MSLN Annual Report

February 24

2020

Report from the Maine State Library and the Maine Department of Education to the Maine Public Utilities Commission for Funding Year 2020 -2021 (July 1, 2020 through June 30, 2021)

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 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 2020-2021 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

Federal Funding Challenge

Over the past year Networkmaine has been dealing with an unexpected delay and potential loss of funding from the federal E-Rate program. For Funding Year 2018-2019 $1,769,000 of MTEAF funds was requested for *Transport Services* based on an anticipated reimbursement from the Federal E-Rate program totaling $4,331,000. On January 16, 2019 Networkmaine received notice from the Universal Service Administrative Company (USAC) that administers the E-Rate program that one of its E-Rate applications filed for Funding Year 2018-2019 was denied. The denied application included a reimbursement request of $941,715.12 for data transport services from one (1) of the seven (7) companies that provide *Transport Services* for the MSLN project. The data transport contract has a three-year term so the funding denial decision could impact FY 19-20 and FY 20-21 as well.

Networkmaine filed an appeal with USAC within days of receiving notice of the funding denial to contest the decision with hopes that the appeal would have a positive outcome prior to the end of the funding year. On April 3, 2019 USAC notified Networkmaine it would not overturn its denial

decision. At issue is USAC's application of the "cardinal change" doctrine[1] to a correction of a clerical error in Networkmaine's original RFP.

Networkmaine filed a petition[2] with the FCC on April 26, 2019 requesting that they overturn USAC's decision. Since filing the petition with the FCC, Networkmaine staff has had a phone conference with FCC staff concerning the petition and subsequently filed supplemental information[3] on June 12, 2019 for the FCC to consider.

With no follow up or decision by the FCC in over six (6) months, given that the FCC does not hold itself to any time limits for ruling on petitions, and learning that the FCC Wireline Competition Bureau has a backlog of over two thousand (2,000) petitions, Networkmaine Council approved engaging Broadband Legal Strategies[4] (BLS) to represent, advise, and assist Networkmaine with bringing the FCC petition to a positive and timely resolution.

BLS met with FCC staff in December 2019[5] concerning specifics of Networkmaine's petition as well as others that have had USAC deny funding requests due to minor clerical corrections made during an RFP process. It is hoped that a public notice concerning E-Rate petitions includes a positive ruling in the next few months.

Mitigating the Impact

While Networkmaine filed a petition with the FCC on April 26, 2019 requesting that they overturn USAC's decision, the petition remains open and therefore USAC's denial still stands. As the denial relates to a 3-year contract it has impacted FY19-20 and will potentially impact funding year 2020-2021.

In order to reduce the impact of this potential loss of E-Rate reimbursement Networkmaine immediately stopped activities and froze spending in the *Technical Services* and *Operational Services* categories upon receiving the initial funding denial from USAC in January 2019. The replacement of aging equipment at the schools and libraries and at the core of the network was stopped, on-site support was reduced to minimize travel expenses, and some staffing actions were delayed. Networkmaine's realized expenses for Funding Year 2018-2019 in these two categories fell well below the levels listed in the annual budget request. Nonetheless the project closed Funding Year 2018-2019 with deficit of over $680,000. The Department of Education is amending its current Cooperative Agreement with UMS to cover the shortfall. When, or if, a positive outcome on the FCC petition is received, these funds will be returned. For now, the University of Maine System is covering the deficit.

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[1] The FCC used the term "cardinal change" to provide guidance to applicants regarding when they would need to rebid a multi-year contract. Specifically, applicants must rebid a contract when the applicant wants to purchase services that are outside the scope of the existing contract. The Universal Service Administrative Company (USAC) has applied that discussion to changes to Requests for Proposals (RFPs), even though the FCC has itself not done so.
[2] https://www.fcc.gov/ecfs/filing/1042663339866
[3] https://www.fcc.gov/ecfs/filing/10612912630792
[4] http://www.broadbandlegal.com/p/intro.html#.XhdsthdKgvo
[5] https://www.fcc.gov/ecfs/filing/12160176023956

For FY19-20 $1,836,600 of MTEAF funds was requested for *Transport Services* based on an anticipated reimbursement from the Federal E-Rate program totaling $3.7M. At the time the annual report was submitted, it was anticipated that USAC would rule favorably on our appeal of their funding denial decision from Funding Year 2018-2019 (FY18-19) prior to FY19-20. That did not happen.

On November 7, 2019, Networkmaine received notice from USAC that they have denied FY19-20's funding for the same contract from FY18-19 based on their what we believe to be erroneous original findings. Networkmaine has appealed that decision and will be taking the necessary steps to include the denial of FY19-20 funding in our existing petition with the FCC. In the meantime, the Networkmaine Council has curtailed activities for FY19-20 in order to operate MSLN within the reduced funding available. The majority of the cost reduction will be achieved by deferring the replacement of aging network equipment. The budget request for Funding Year 2020-2021 included in this report is based on a worst-case scenario in which Networkmaine's petition with the FCC is not successful.

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. 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 $3.9M, in combination with funding from the MDOE ($445K) and anticipated Federal E-Rate funding ($3.25M), will contribute to the delivery of the essential services described later in this report.

While FY19-20 has been a difficult year for the MSLN project financially, Networkmaine has worked diligently to minimize the impact of these funding challenges on Maine's schools and libraries. Caribou students were still able to talk with and be inspired by astronaut, and Caribou alumna, Jessica Meir from the International Space Station[6] and Friend Memorial Public Library continued to creatively meet the needs of its patrons with its summertime Wi-Fi tent[7]. The plans for FY 2020-2021 described in this report will continue to support the great work of Maine's K12 schools and public libraries.

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[6] https://mainedoenews.net/2019/11/14/reaching-for-the-stars-starts-with-a-strong-ground-crew/
[7] https://bangordailynews.com/2019/08/21/news/hancock/at-this-maine-library-internet-service-is-available-in-a-tent-out-front

Recommendations for Funding Year 2020-2021

The MDOE and MSL are confident that the plans and adjustments they have made for FY 2020-2021 will position the MSLN project to meet the connectivity needs of Maine's K12 schools and public libraries. Therefore, for Funding Year 2020-2021 (July 1, 2020 – June 30, 2021), the MSL and MDOE respectfully submit the following recommendations for funding to the Commission for its consideration.

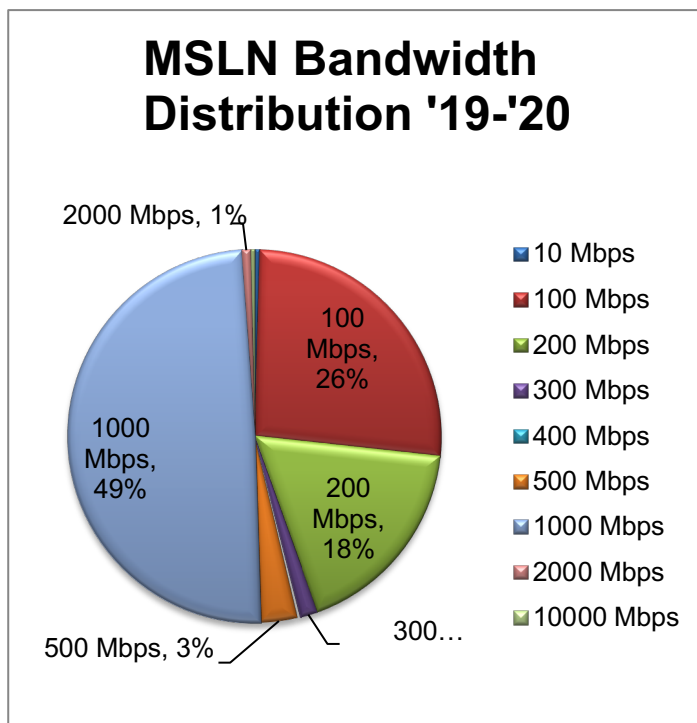## I. Continued Funding for Services

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 third year of the resulting contracts. The total expenditure on Transport Services, both MTEAF and E-Rate funds, is expected to be $5.5M for FY20-21.

This Transport Services funding request for FY 2020-2021 is substantially higher, roughly $400,000 higher, than what was requested for FY19-20. This increase is required due to the potentially reduced level of E-Rate funding pending a favorable ruling on the FCC petition described above.

If a favorable ruling is received prior to or during FY20-21 Networkmaine will inform PUC staff and review any adjustments to the budget that may be appropriate.

MSLN Bandwidth Distribution '19-'20

- 10 Mbps
- 100 Mbps
- 200 Mbps
- 300 Mbps
- 400 Mbps
- 500 Mbps
- 1000 Mbps
- 2000 Mbps
- 10000 Mbps

2000 Mbps, 1%
100 Mbps, 26%
1000 Mbps, 49%
200 Mbps, 18%
500 Mbps, 3%
300…

Anticipated impact on MTEAF is $2,254,900

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 past year, Networkmaine has established a direct peering connection with Google through the Massachusetts Internet Exchange (Mass-IX). Content from any of Google's services destined to MSLN participants now prefers to travel over this direct connection rather than over the Internet providing lower latency and resiliency. Between this new direct peering with Google and having their content caches on-net, roughly 7 Gbps (7,000 Mbps) of traffic no longer traverses Networkmaine's Internet connections. Additional direct peering with other major content providers is being considered for the coming year.

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.

Internet Bandwidth

- Committed Bandwidth (Gbps)
- Unit Cost ($/Mbps)

$42.25
0.31
50.00
$0.40

The MSL and the MDOE request that MTEAF funds be made available for acquiring Internet Access Service for FY 2020-2021
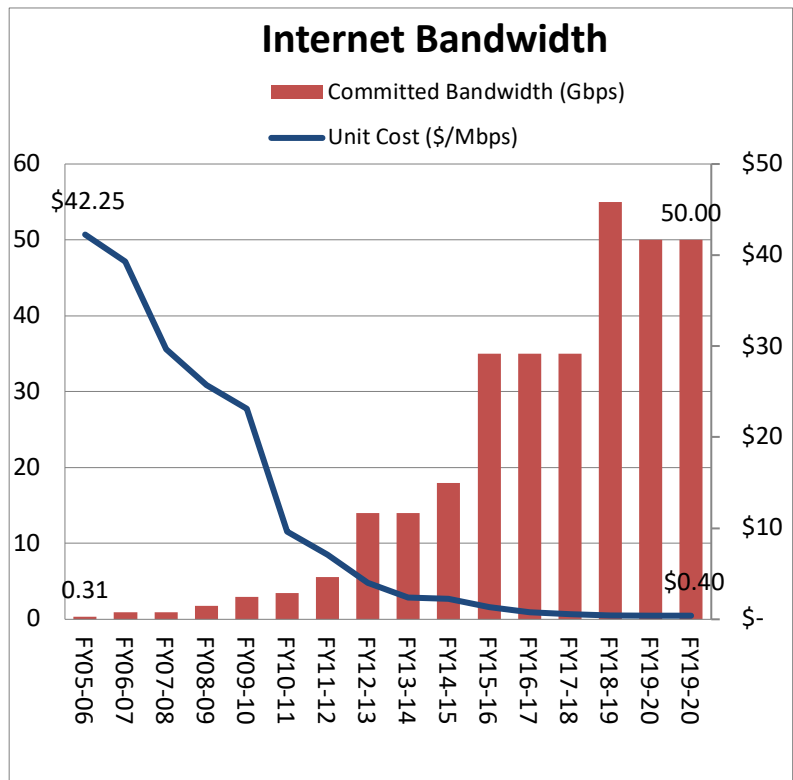
Anticipated impact on MTEAF is $67,500

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.

The MSL and the MDOE request that MTEAF funds be made available for the continued funding of content filtering for FY 2020-2021.

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.

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 2020-2021.

Anticipated impact on MTEAF is $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.

In this request, funding for both CPE and core network equipment is not being requested. The replacement and refresh of such equipment is being deferred given the uncertainty of the pending FCC petition. As deferring the replacement of aging equipment has been a tactic used in past years to deal with the previously shrinking of MTEAF revenue, the MSLN Project has CPE in use at schools and libraries that exceeds its expected useful life (5-7 years). However, it is expected that funding for the replacement of aging equipment will come from either a favorable FCC ruling or in the 2021-2022 Funding Year when new transport contracts are negotiated.

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 FY19-20, 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 2020-2021.

Anticipated impact on MTEAF is $205,000

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
- 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.

The MSL and the MDOE request that MTEAF funds be made available to contribute towards the costs to operate MSLN for FY 2020-2021.

Anticipated impact on MTEAF is $519,100

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 site[8] 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

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[8] https://enroll.networkmaine.net

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

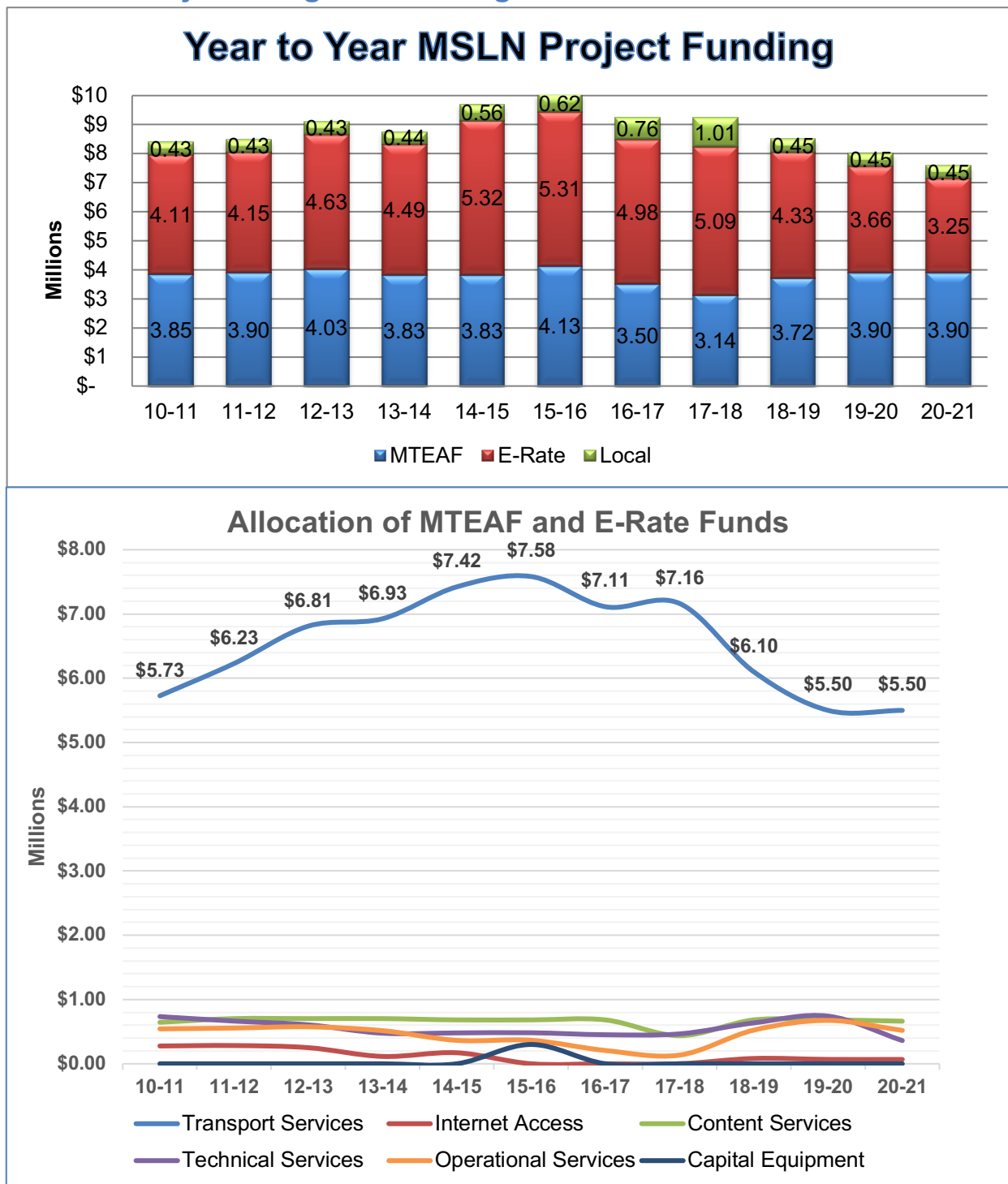### Comparison of MTEAF Funding: Funding Years 2014 - 2020

Services	2014-2015 Actual	2015-2016 Actual[9]	2016-2017 Actual	2017-2018 Actual	2018-2019 Actual	2019-2020 Revised	**2020-2021 Requested**
Transport Service[10]	$2,167,813	$2,356,357	$1,956,533	$2,029,231	$2,178,461	$2,254,900	$2,254,900
Internet Service	$ 44,020	$ 0	$ 0	$ 0	$ 77,500	$ 67,500	$ 67,500
CIPA Compliant Content Filter	$ 87,552	$ 85,922	$ 100,658	$ 100,658	$ 155,520	$ 156,000	$ 156,000
Electronic Content & E-Discovery	$ 682,600	$ 580,000	$ 682,600	$ 500,000	$ 682,600	$ 662,600	$ 662,600
Technical Services	$ 404,470	$ 523,769	$ 309,927	$ 339,658	$ 252,716	$ 205,000	$ 205,000
MTEAF Fund Administrator	$ 25,100	$ 24,660	$ 25,100	$ 25,100	$ 25,100	$ 34,300	$ 34,900
Operational Services	$ 415,342	$ 461,925	$ 425,094	$ 144,678	$ 346,867	$ 519,700	$ 519,100
Totals:	**$3,826,897**	**$4,032,633**	**$3,499,912**	**$3,139,325**	**$3,718,764**	**$3,900,000**	**$3,900,000**

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[9] Includes $300,000 in one-time costs associated with the new Transport Services contracts
[10] Total cost prior to expected E-Rate reimbursement: 2020-2021 - $5,500,000

Appendix B

MSLN Project Budgets - Funding Years 2010 – 2020

Year to Year MSLN Project Funding

Funding Year	MTEAF	E-Rate	Local
10-11	3.85	4.11	0.43
11-12	3.90	4.15	0.43
12-13	4.03	4.63	0.43
13-14	3.83	4.49	0.44
14-15	3.83	5.32	0.56
15-16	4.13	5.31	0.62
16-17	3.50	4.98	0.76
17-18	3.14	5.09	1.01
18-19	3.72	4.33	0.45
19-20	3.90	3.66	0.45
20-21	3.90	3.25	0.45

Allocation of MTEAF and E-Rate Funds

Transport Services values: $5.73, $6.23, $6.81, $6.93, $7.42, $7.58, $7.11, $7.16, $6.10, $5.50, $5.50

Legend: Transport Services, Internet Access, Content Services, Technical Services, Operational Services, Capital Equipment

*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 – Richard Fortin, Bailey Public 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