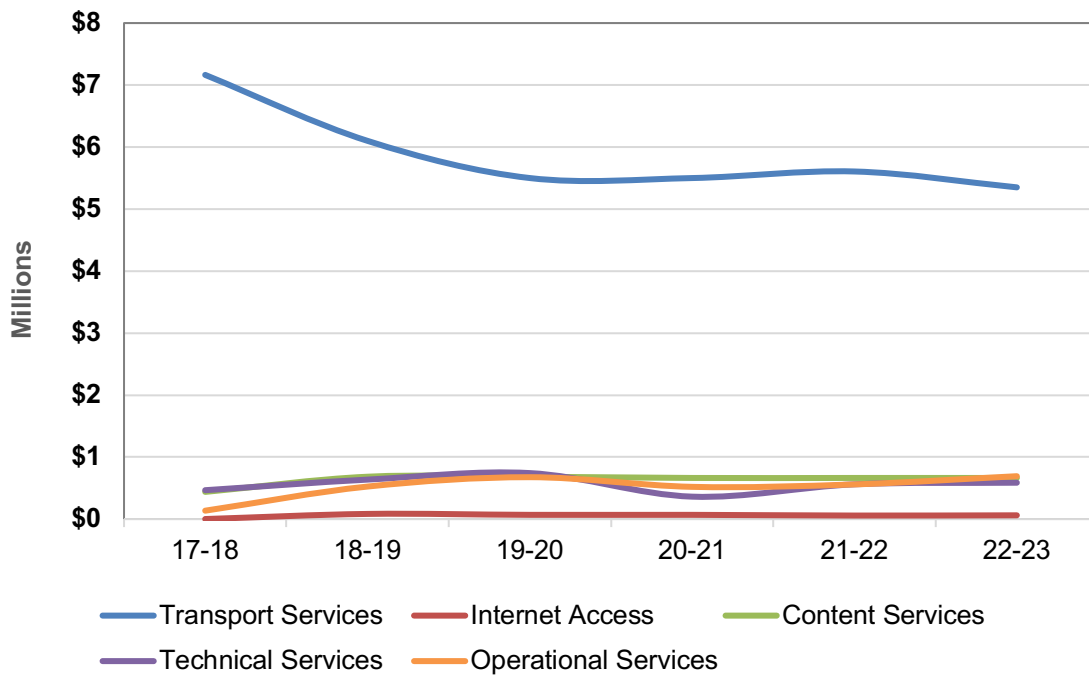
Appendix B

MSLN Project Budgets - Funding Years 2017/2018 – 2022/2023

Year to Year MSLN Project Funding



Allocation of MTEAF and E-Rate Funds



Appendix C

Networkmaine Council Members

- Maine State Library – James Ritter*, State Librarian
- Maine Dept. of Education – Beth Lambert, Dir of Innovative Teaching & Learning
- Maine Office of Information Technology – Fred Brittain, CIO
- University of Maine System – David Demers, Chief Information Officer
- Library – Richard Fortin, Bailey Public Library
- Library – Michelle Conners, Kennebunk Free Library
- K12 School – Will Backman, Waterville, Winslow, and Vassalboro Public Schools
- K12 School – Dennis Crowe, Gorham School Department
- Ex-officio – Jeff Letourneau, Executive Director, Networkmaine (non-voting)

*Chairperson