

COMMISSIONER:  
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**PERMANENT  
FUNDING FOR K-12  
SCHOOL AND  
PUBLIC LIBRARY  
TELECOMMUNICATIONS  
ACCESS**

**Report to the  
Legislature**

**As required by  
Minnesota  
Session Laws 2001,  
First Special Session,  
Chapter 3, Article 4,  
Section 4**

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**MINNESOTA DEPARTMENT OF CHILDREN, FAMILIES &  
LEARNING**

**PERMANENT FUNDING FOR K-12 SCHOOL AND PUBLIC  
LIBRARY TELECOMMUNICATIONS ACCESS**

**REPORT TO THE LEGISLATURE**

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## ESTIMATED COSTS OF PREPARING THIS REPORT

*Minnesota Statutes*, Chapter 3.197 requires that a report to the Legislature contain, at its beginning, the cost of preparing the report. No funding was appropriated for the completion of this report.

This report contains information which the Department of Children, Families & Learning already collects as part of its normal business functions. The cost information reported below does not include the cost of gathering and analyzing the data but rather is limited to the estimated cost of actually preparing this report document.

The following provides estimated costs incurred in the preparation of this report.

### 1. CFL Costs

A. Personnel Costs \$14,359.19

B. Information Gathering/Dissemination Cost \$575.00

Most printed materials for meetings/discussions were distributed electronically, so mailing costs were nominal.

- Bridging costs for ITV: \$250.00
- Mileage for outstate participants: \$325.00

C. Consultant Fees: \$0

D. Report Printing Cost: \$130

Most distribution completed via e-mail/Internet.  
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E. Other Costs: \$0

2. Other Agency Costs: \$6,502.40

Agencies Participating:

Department of Administration  
University of Minnesota  
Regional Public Library Systems  
Service Cooperatives

School Districts  
Costs relate to staff time associated with meeting attendance  
and written contributions.

3. Any Other Costs:	\$0
<b>TOTAL ESTIMATED COST OF THIS REPORT:</b>	<b>\$21,566.59</b>

# **EXECUTIVE SUMMARY**

## **DESCRIPTION AND PURPOSE OF THIS REPORT**

During the 2000 and 2001 Legislative Sessions, the Minnesota Legislature enacted legislation directing the Commissioner of the Department of Children, Families & Learning (CFL) to work in cooperation with the Commissioner of Administration and the Minnesota Education Telecommunications Council (METC) to recommend a permanent funding solution for education and public library telecommunications support.

*Minnesota Session Laws 2001*, First Special Session, Chapter 3, Article 4, Section 4, direct CFL as follows:

“By February 1, 2002, the commissioner of children, families & learning, in cooperation with the commissioner of administration and the Minnesota education telecommunications council, shall recommend to the legislature a permanent method for funding telecommunications access as part of the general education revenue formula under Minnesota Statutes, section 126C.10, for school districts and charter schools and a permanent method for funding telecommunications access as part of the basic support grants for public libraries. The commissioner shall consider the following in making the recommendation:

- (1) the range of costs providing a minimum level of telecommunications access for all students and library users;
- (2) the flexibility that is necessary to accommodate emerging technological advances in the telecommunications field; and
- (3) other related efforts within the state, including the state’s higher education and public library systems.”

## **PERMANENT FUNDING STEERING COMMITTEE**

CFL established a Permanent Funding Steering Committee to respond to the charge outlined in legislation. Membership included representatives with expertise in school district finance, telecommunications access networks, public library services, and education policy. Representatives were drawn from education organizations, technology services cooperatives, regional public library systems, school districts, higher education, CFL, the Department of Administration, and the Minnesota Education Telecommunications Council (METC). A complete listing of the Permanent Funding Steering Committee membership is included in the Appendices section of the report.

## **THE RESULT**

Over the course of several months, the Permanent Funding Steering Committee discussed many issues relating to permanent funding for school and public library telecommunications access. Extensive research was conducted, including reviewing the telecommunications infrastructure and policies of other states, assessing the effectiveness of Minnesota's current telecommunications infrastructure for K-12 schools and public libraries, and taking a look at the future direction of telecommunications technology as it applies to delivery of education and information to Minnesota citizens. As a result of these discussions, the Committee determined that any solution recommended for permanent funding needed to go well beyond the limits of the formula-based funding solution requested in the legislation.

Several methodologies for funding source, organization and governance, and disbursement strategies were examined. While the report does address options for formula-based funding for schools and public libraries in response to the requirements in the law, the final recommendation of the Permanent Funding Steering Committee moves away from the limits imposed by those types of funding methodologies to a holistic approach that eliminates separate funding streams for school districts and public libraries, allows for future growth in terms of both usage and technology innovations, promotes collaboration, partnership, and economies of scale, and is needs-driven and performance-based. The recommended solution represents a comprehensive, statewide approach that removes funding support for telecommunications access for schools and public libraries from the state's biennial budget cycle, thereby creating a stable, long-term source of funding.

## **RECOMMENDATIONS**

The following recommendations address the issue of a comprehensive statewide structure for funding and supporting telecommunications access for Minnesota schools and public libraries. The recommendations are organized within the topic areas of:

1. Funding Source
2. Organizational Model
3. Funding Distribution
4. Action Plan
5. Evaluation

## **FUNDING SOURCE - UNIVERSAL SERVICES FUND**

The state of Minnesota should work with its Public Utilities Commission (PUC) and Legislature to adopt a universal service fund model for permanently funding the telecommunications access costs of K-12 schools and public libraries.

- Under this model, funding would be generated by telecommunications service providers, who would collect a nominal surcharge based on a certain amount per

wire and wireless customer as part of their monthly billing. A nominal monthly surcharge on the three million wire line and two million wireless access lines in Minnesota would generate the approximately \$24 million in annual funding needed to support K-12 schools and public libraries telecommunications access. These funds would be transferred to a special revenue fund in the Department of Revenue.

- In addition to the national universal service model associated with the federal E-rates program, Wisconsin, Texas, and other states have adopted this model successfully at the state level, so there are existing practices and precedents that Minnesota can adapt to its needs.
- This would provide a relatively stable, permanent source of funding for telecommunications access for schools and public libraries and would eliminate the need for these constituencies to continue seeking telecommunications access funding from the Legislature each biennium. Revenues from this fund would pay the full operational costs of a shared, statewide infrastructure that connects K-12 schools and public libraries to each other and to worldwide learning and information resources.
- Telecommunications access for nonpublic schools could also be supported from a universal service fund model.
- The level of bandwidth deployed for schools and public libraries would be based on demonstrated need.
- The universal service fund dollars would support ongoing wide-area network telecommunications access costs for schools and public libraries, including monthly line leases, Internet access fees, network maintenance support, and installation costs. The line of demarcation for costs the funds would support is a connection point at each school and public library, including maintenance on the router and codec, or similar equipment deployed at the point of presence, to deliver access to that connection point.
- K-12 schools and public libraries have been working in partnership with higher education in the delivery of curriculum and information over the existing telecommunications network for the past several years. This partnership will continue. To move towards a fully integrated network infrastructure, the next phase of adopting a universal service model for funding telecommunications access for education is the inclusion of higher education institutions in this model.

## **ORGANIZATIONAL MODEL - STATE LEVEL COORDINATION OF TELECOMMUNICATIONS INFRASTRUCTURE AND LOCAL NEEDS**

The telecommunications infrastructure for K-12 schools, higher education, and public libraries should be coordinated by an appropriate state level agency that represents the telecommunications interests and needs of school districts, public libraries, and higher education, along with appropriate state agencies such as CFL, HESO, and the Department of Administration.

- The appropriate state level agency would set criteria for funding and procurement of services based on needs, cost effectiveness, network efficiency, and existing telecommunications infrastructure available throughout the state.
- Experience has demonstrated that procuring and delivering telecommunications access through a regional model is very effective. Such a model lends itself to aggregation of needs and services, cooperative purchasing, cost savings on technical support, network efficiencies, interoperability, shared responsibility in curriculum and information delivery, and elimination of network redundancy. School districts and public libraries should work with appropriate regional organizations to aggregate needs and procure services based on criteria established by the appropriate state level agency.
- School districts and public libraries are presently required to prepare technology plans for review and approval by CFL in order to be eligible for the federal E-rates discount program and other federal programs related to technology. Outcomes and measures for the use of the services delivered through telecommunications and technology should be further emphasized in school district and public library technology plans.
- Regional technology plans that focus on the efficient delivery of capacity to schools and public libraries, emphasize interoperability and network reliability, and which meet objectives established by the state for deployment of telecommunications in schools and public libraries should also be required.
- As part of the technology planning process, needs analysis would be performed by school districts and public libraries in conjunction with their telecommunications access cluster, regional public library system, or other appropriate regional entities in their area.

## **FUNDING DISTRIBUTION – STATE LEVEL**

1. Funds to support telecommunications access for K-12 schools and public libraries that are generated by a state level universal service fund mechanism to support operation and maintenance of the shared, statewide telecommunications infrastructure should be distributed in a manner similar to that presently used to fund the higher education network. In other words, telecommunications access clusters, regional public library systems or other appropriate regional agencies work to assess local needs, procure services through cooperative purchasing, promote network efficiency and reduce service redundancies, and present proposals to the appropriate state agency for funding. Funding would then be distributed by the appropriate state agency acting as fiscal agent.
  - An appropriate state level agency would establish criteria for distribution of funding for school and public library telecommunications based on needs, cost effectiveness, network efficiency, and existing telecommunications infrastructure available throughout the state.

- Funding for nonpublic schools would flow through the school district of residence as is currently the case for other types of funds for nonpublic schools.
  - Incentives for aggregating needs and service, collaboration on service delivery, and continuous improvement in network efficiency and cost reductions should be provided.
  - Funding should be provided for evaluation of emerging technologies through a competitive grant process.
2. Funding for “total cost of ownership,” which includes operation of building level infrastructure, computers and servers, local area network hardware and software, local network maintenance, local technical support, educational content and any required network security should be provided as part of the general education funding formula for K-12 schools and as part of regional library basic system support for public libraries. While some of these needs are now partially funded through discretionary use of local funds by school districts and libraries, these needs are not specifically supported in any existing school district or public library funding formula.

## **ACTION PLAN**

1. The Legislature should develop an action plan to address the issue that there is no state funding available to support telecommunications access for schools, and insufficient funding available to support telecommunications access for public libraries, in FY2003 and any succeeding years until such time as the universal service fund model can be implemented.
2. The Legislature should appoint a working group to immediately begin working towards establishment of a universal service fund model for permanently funding telecommunications access for K-12 schools and public libraries.

## **EVALUATION**

The appropriate state agency should define a clear, measurable set of objectives for the telecommunication infrastructure shared among K-12 schools, public libraries, and higher education. The statewide infrastructure should be regularly assessed against those objectives.

# INTRODUCTION

## DESCRIPTION AND PURPOSE

During the 2000 and 2001 Legislative Sessions, the Minnesota Legislature enacted legislation requiring the Commissioner of the Department of Children, Families & Learning (CFL) to work in cooperation with the Commissioner of the Department of Administration and the Minnesota Education Telecommunications Council (METC) to recommend a permanent funding solution for education and public library telecommunications support. The following statutory language mandating development of this solution is derived from *Minnesota Session Laws 2001, First Special Session, Chapter 3, Article 4, Section 4*.

“By February 1, 2002, the commissioner of children, families & learning, in cooperation with the commissioner of administration and the Minnesota education telecommunication council, shall recommend to the legislature a permanent method for funding telecommunications access as part of the general education revenue formula under Minnesota Statutes, section 126C.10, for school districts and charter schools and a permanent funding method for funding telecommunications access as part of the basic support grants for public libraries.”

The purpose of this report, therefore, is to outline the various issues associated with funding education and public library telecommunications both within and outside of the boundaries of this legislation and to recommend a permanent funding solution for consideration by the Legislature.

## PERMANENT FUNDING STEERING COMMITTEE MEMBERSHIP, CHARGE, AND PROCESS

The Minnesota Department of Children, Families & Learning (CFL) created a Permanent Funding Steering Committee to develop the permanent telecommunications funding solution prescribed by law. Membership included representatives with expertise in school district finance, telecommunications access networks, public library services, and education policy. Representatives were drawn from education organizations, technology services cooperatives, regional public library systems, school districts, and higher education. In order to meet the requirement that CFL work in cooperation with METC and the Department of Administration, representatives were also drawn from both of those organizations. CFL staff from Education Finance, Information Technologies, and Library Development and Services also served on the Steering Committee. See Appendix A for a complete list of the Permanent Funding Steering Committee membership.

Ken Hasledalen, CFL Chief Information Officer, defined the scope of this report as the development of a state level, permanent funding strategy to support education and public library telecommunications access that would eliminate the need for these constituencies to request categorical funding for this purpose from the Legislature each biennium. The recommended strategy would also be designed to eliminate the need for these constituencies to be continuously competing for telecommunications access resources due to separate funding streams. Based on the language of the legislation, the charge to the Committee also required that a permanent, formula-based solution be explored that addresses the funding mechanisms prescribed in the law, which are the general education revenue formula for schools and the basic support grants for public libraries.

Beginning in June 2001, the Steering Committee began meeting and discussing the scope, outline, and content of the report. Throughout the course of several months of discussion, key components of the report were identified, critical data to support conclusions were defined, and the structure of the report was established.

## **REPORT STRUCTURE**

This report is constructed to comply with the legislative requirements relating to its completion and submission to the 2002 Legislature. During the course of discussion, the membership of the Permanent Funding Steering Committee very strongly felt that there are issues of future growth, development, and support of a viable, accessible telecommunications network for education and public libraries that go beyond the formula-based solution as prescribed in the law mandating this report. This report, therefore, focuses on recommendations for permanently funding telecommunications access needs in such a fashion that the basic telecommunications needs of schools and public libraries are supported on a permanent basis through a comprehensive process and state-level funding stream. It also explores the implications of attempting to permanently fund current existing telecommunications infrastructure for K-12 schools using the general education revenue formula and for public libraries through regional library basic aid formulas.

# HISTORY OF K-12 SCHOOL AND PUBLIC LIBRARY TELECOMMUNICATIONS STRUCTURE

## THE LEARNING NETWORK OF MINNESOTA (LNM) AND THE MINNESOTA EDUCATION TELECOMMUNICATIONS COUNCIL (METC)

**The Learning Network of Minnesota.** The Learning Network of Minnesota (LNM) was established in 1993 by the Minnesota Legislature to provide a statewide, high-speed telecommunications highway designed to enable higher education institutions to provide courses through distance learning. In 1995, the LNM was expanded to establish links to connect K-12 public schools and public libraries with the existing higher education network. Using high-speed telecommunications lines, the LNM collaboration provides access and delivery of information resources to students and public library customers such as:

- Internet access;
- Distance learning opportunities to learners through the use of interactive television (ITV) and on-line learning technology;
- A transport system for the state to send and receive data electronically from K-12 schools and public libraries, and;
- Access to MnLINK, the Minnesota Library Information Network.

In 1995, the expansion of the higher education telecommunications network to include links for K-12 schools and public libraries was supported by initial appropriations totaling \$15.5 million in noncompetitive telecommunications access grants for the FY1996-FY1997 biennium. These appropriations were intended to bring telecommunications access to the “door” of the school district or regional public library system. The school districts and public libraries were then expected to provide the local area networks needed to link individual buildings and connect to the Learning Network of Minnesota.

The resulting Telecommunications Access Grant (TAG) program for K-12 schools and public libraries included a requirement that school districts and public libraries apply in groups of at least ten school districts in order to be eligible to receive funding. In order to provide for improved coordination of funding distribution, delivery of services, and economies of scale available through cooperative purchasing, school districts and public libraries voluntarily organized themselves into eight telecommunications access clusters, or regions, throughout the state.

The TAG program was continued with funding appropriated for the FY1998-FY1999 biennium. In FY2000, the Legislature declined to continue funding the ongoing costs of telecommunications access for schools through the TAG program. A limited amount of TAG funding was provided in FY2000 to purchase equipment for sites that had not previously connected to the Learning Network of Minnesota, but no further funding for recurring telecommunications access costs was provided for schools. Public libraries were

provided with ongoing telecommunications funding through the newly established Regional Library Telecommunications Aid (RLTA) program.

In FY2001, the Legislature provided funding for school district and public library telecommunications access through separate funding streams. For school districts, funding was appropriated for ongoing telecommunications access and maintenance through a \$5 adjusted marginal cost per pupil (AMCPU) increase in operating capital revenue, and a supplemental entitlement program known as the Telecommunications Access Revenue Program (TARP). Any district whose ongoing telecommunications costs associated with line leases, interactive television, Internet access, and ongoing wide area network maintenance exceeded the additional \$5 per AMCPU in operating capital revenue could submit projected costs to CFL for up to one 1.544 Mbs data or video link per elementary, middle, and secondary school. School districts could also claim costs associated with cooperative agreements relating to delivery of telecommunications access. The \$5 per AMCPU in operating capital revenue and the supplemental TARP program were also provided to school districts in FY2002.

For public libraries, FY2000 resulted in the creation of the Regional Library Telecommunications Aid (RLTA) program. Funding for this program was also provided in FY2001, which included a base amount and a one-time increase for the purchase and installation of equipment for upgrading lines. Funding for FY2002 was for the base amount to cover telecommunications line lease and maintenance only.

**The Minnesota Education Telecommunications Council (METC).** The Minnesota Education Telecommunications Council (METC) is a multi-agency advisory board established in law and is composed of 25 members. Membership on METC includes representatives from both houses of the Legislature, K-12 public schools, public libraries, state agencies (Department of Administration, Department of Children, Families & Learning (CFL), and the Minnesota Higher Education Services Office (HESO), and higher education (University of Minnesota, Minnesota State Colleges and Universities, and the Private College Council). METC establishes priorities, criteria, and policy relating to the funding and use of telecommunications infrastructure by K-12 education, higher education, and public libraries. According to *Minnesota Statutes* 125B, Section 21, METC is to serve as a forum to establish and advocate for a statewide vision and plans for the use of distance learning technologies, including:

- The coordination and collaboration of distance learning opportunities;
- The implementation of the use of distance learning technologies;
- The collaboration of distance learning users;
- The implementation of educational policy relating to telecommunications;
- The exchange of ideas;
- The communications with state government and related agencies and entities;
- The coordination of networks for post-secondary campuses, K-12 education, and regional and community libraries; and
- The promotion of consistency of the operation of the learning network with standards of an open system architecture.

**Telecommunications Access Clusters.** Critical to the operation of the LNM are the K-12 school and public library telecommunications access clusters and the higher education telecommunications regions. For K-12 school districts and public libraries, these clusters serve a crucial role in the coordination and operation of the network. Services provided by the K-12 school and public library telecommunications access clusters and their coordinators include:

- Aggregation and coordination of service demands and needs;
- Cooperative purchasing and procurement practices based on aggregated needs and cost effectiveness;
- Coordinated application for federal E-rate telecommunications services discounts.
- Wide area network operational support and maintenance;
- Coordination and scheduling of statewide distance learning activities via interactive television (ITV);
- Communication and promotion of the telecommunications access needs of member school districts and public libraries to the Legislature and other policy-making bodies; and
- Coordination with telecommunications service providers on service issues.

Due to the existence of these telecommunications access clusters, the technical and logistical burdens associated with delivery of telecommunications access and service for school districts are greatly reduced. For most school districts and public libraries the delivery of telecommunications access is a “given” and the complex technological logistics are completely transparent because the telecommunications access clusters provide technical expertise that is not typically available within most independent school districts or public libraries. The organization of telecommunication access clusters throughout the state directly results in an aggregation of need, network efficiencies, reduction in overall costs, and interoperability that would not exist if school districts and public libraries were to independently seek this level of telecommunications service.

## **TELECOMMUNICATIONS FUNDING FOR SCHOOLS AND PUBLIC LIBRARIES PROGRAM COMPARISON**

Since 1996, the state has provided funding support for telecommunications access costs for schools and public libraries through three funding programs.

### **1. Telecommunications Access Grant Program (TAG).**

In FY1996-FY2000 the Legislature provided funding support for school and public library telecommunications through the Telecommunications Access Grant program (TAG). TAG was a noncompetitive grant program that provided funding for telecommunications through eight telecommunications access clusters throughout the state. Schools and public libraries sharing common traits of geographic location, service needs, and political subdivisions grouped together in the telecommunications access clusters to apply for and obtain TAG funding

and coordinate the procurement and delivery of services. Cluster funding requests and budgets were reviewed and approved by the METC and funds were allocated to the clusters by CFL.

## **2. Telecommunications Access Revenue Program (TARP).**

Beginning in FY2001, the TAG program was discontinued by the Legislature and an entitlement program known as the Telecommunications Access Revenue Program (TARP) was enacted in legislation. Under TARP, each school district began receiving an additional \$5 per adjusted marginal cost per pupil unit (AMCPU) in operating capital revenue to be reserved for ongoing telecommunications access costs associated with data, video, and Internet access. In addition to this funding, a separate appropriation was provided to assist school districts whose ongoing telecommunications access costs exceed these additional operating capital revenue funds. To access TARP, school districts submit projected costs to CFL. CFL calculates a district TARP entitlement by subtracting both the \$5 per AMCPU in operating capital revenue and the anticipated federal E-rate discounts on the services to generate the school district entitlement that is then leveled against the TARP appropriation.

This combination of a per pupil formula and a supplemental entitlement based on projected costs is designed to address the issues of disparity that arise when a school district's enrollment does not generate sufficient funds to cover the cost of telecommunications through the per pupil formula approach. Areas of high telecommunications costs occur throughout the state due to factors of telecommunications service provider availability and distance. For school districts in these areas, access to telecommunications services can be cost prohibitive if the funding scenario is based entirely on a per pupil formula. Telecommunications access support is also provided to charter schools and nonpublic schools from this TARP appropriation using a formula calculation based on enrollment.

## **3. Regional Library Telecommunications Aid (RLTA).**

In FY2000-FY2001, Regional Library Telecommunications Aid (RLTA) existed as a noncompetitive grant program. Regional public library systems applied to CFL on behalf of their branch/system members for this funding. In FY2002-FY2003, the RLTA was converted to a categorical aid program. Funds are disbursed to regional public library systems on behalf of their branches/system members based on actual costs and are prorated to maintain adequate connectivity across the state's public libraries.

## FUNDING HISTORY

<b>PROGRAM</b>	<b>FY1996- FY1997</b>	<b>FY1998- FY1999</b>	<b>FY2000- FY2001</b>	<b>FY2002-FY2003</b>
Telecommunications Access Grants (TAG)	\$15.5 million	\$23.0 million	\$5 million	\$0
\$5 AMCPU Additional Operating Capital Revenue for Telecommunications	\$0	\$0	\$4.8 million  (\$4.8 in FY2001)	\$4.8 million  (\$4.8 in FY2002) Telecommunications reserve requirement on operating capital revenue is discontinued in FY2003.
Telecommunications Access Revenue Program (TARP)	\$0	\$0	\$18.5 million  (\$18.5 million in FY2001)	\$15.4 million  (\$15.4 million in FY2002). No appropriation for FY2003.
Regional Library Telecommunications Aid (RLTA)	\$0	\$0	\$4.8 million	\$2.4 million

For a detailed comparison of the operational aspects of these programs, see Appendix B.

### LESSONS LEARNED

The approaches to funding telecommunications access for Internet and video for schools and public libraries through the Telecommunications Access Grant (TAG) program, Telecommunications Access Revenue Program (TARP), and Regional Library Telecommunications Aid (RLTA) program have demonstrated the advantages and disadvantages of the operation of these funding programs. They have also revealed their effectiveness in maintaining the telecommunications access capacity that schools and public libraries have come to rely on to deliver instruction and information. Some examples of the advantages and disadvantages of each program are described below:

#### 1. Telecommunications Access Grant (TAG)

##### ADVANTAGES

- Administering funding through eight telecommunications access clusters of schools and public libraries was administratively efficient. Clusters submitted budget proposals on behalf of their members. The proposals were reviewed and approved by the Minnesota Education Telecommunications Council (METC) according to criteria established by METC and funds were distributed by the Department of Children, Families & Learning (CFL).
- The cluster approach of funding permitted CFL to make periodic payments to eight central entities based on previously approved budgets. The clusters cooperatively procured and coordinated services, provided network support, applied for E-rates and paid telecommunications invoices on behalf of their member school districts and public libraries.
- The approach of working through telecommunications access clusters promoted cooperation and partnership among the schools and libraries within the cluster and with other clusters throughout the state.
- The METC provided a wide range of expertise, technical assistance, and a statewide perspective on the needs and issues of schools, public libraries, and higher education relating to the effective deployment of telecommunications technology.
- Expenditure on equipment and equipment upgrades to promote more effective use of the available telecommunications technology was permitted and resulted in a more modern network.

## **DISADVANTAGES**

- Nonpublic schools were not provided any funding through the TAG program to support their use of telecommunications services. While the legislation governing the TAG program permitted nonpublic schools to participate at their own cost, there were few, if any, incentives for them to do so, thus creating a potential “digital divide” for Minnesota students who are educated outside of the public education system.
- The grant agreement contracts used by the state involve a lengthy legal execution process. Adjustments in funding levels also needed to be made through a grant agreement amendment process.
- Some of the clusters were more cohesive and functioned in a more harmonious manner than others.

## **2. Telecommunications Access Revenue Program (TARP)**

### **ADVANTAGES**

- The \$5 per AMCPU in operating capital revenue is automatically paid to school districts via the Integrated Department of Education Aid System (IDEAS) so those funds begin flowing with the enactment of the legislation.

- The combination of per pupil formula funding and entitlements based on cost is designed to equalize disparate access costs. It helps to meet the needs of both the larger urban districts who generate more funding via a per pupil formula approach and provides relief for schools with smaller enrollments that are in areas hit with heavy telecommunications access charges.
- TARP entitlements flow through IDEAS when the entitlement calculations are completed based on submission of projections information.
- Nonpublic schools receive financial support for their telecommunications access, thus providing improved equity in terms of access to instructional and informational resources for nonpublic school students.
- The TARP program establishes T1 speed as the standard bandwidth for individual schools, which is an advantage over the previous TAG program wherein the bandwidth level was 56kb for data and T1 for data/video for an entire school district.

## **DISADVANTAGES**

- The TARP program significantly increases the administrative burden on school districts, regional organizations, and CFL. CFL is required to collect and process cost projection data from over 340 school districts and potentially up to 550 nonpublic schools. Regional organizations must bill the school districts for telecommunications services associated with cooperative agreements and the school districts in turn must claim those costs as part of their projections.
- There is no provision for funding the administrative costs of the telecommunications access clusters, regional public library systems or CFL related to support of the TARP program.
- The TARP program, with its emphasis on payment of funds to individual districts and the potential purchase of services at the district level, does not provide a great deal of incentive for collaboration, coordination of efforts, cooperative purchasing, or sharing services, all of which can result in lower costs for participating school districts.
- With the exception of a few school districts that meet their telecommunications costs using the additional \$5 per AMCPU in operating capital revenue and do not access a TARP entitlement, there is no provision in TARP for the purchase of peripheral equipment needed to fully enable telecommunications access.
- Nonpublic school funds flow through the school district of residence and are not paid directly to the nonpublic schools.
- Ensuring accuracy of data submitted for the calculations process is difficult. Staff resources at CFL do not exist to monitor the telecommunications expenditures of each individual school district. It is also difficult to ensure information on the TARP application and reporting process reaches the appropriate staff within each individual school district.

- The statutorily established standard of T1 capacity for each school regardless of school size and technology use creates a potential that some schools will be funded for more capacity than they need and some districts may not be funded for sufficient capacity.
- The wide range of connectivity scenarios, network topology, and telecommunications access costs that exist throughout the state make it difficult to develop equitable and consistent eligibility criteria.
- The inclusion of E-rate discounts in the legislatively mandated parameters for calculation of TARP entitlements creates significant calculation problems. The timeframes of the E-rate program do not coincide with the TARP calculation timelines. In addition, E-rates are not guaranteed for any school, but are dependent on successful completion of an application process whereby Minnesota schools and libraries are in competition for limited funds with all schools and public libraries in the U.S.

### **3. Regional Library Telecommunications Aid (RLTA)**

#### **ADVANTAGES**

- Statewide collaboration among regional public library systems, system branches/members, and telecommunications access clusters is administratively efficient and promotes cooperation and partnership among public library systems and clusters statewide.
- Data collection on over 350 individual libraries relating to costs, needs, and outcomes is collaboratively aggregated at the regional public library system level.
- CFL makes periodic payments to twelve designated central entities (regional public library systems).
- The collaborative approach of RLTA provides for cooperative purchasing, needs assessment, network efficiencies, and technical support for regional public library systems and their system branches/members.
- Regional public library systems may choose to work with a designated telecommunications access cluster in applying for the federal E-rate discount program on behalf of system branches/members for lines funded by RLTA.
- Regional public library systems may opt to act as an independent telecommunications access cluster if this meets system needs and RLTA requirements.
- METC's initial involvement in setting eligibility criteria in the initial phases of TAG and RLTA provided CFL with expertise, technical assistance, and a statewide perspective relating to needs.
- Regional public library systems have improved their understanding and quality of data regarding telecommunications needs, process, and costs.

- Converting RLTA from a grant program to a categorical aid program has streamlined application and payment processes significantly.
- RLTA payments are established on pro-rated, actual costs, which simplifies the administration of the aid program. CFL has more detailed data on actual costs for providing telecommunications access to communities through public libraries.

## **DISADVANTAGES**

- In order to meet system needs and RLTA requirements, some of the regional public library systems have chosen to operate independently of a designated telecommunications access cluster. The disadvantage of this decision is the shift in administrative workload from the telecommunications access cluster to the regional public library system.
- Accountability requirements are limited to the documentation requested for applications, documentation to support payments, and final reports since CFL lacks staff resources to conduct site visits to monitor the telecommunications expenditures of individual regional public library systems and their system branches/members.
- The initial eligibility criteria for bandwidth (56 Kb and T1 lines) is outdated as technology changes and library customer demand for service increases.
- FY2002 – FY2003 funding has no provision for equipment purchase, installation, or equipment upgrades that allow regional public library systems to continue to use the bandwidth efficiently and effectively or for new technologies or different service providers, which may improve bandwidth and decrease costs.
- FY2002 – FY2003 funding does not adequately provide for the actual costs of maintaining the lines upgrades installed in FY2001. As a result, some regional public library systems have been forced to downgrade bandwidth speeds in order to reduce operating costs not covered by RLTA.
- The inclusion of legislative language requiring regional public library systems to apply on behalf of their system branches/members for the federal E-rate discount program causes problems because the RLTA and the E-rate programs have different time frames. E-rate discounts are not guaranteed and if a system application is rejected and appealed, the appeal process may take several years.
- There is no provision for funding the administrative costs for regional public library systems, telecommunications access clusters, and CFL to support the RLTA program.
- The Regional Library Basic System Support (RLBSS) aid formula is not feasible for allocating RLTA. RLBSS does not take into account the variance in telecommunications service vendor costs. Running RLTA

through the RLBSS aid formula results in significant inequity for the out-state libraries which have higher telecommunications costs.

## **CURRENT NETWORK INFRASTRUCTURE**

The current Learning Network of Minnesota (LNM) network infrastructure consists of a cohesive series of interoperable networks coordinated by K-12 schools, regional public library systems, and higher education. The LNM provides data, Internet, video conferencing, and distance learning services to K-12 schools and public libraries. The composition of the LNM reflects the reality that no single vendor is positioned to provide the lowest cost services for the entire state. Seven K-12 telecommunications access clusters, six higher education regions, three regional public library systems, and approximately 60 individual school districts that are not members of any of the seven telecommunications access clusters use public bid processes to secure telecommunications services. Contracts for services range from month-to-month to multi-year agreements depending upon the type of service, location of the organization, and the service provider selected. The LNM infrastructure shared by K-12 schools and public libraries can be described as follows:

### **1. Data/Internet for Schools**

Frame relay and dedicated T1 lines are the most common connections among schools. Some of the larger, rural districts often have multiple T1 connections, but few have installed the TARP maximum authorized configuration of one T1 speed connection per school. Some of the telecommunications access clusters have deployed hub and spoke network designs, acquiring DS3 levels of service to the hub, thereby lowering unit costs. Some clusters use private virtual circuits (PVCs) in the frame relay environment to segregate school district administrative data from routine Internet traffic. According to the “Technology Counts 2001” report compiled by Education Week, 93 percent of Minnesota schools now have Internet access in one or more classrooms.

### **2. Data/Internet for Public Libraries**

Currently funded through Regional Library Telecommunications Aid (RLTA) program, most public libraries were first connected to the Learning Network of Minnesota through the former Telecommunications Access Grant (TAG) program. All but three of the twelve regional public library systems remain members of their designated telecommunications access clusters. Frame relay and dedicated T1, fractional T1, and 56Kb connections are the most common connections between public libraries and their regional systems. PVCs may be used to segregate library automation data from routine Internet traffic. Nearly 100 percent of the state’s public libraries offer Internet access to their customers. Some public library sites augment their state-funded lines with locally-funded DSL-based Internet service.

### **3. Video for Schools**

The TAG program provided video equipment to school districts that had not previously installed interactive television (ITV). Existing systems were typically analog ITV transmitted over leased fiber. Compressed digital transmission was a popular choice for the newly eligible school districts under the TAG program because it did not require a studio and could operate over a copper Integrated Service Digital Network (ISDN) T1 connection.

### **4. Video for Public Libraries**

Although each regional public library system is authorized to operate an interactive video connection, only six have been installed thus far. ISDN-based compressed digital systems are the most common technology deployed for ITV in public libraries.

## **APPLICATIONS AND USES**

Access to adequate telecommunications has become essential to the operation and mission of schools and public libraries. Schools and public libraries are reliant on this access because of the following factors:

- The growth of the Internet as an integral part of the school curriculum;
- The popularity and importance of the Internet as a public library reference resource and information service;
- The reliance of state government on electronic transfer of information, including licensure, student accounting, and financial accounting data;
- The increasing use of video for instruction, continuing education, statewide meetings, and information exchange;
- The reliance of public libraries on providing annual statistics to CFL to meet federal requirements; and
- The reliance on the Internet to access data bases and state government information for use by students, their families, and their communities.

### **1. Internet for Schools**

The vast information resources of the Internet have become essential for schools, particularly in an era where resources are often limited for more traditional print forms of instructional materials and information resources. Students now have access to a wide array of informational resources and engage in on-line learning activities that extend far beyond the school district boundaries or the limits of their local community. Some examples of Internet use in schools include:

- World Wide Web-oriented information searches;

- Information access from selected remote sites;
- Access to on-line curriculum;
- Access to school district web pages, digital movies, and student projects;
- Creation and maintenance of community web pages;
- Cultural exchanges with students in other states and countries through electronic mail and web-based classroom interactions; and
- Access to electronic journals and reference newspapers through school media centers and libraries.

## **2. Internet for Public Libraries**

Through the Internet, public library customers now have access to the databases of printed materials housed at libraries outside of their communities, as well as the vast array of informational resources that are directly available from the Internet. Many Minnesota citizens do not have access to computers for personal use either at work or at home. Most of these people rely on computers at public libraries to provide them with e-mail accounts, access to the Internet and word processing software. Simply ensuring that the telecommunications industry provides Internet service in each county in Minnesota does not eliminate the “haves” and “have nots” created by the “Digital Divide.” A critical component for alleviating disparity between those with access to computers and Internet and those without is to provide the people in each county in Minnesota with access to a computer equipped with Internet access. Public libraries are key in addressing that essential piece of the Digital Divide puzzle.

## **3. Data for Schools**

In addition to Internet access for instructional and informational purposes, the transmission capacity provided through telecommunications technology also enables schools to perform the administrative and managerial functions associated with the educational enterprise. Some examples of how networks and the Internet are used for the administration of schools include:

- Processing employee payrolls;
- Conducting financial accounting;
- Processing and maintaining student accounting and attendance records;
- Developing and maintaining student portfolios, electronic grade books, and other types of instructional management applications; and

- Transfer, exchange, and reporting of information among school districts and the CFL. It is important to note that much of the required reporting to the state and federal government on behalf of school districts is now accomplished using Internet technology and the transmission capacity of the Learning Network of Minnesota.

#### **4. Data for Public Libraries**

Through the Internet, regional public library systems operate automated library systems that provide on-line cataloging, circulation information, and public access to bibliographic information maintained by public libraries on their collections. Some examples of how networks and the Internet are used by regional public library systems and their system branches/members include:

- Local libraries pool resources at the regional level and the regions share information with each other via the MnLINK Gateway. The MnLINK Gateway connects all regional public library catalogs, as well as all academic and government library catalogs.
- The network, through the MnLINK gateway, allows all Minnesota libraries to share information relating to materials in their collections, other interlibrary loan contracts, and delivery systems. Other interlibrary loan contracts and delivery systems provide the means to share the actual materials.
- Some K-12 schools also participate in the MnLINK Gateway.
- Regional public library systems and system branches/members report public library data to the state to meet state and federal requirements through the Internet.

#### **5. Video for Schools**

Each year, numerous courses are offered to Minnesota students through interactive television (ITV). The provision of courses using this technology allows districts to share teachers and provide courses regardless of school district boundaries. This eliminates barriers to educational opportunities for students that might exist because of time and distance logistics. The partnerships among school districts generated by the use of this technology also frequently result in extended course offerings. These course offerings might not otherwise be available due to resource constraints or because the subject matter is only appropriate to the educational path of a limited number of students in an individual school. Examples of ITV activity include:

- Delivery of regularly scheduled standard and/or specialized K-12 classes;
- Delivery of continuing education or post secondary enrollment options classes;
- Electronic field trips or cultural experiences in Minnesota, other states, and countries around the world;
- Administrative meetings; and
- Workshops and staff development.

## **6. Video for Libraries**

There are six public library sites in the state that are part of the interactive television network component of the Learning Network of Minnesota.

Examples of how these ITV sites are used include:

- Distance learners who live in one part of the state and are enrolled as a student in a post secondary institution some distance away use public library ITV sites to access courses.
- High school students use public library ITV sites when taking shared courses from other school districts or educational institutions.
- Citizens use the ITV video conferencing capabilities to attend meetings rather than driving long distances.
- Private businesses deliver seminars and training to multiple locations simultaneously.
- Library staff use the ITV for access to workshops, classes, and other staff development programs offered throughout the state.

# PERMANENT FORMULA-BASED FUNDING

## PARAMETERS DEFINED IN LEGISLATION

In the legislative charge to the Department of Children, Families & Learning (CFL) to develop “a permanent method for funding telecommunications access,” *Minnesota Session Laws*, 2001, First Special Session, Chapter 3, Article 4, Section 4, require the Commissioner of CFL to develop a permanent solution for funding telecommunications using the general education revenue formula for schools and library system support aid formula for public libraries. In addition:

“The commissioner shall consider the following in making the recommendation:

- 1) The range of costs for providing a minimum level of telecommunications access for all students and library users;
- 2) The flexibility that is necessary to accommodate emerging technological advances in the telecommunications field; and
- 3) Other related efforts within the state, including the state’s higher education and public library systems.”

## HOW FORMULA-BASED FUNDING WORKS

Funding telecommunications access through the general education revenue and library basic system support aid formulas presents significant difficulties due to the wide disparity in telecommunications costs that exist throughout the state. These disparities exist because telecommunications service providers tend to base the cost of telecommunications access on the distance the user is from the provider and the level of local telecommunications infrastructure available in the area. As an example, a T1 data only service in Floodwood costs approximately \$32,586 per year, while the same T1 data only service costs approximately \$11,300 in Wayzata. Existing per pupil and basic library support formulas that work very well for distribution of funds for purchase of services or items with fairly standard costs are not easily translated into calculations that work effectively for items of disparate cost, such as telecommunications access. See the attached information in Appendices C and D for information on the range of telecommunications costs for schools and libraries.

### **1. General Education Revenue Funding for Telecommunications Access for Schools**

In order to fund telecommunications access for schools through the general education revenue formula, it is necessary to construct a calculation that takes into account the disparity in telecommunications costs that exist in the area in which the school district happens to reside.

Using the existing cost projection data collected last year in association with the Telecommunications Access Revenue Program (TARP), and the funding appropriation level of \$15,000,000 which is currently allocated for TARP as a baseline, Education Finance staff experimented with several different calculation methodologies in an attempt to achieve a per pupil cost for telecommunications that is reasonably equitable and that generates sufficient revenue to cover telecommunications costs for school districts based on information available through the first year of the TARP Program.

It is important to note that this formula simulation sample as presented is based on a total appropriation level of \$15,000,000, which is the current amount of the TARP appropriation. Projections data collected for TARP indicates that the level of school district expenditure, prior to application of E-rate discounts, equals approximately \$21,000,000 each year. In the current funding model used for the TARP program, school districts receive an additional \$5 per adjusted marginal cost per pupil (AMCPU) in operating capital revenue, which totals approximately \$4,800,000 statewide. This revenue is reserved for telecommunications access in FY2002 and is in addition to the \$15,000,000 currently available to school districts for TARP in FY2002. TARP entitlements are calculated based on the school districts' projected costs for up to a T1 speed connection per school, less the additional \$5 per AMCPU in operating capital revenue, less the projected E-rate discount for the school district.

A purely formula-based model for school district telecommunications access funding could work as follows:

### **Independent School Districts**

The proposed formula recognizes that there are differences in telecommunications costs between districts due to a variety of factors. These factors can include population, isolation of district, and number of school sites that must be served. In addition, the cost of telecommunications for a particular site is impacted by the distance that the site is from the telecommunication providers' service center. Because of these factors, the proposed formula provides funding for school sites based on the following:

- A. Base revenue per site: Provides a set dollar amount per site where students are served.
- B. Basic Per Pupil Amount: Provides districts with a standard dollar amount per student.
- C. Small District Factor: Provides additional funding if the district has less than three sites.
- D. Low Enrollment Factor: Provides additional funding if students served is less than 850 ADM\*.

- E. Sparsity Factor: Provides additional funding per student if the number of students per square mile is less than 5 ADM. This recognizes the impact district size and isolation can have on telecommunications cost.

\*ADM for the purposes of this formula is an enrollment measure defined as average daily membership served by the district.

### **Charter Schools**

- A. Basic Revenue per site: Provides districts with a dollar amount per site where students are served.
- B. State average per Pupil Amount: Provides an amount equal to the state average telecommunication aid per ADM.

### **Proposed Amounts for Formula Factors**

School Districts:

- A. Basic Revenue Per Site: \$3,500.00 per site
- B. Basic Per Pupil Amount: \$5.87 per ADM
- C. Small District Factor: If sites are less than 3, then an additional \$2,000 per site
- D. Low Enrollment Factor: If ADM less than 850, then an additional \$5,000 per district
- E. Sparsity Factor: If ADM per square mile is less than 5, then additional \$15 per ADM

Charter Schools

- |                                   |                     |
|-----------------------------------|---------------------|
| 1. Basic Revenue Per Site         | \$3,500.00 per site |
| 2. State Average Per Pupil Amount | \$17.74 per ADM     |

This model is based on a total appropriation of \$15,000,000 as a sample. To fully fund the costs of telecommunications access for public schools as they exist today without factoring E-rate discounts into the calculations, requires approximately \$21,000,000. See Appendix E for a spreadsheet illustrating the results of applying this formula model at the \$15,000,000 level.

## **2. Basic Support Aid for Public Libraries**

In order to fund telecommunications access for public libraries through the library basic system support aid formula, it is also necessary to construct a calculation that takes into account the disparity in telecommunications costs that exist in the area the

public library building and its regional public library system are located. The Regional Library Basic System Support (RLBSS) formula is based on four factors: area, population, equity, and basic service:

- Area refers to square miles.
- Population is based on State Demographer's figures.
- Equity is tied to adjusted net tax capacity from the Department of Revenue.
- Basic service is a percentage divided equally.

When working towards a model for funding public library telecommunications using the Regional Library Basic System Support (RLBSS) aid formula as requested in the law, Education Finance and Library Development and Services staff determined that the RLBSS is not a feasible model for funding telecommunications access. Formula simulations indicated there would be significant numbers of public library sites penalized under this scenario. If a formula method for disbursing telecommunications access funding for public libraries is to be considered a permanent method for funding, it is recommended that the model currently deployed under Regional Library Telecommunications Aid (RLTA), whereby actual cost information is collected and funding is disbursed on a pro-rated basis, be the model for disbursement.

## **PROS, CONS, AND ISSUES WITH FORMULA FUNDING**

Adopting a formula method for permanent funding of K-12 school and public library telecommunications funding raises several issues, including:

### **1. Gap Year Issue in Funding for School District Telecommunications.**

Regardless of funding disbursement method, the current Telecommunications Access Revenue Program (TARP) concludes in FY2002. There is NO state funding appropriated to support school district telecommunications costs in FY2003, thus leaving school districts with no state support for telecommunications access during the second year of the FY2002-FY2003 biennium and beyond. This level of funding support is critical to many school districts, which may otherwise find providing Internet access and ITV capacity cost prohibitive.

### **2. Shortfall in Public Library Funding.**

Regional Library Telecommunications Aid (RLTA) is currently funded at \$1.2 million per year. Actual costs before realization of federal E-rate discounts are \$3.4 million. Actual costs after realization of E-rate discounts are approximately \$2 million. Although funded in FY2003, there is a \$800,000 shortfall. The legislative intent in 2001 was to continue funding for telecommunications access for public libraries by moving the appropriation to the regional library basic system support aid program. The Governor's budget recommends deleting that portion of the appropriation in FY2004-FY2005.

### **3. Disparities in Telecommunications Access Funding by Formula.**

Formula-based funding for school district telecommunications access poses particular problems and barriers because it focuses on the number of students in a school and district, which is not a measure to which telecommunications costs can be easily linked. Telecommunications access costs are based on factors of distance and delivery, meaning that small, rural schools with the smallest enrollment, or public libraries in small, rural communities often have the largest real costs for telecommunications access. In addition, the telecommunications needs of a school district or library vary widely, depending on how the telecommunications capacity is being deployed. The minimum bandwidth established historically through the TAG, TARP, and RLTA programs is inadequate in heavily-populated communities with higher demand for bandwidth, especially for public libraries.

The distribution methods currently in place through the TARP program (schools) and the RLTA program (public libraries) are specifically designed to deal with the disparities in telecommunications cost that exist in Minnesota when funds are appropriated at sufficient levels. These disbursement methodologies have been fairly successful in alleviating the cost disparities.

How well does a formula derived from general education revenue deal with the variances in telecommunications costs and needs that exist throughout the state? The formula-based funding model for schools as presented above represents a calculation strategy that attempts to disburse funding through a per pupil formula, while at the same time dealing with the disparities in telecommunications cost in a reasonably equitable matter through the use of factors such as sparsity. It should be noted that this formula is NOT based on the varying bandwidth needs of school districts, or factors of eligible vs. ineligible costs, nor does it specifically address the costs of wide area network access and support that are currently provided through cooperative arrangements—it simply calculates an amount of revenue per district based on a certain level of appropriation and the best estimation of adjustment factors that CFL can make given the information currently available. Under this formula scenario, costs of cooperative telecommunications arrangements would need to be billed to the district where students are being served. Analysis of the results of this formula indicate that while this approach generates amounts that come close to current school district telecommunications costs based on information from the existing TARP program, there are districts that will not generate sufficient funding and districts who will generate more funding than is needed.

#### **4. RLTA is Effective for Public Library Telecommunications Access.**

For the past two years, CFL, through Library Development and Services (LDS), has distributed public library telecommunications access funds through the Regional Library Telecommunications Aid (RLTA) program. The funds are distributed on a reimbursement formula based on actual cost. There are established limits as to amount of bandwidth, and in years of insufficient funding, the distribution amounts have been pro-rated according to the amount available. The RLTA program provides an effective method for funds to be distributed on an equitable basis that takes into consideration the disparities in telecommunications costs while providing a consistent distribution of minimum bandwidth.

#### **5. Formula-based Funding as a Permanent Source**

The major advantage of a formula-based funding scenario is that it recognizes the need to have state-supported funding for telecommunications access infrastructure permanently available to school districts and public libraries, regardless of the mechanism for how the dollars are regulated and distributed. Additionally, such a formula provides for a funding level and distribution methodology that does not have to be reviewed by the Legislature every two years. A well-constructed formula that recognizes and equalizes the disparate costs of telecommunications access statewide is a flexible and dependable means of determining the continuous distribution of funds. A funding formula approach, however, typically does not guarantee any set level of funding on which school district and public library

system administrators may depend. Fluctuations in demographic factors and changes in levels of state funding available for schools and public libraries that occur through the biennial budget process affect the amount of dollars available for telecommunications access within the general education revenue and the regional library telecommunications aid formulas. It is also important to note that funding school district telecommunications access through a general education revenue based funding formula and public library telecommunications access through the Regional Library Telecommunications Aid (RLTA) methodology does not address the fact that schools and libraries would continue to receive funding through separate funding streams for the same types of services and would continue to “compete” for funds in the biennial budget process.

## **6. The Instability of E-Rates as a Funding Source.**

It is not disputed that schools and public libraries should apply for federal E-rate discounts in order help extend or leverage available state funds to support telecommunications access. E-rates, however, SHOULD NOT be part of any calculation designed to determine school or public library entitlements for ongoing telecommunications access support. The E-rate discounts are currently a factor in TARP calculations; however, CFL has found this creates extensive complications in projecting and calculating costs accurately because the timing of the E-rate application process does not coincide with state processes for TARP. Including the E-rate in calculations for TARP also inadvertently penalizes the poorer school districts that the E-rate is designed to support. This occurs because while the district may get a larger E-rate discount due to poverty factors, it also means they receive less state support for their telecommunications access.

In addition, E-rate discounts are NOT guaranteed to any school or public library. E-rate discounts are granted through an annual application process administered by the federal government whereby the telecommunications funding demands of 50 states are leveled against a \$2.25 billion dollar appropriation. Applicants must successfully complete all phases of a complex process in order to obtain the discounts. Since the inception of the E-rate program in 1998, there has been no year in which all the Minnesota telecommunications access clusters, school district and public library cluster members, and regional public library systems realized discounts without resorting to the lengthy appeals process that allows applicants to seek redress when applications are denied. This is NOT a reflection on the expertise or efforts expended by these applicants to achieve E-rate discounts, rather, it is a clear indication of the complexity of the application process, the continuously evolving nature of the E-rate program policies as the program matures, and the FCC’s continuing efforts to use the program to foster competition in the telecommunications industry.

Lastly, E-rates are a highly unreliable source for funding because the existence of the program is continually evaluated and debated by Congress. Congressional

action can potentially impact the E-rate program administration and availability in any given year.

# THE LEARNING NETWORK OF THE FUTURE

## NEEDS

Article XIII, Section I of the Minnesota Constitution reads: “The stability of a republican form of government depending mostly upon the intelligence of the people, it is the duty of the legislature to establish a general and uniform system of public schools. The legislature shall make such provisions by taxation or otherwise as will secure a thorough and efficient system of public schools throughout the state.”

In 1857, the framers of the Minnesota Constitution recognized the responsibility of the state to provide a general, uniform, thorough, and efficient education system. In the early agrarian days of Minnesota’s settlement, learning resources were restricted to the printed page and word of mouth. Today, the dynamics of regional and national economies, world-wide commerce, and an increasing rate of change require rapid communication, real-time data, and information management skills, but the constitutional requirements for Minnesota’s education system remain as relevant as they were in 1857.

According to *Minnesota Statutes* 134.31, “the state shall, as an integral part of its responsibility for public education, support the provision of library services for every citizen [and] the development of cooperative programs for the sharing of resources and services among all libraries...” Public libraries collaborate with school districts in providing access to information for Minnesota’s citizens through the Learning Network of Minnesota.

In addition, access to information and the communication capacities of technology have become as essential to the educational enterprise and to the public as electricity, the telephone, and other utilities and services that citizens have come to take for granted as they conduct the business of everyday life.

The following examples illustrate the relationship between telecommunications and technology and the state’s responsibility to provide a general, uniform, thorough, and efficient education system.

### 1. “A General Education System.”

The Minnesota Constitution recognizes the importance of an educated population to stable government and a productive, competitive society. Today’s education system should provide Minnesota students and citizens with the skills and training essential for economic survival in a digital age. Access to the Internet and technology helps us to do this in the following ways:

- The Internet provides access to learning opportunities on a worldwide basis, without constraints of time or distance, that extend well beyond the borders of traditional classrooms, public libraries, and school media centers/libraries. Citizens and students need access to the equipment, software, high-speed Internet connections, and other resources necessary to take full advantage of these learning resources.
- Technology, particularly the use of the Internet, is now an integral tool in the learning process. In many cases, the resources available electronically through the Internet have surpassed the effectiveness of printed materials traditionally relied upon for instruction because of the wide array of up-to-date resources that are instantly available. Teachers, library staff, and learners need to be technology literate in order to effectively deploy this resource for learning.

## 2. “A Uniform Education System.”

Students in all Minnesota schools and customers of Minnesota public libraries, whether urban or rural, and regardless of economic status, should have equal access to learning resources and be provided with equal opportunities to succeed. The total cost of delivering fast, reliable, broadband connections that can support interactive communication and robust multi-media content varies dramatically throughout the state. The following statements offer an explanation of why the variances in telecommunications costs exist. These variances must be addressed in any funding scenario supporting school and public library telecommunications access if Minnesota is to effectively deploy telecommunications to deliver a “uniform education system.”

- Some components of the total cost of delivering learning resources are relatively equal, regardless of the location served. Examples of the types of costs that are fairly consistent to serve all users include computers, network servers, interactive video equipment, local area network hardware and software, technical support, and educational content. These costs tend to be driven by national or regional markets based on the availability of current products.
- Other cost components, particularly those associated with telecommunications access that is essential to retrieval and transmission of electronic forms of information, vary widely and are heavily influenced by the type of transport technology used and distance between the learning site and the telephone company facilities that serve it. This distance is often referred to within the telecommunications industry as “the last mile.” Although the equipment that provides standard voice telephone services is installed in every telephone company office, the equipment to provide high-speed data transmission and Internet access may not be located in a school district or public library’s home community. Equipment that supports interactive video (ITV) for distance learning can be even more distantly located from the end user site. Consequently, the “last mile” between the site and the connection point to necessary equipment and telecommunications hubs for Internet access and/or

video transmission is often several miles. Even with standardized contracts, the cost of providing the same service to locations around the states varies dramatically. Local telephone companies establish these costs based on telecommunications industry operational practices.

- Like most businesses, where the goal is to provide a demanded service or product that generates profit, telecommunications service providers are attracted to markets with a high population density due to the increased profit margins that result from operating in these areas. Where populations are concentrated, vendors will stimulate demand for advanced services and price competition that will eventually lower costs. Where population is sparse, collaboration among regional entities and aggregation of demand for telecommunications services can be effective in securing advanced services at affordable costs. The presence of K-12 schools and public library sites as anchor tenants in a community can therefore encourage providers to make advanced telecommunications services available to the entire community, thus providing a resource for community economic development. High speed Internet access in Minnesota communities equates to uniform, global access that supports all learners.

### 3. “A Thorough Education System.”

*Minnesota Statutes* 120A.03 states that “the mission of public education in Minnesota, a system for lifelong learning, is to ensure individual academic achievement, an informed citizenry, and a highly productive work force. This system focuses on the learner, promotes and values diversity, provides participatory decision-making, ensures accountability, models democratic principles, encourages learners to reach their maximum potential, and integrates and coordinates human services for learners.” Technology enables Minnesota to promote a “thorough” education system in the following ways:

- Given the increasing diversity in statewide racial, ethnic, and language populations, the needs of special education students, students in special populations and advanced placement students, the mission requirement to “focus on the learner” presents a major challenge. Technology can help schools expand educational opportunities for diverse populations through interactive television and electronically delivered curriculum.
- Minnesota schools and public libraries have benefited from a prolific influx of technology assets during the past decade. Teachers and public library staff, however, are not always confident in their use of these assets. This lack of confidence inhibits their willingness to integrate such tools into their daily work practices. School districts and public libraries need to recognize the importance of effective staff development strategies for technology integration that offer alternatives to the infrequent, off-site training classes that are often the only technology training available to teachers and public library staff. Technology can help expand training opportunities for teachers and public library staff to

help them effectively integrate technology with instruction and public library services.

- Virtual schools may offer an effective approach to meeting these challenges. The Distance Learning Resource Network (DLRN) is the dissemination project for the Star Schools Program, a federally funded distance education program that offers instructional modules, enrichment activities, and courses in science, mathematics, foreign languages, workplace skills, high school completion and adult literacy programs. CFL is also involved in several on-line learning projects and has convened a steering committee to discuss issues of course quality, standards, and funding streams associated with calculating state aid.

#### **4. “An Efficient Education System.”**

In addition to preparing students and citizens for survival in a digital age, the state should set the direction for effective application of technology to the education process. There are concerted and interrelated efforts underway with various groups to address these issues.

During 2001, CFL appointed a multi-member steering committee that is charged with developing a statewide plan for technology in K-12 education. The K-12 Education Technology Planning Steering Committee Report, which is scheduled for preliminary release in March 2002, will contain the recommendations of four separate focus groups that will help establish future policy direction for technology in education. The four focus groups have outlined issues and recommendations in the areas of teaching and learning, educator preparation and ongoing staff development, school technology infrastructure, and school administration. Some of the recommendations under discussion by the Steering Committee include:

- An assessment of the current status of technology use in teaching and learning should be conducted.
- Minnesota graduates should be able to demonstrate achievement of national standards for student technology proficiency, such as the International Society for Technology in Education (ISTE), and the “Big Six” Information Literacy Skills.
- There should be statewide access to online learning resources.
- Educators should develop and demonstrate technology proficiencies aligned with the Minnesota Board of Teaching Interstate New Teacher Assessment and Support Consortium Standards (INTASC) and national ISTE standards for teachers and administrators.
- Educator preparation and in-service training programs should focus on development of 1) basic technology skills, 2) instructional integration of technology, and 3) assessment and evaluation of learning.
- There should be an integrated systems approach to selection and use of technology statewide for school administration to ensure interoperability and seamless flow of school information.

- CFL should expand use of technology for activities such as statewide testing, communications, and ongoing school improvement.
- Minimum statewide standards should be established for school district technology infrastructure and technology support.
- Standards should address communications bandwidth, data protection, interoperability, and employee training/technical assistance.

Another state level discussion is taking place with the Technology Subcommittee of the Higher Education Advisory Council (HEAC). This group has been discussing the importance of technology and telecommunications access for education and public libraries. Topics under discussion by this group include:

- The growing use and reliance on network technology by education;
- Progress towards a statewide network infrastructure for Minnesota education;
- Coordinated network infrastructure funding; and
- Recommendations towards a coordinated approach to network technology management.

For further detail on the HEAC Technology Subcommittee, see the HEAC Technology Subcommittee Report, December 10, 2001, attached as Appendix G.

Other evidence of the deployment of telecommunications and technology to promote efficiency in the K-12 education system and public library environment is demonstrated by the following examples of current practice:

- Whether they are urban school districts facing difficulty in filling teaching positions or rural school districts facing declining enrollments, distance learning capabilities give schools the ability to offer a complete, robust curriculum to their students.
- CFL conducts business, distributes information, and collects data from school districts and regional public library systems and system branches/members using web-based and e-mail applications, thus reducing paper/pencil reporting and costs associated with printing and mailing.
- CFL has established a web page that is accessible by students, parents, teachers, and administrators. In addition to housing news and policy publications, the web site also serves as a repository for K-12 school and public library demographic, population, and directory information. This web page is continuously updated and will soon include advanced features that will help school districts and regional public library systems and system branches/members more effectively use statewide data for policy analysis and decision-making.

## EMERGING NEEDS

1. The TARP and RLTA programs currently established in statute set a maximum authorized level of telecommunications access as T1 (1.544 mb/sec) speed for schools and for public libraries. The actual capacity, or bandwidth, needed by a school or public library for an acceptable level of performance depends on the number of simultaneous users accessing the connection and the amount of data each of those users is transmitting or receiving. For example, text-oriented applications typically require less bandwidth than those with graphics or photographs, and applications including video or music files require higher levels of bandwidth. While many schools and public libraries experience adequate performance with a T1 connection, others have increased their capacity to maintain satisfactory performance time. As on-line learning applications and information resources grow more sophisticated and media-rich, the bandwidth needs of schools and public libraries will increase.
2. The 1996 Legislature authorized the creation of a statewide virtual library known as the Minnesota Library Information Network (MnLINK). MnLINK represents a collaborative effort among libraries throughout the state that consists of two components, the Integrated Library System (ILS) and the Gateway. The MnLINK ILS is designed to be a shared library automation system (software and hardware) for the University of Minnesota, the Minnesota State Colleges and Universities, and the Minnesota state agencies libraries. Other participating libraries include several private colleges, public libraries, K-12 school media centers/libraries, and special libraries.

The MnLINK Gateway is software that facilitates electronic access to a multitude of different types of library resources. These include library catalogs and commercial data bases that have been made available to all Minnesota residents, including students, staff, and faculty at Minnesota educational institutions through collective, statewide contracts. The MnLINK Gateway also connects the online catalogs of Minnesota's regional public library systems. MnLINK has contracted to purchase software that will enable Minnesota's library users to use the MnLINK Gateway to request interlibrary loan resources from other MnLINK libraries. Students and citizens throughout Minnesota will be able to locate, place holds on materials, and request delivery to the local library of their choice. It is anticipated that as this new software is installed and used by the public, current bandwidth will be inadequate to handle the data traffic.

3. As Internet 2, an advanced version of the Internet created for use by research universities, telemedicine applications, and more sophisticated on-line learning applications are deployed, school and public library sites will increasingly find that the T1 level of bandwidth is inadequate to the task.

## **LEVELS OF OPERATIONAL AND FINANCIAL RESPONSIBILITY**

### **1. School Districts**

Teachers and school librarians/media center specialists are the principal architects of the learning process. Planning and necessary technical support for integration of technology into the curriculum is an essential component of each school district technology plan. The provision and allocation of resources to support that plan, including the installation and operation of local area network infrastructure, computers, related hardware and software, curriculum, and integration of technology into the classroom should be a school district responsibility.

### **2. Public Libraries**

Public library staff members provide basic computer and Internet training to the general public on a daily basis. Public access computers are reserved and used continuously throughout the day in every public library. Staff training, technical support, interior wiring, computer hardware and software, and the space and staff support necessary to make computers available to the public should continue to be a local public library responsibility.

### **3. Regions**

Regional organizations, such as service cooperatives, management information centers, and telecommunications access clusters are created by and exist based on the service needs of local school districts. Regional public library systems were created by state statute and are funded through library basic system support aid programs as well as local tax dollars. Regional organizations provide for cooperative purchasing, administrative support, regional technical assistance, and can also serve as a source for application development and training. They often serve as fiscal agents and develop federal E-rate discount program applications for large geographic areas throughout the state. These organizations also support the evaluation of new technologies on behalf of their members.

### **4. State**

The State of Minnesota has a responsibility to provide a certain level of infrastructure for its citizens to conduct business, access information, and perform other public functions such as operation of a public education system. Electronic access to information resources and communications capabilities in our economy and society should be considered a service vital to daily life in much the same way that other utilities and services such as roads, electricity, and telephones are considered as essential. The state should provide a consistent, equitable, permanent source of funding to help schools, public libraries, communities, and other public constituencies obtain affordable telecommunications access for conducting business

and delivering education and information services. The funding strategy should be constructed in such a way that it eliminates the need for schools and public libraries to seek funding support for telecommunications access from the legislature each biennium, eliminates separate operational and funding streams, and eliminates the need for individual constituency groups to put themselves in competition for resources for this purpose. The state should also establish quantifiable goals and measures of network use and effectiveness, provide incentives for increased collaboration among all units of government, work to combine simultaneous, relevant state and federal telecommunications initiatives, and serve as a recipient and distribution source for statewide funding for telecommunications access.

# **PERMANENT FUNDING FOR SCHOOL AND PUBLIC LIBRARY TELECOMMUNICATIONS ACCESS**

The purpose of this section of the Permanent Funding for School and Public Library Telecommunications Access Report is to provide background on the various options for funding sources, organizational/governance structures, and distribution structures that were discussed by the Permanent Funding Steering Committee.

## **POSSIBLE SOURCES**

### **1. State General Fund**

The state general fund is typically used to fund basic state government operations. Telecommunications access for schools and public libraries could be funded through a direct appropriation from this source if the Legislature would appropriate a sufficient amount to meet the needs of schools and public libraries and permanently include it in the state's budget base so that there would be no need to seek a new appropriation in each biennial budget cycle. The disadvantage to this approach would be that the funding priority could change with executive administration and legislative leadership changes, or funding might be reduced when budget deficits surface as an issue, all of which significantly impact the stability of the state general fund as a permanent funding source.

### **2. Universal Service Fund (USF)**

Several states, most notably Wisconsin and Texas, fund their education networks through universal service funds in which a flat fee surcharge is applied to all telecommunications access lines, both wire line and wireless. The Universal Service Fund (USF) model has also been implemented on a national level and serves as the source of funding for the federal E-rate discount program.

There are approximately three million wire line and two million wireless access lines in Minnesota. A 10-cent surcharge on this access would generate approximately \$6 million in annual funding. A 35-cent surcharge would provide \$21 million in annual funding which is the approximate amount needed for K-12 schools and public libraries telecommunications access, after federal E-rate discounts have been applied. The USF model would provide the most stable source of funding for the K-12 schools and public libraries education networks, would eliminate separate funding streams for schools and public libraries, and would be the least complex model to administer.

This funding mechanism could also incorporate the Broadband Access Availability Initiative being proposed by the Minnesota Department of Administration during this

legislative session. Similar in concept to the universal service fund model, the Broadband Access Availability Initiative is a special revenue fund to help finance the development and deployment of high-speed access in Minnesota by the private sector, particularly in greater Minnesota. The Broadband Access Availability Initiative and the need to provide telecommunications access support for K-12 schools and public libraries represent complementary efforts. The K-12 schools' and public libraries' broadband requirements could be aggregated with those of the rest of their communities' to promote the development of a total infrastructure where it is currently not available. An appropriate portion of this special revenue fund can be dedicated to paying the costs of the education network for K-12 schools and public libraries.

Under the Universal Service Fund model, the funds would be collected by the service providers as part of their monthly billing and transferred to the commissioner of revenue for deposit in a special revenue fund. This fund would be used to pay for the K-12 schools' and public libraries' network costs for network connectivity and the coordination of its use across districts and public library systems.

### **3. The Minnesota State Lottery**

Allocating a portion of state lottery funds for K-12 schools and public libraries telecommunications infrastructure earmarks a funding source not wholly dependent on legislative allocations for general education, but it does not generate "new money" for the purpose of technology infrastructure. Rather, it earmarks existing general funds. In FY2001, the Minnesota Lottery provided approximately \$36.14 million, including \$1.89 million for compulsive gambling treatment programs, or about 9.8% of its total revenue, to the state's general fund. Funding for the K-12 schools' TARP and public libraries' RLTA programs also comes from the state's general fund. In the future, the Legislature could divert either a percentage or a fixed amount of these lottery funds from the state's general fund and earmark them for permanent funding for the K-12 schools and public libraries statewide telecommunications infrastructure. Although there may be some fluctuations in this source of funding, it still would provide some stability for the permanent funding requirements of the K-12 schools and public libraries telecommunications infrastructure on an on-going basis, and could potentially stimulate additional lottery sales if the general public is made aware that a large percentage of these funds are going to education and public libraries.

## **POSSIBLE ORGANIZATIONAL STRUCTURE**

### **1. Role of the State**

Regardless of the distribution path for state funding, building an integrated and cost-effective statewide network will require leadership at both the local and state level. The needs requirements, for example, must be driven locally from the school districts and public libraries. Ongoing input from local and regional technology leaders should be integral to the maintenance of a state technology plan. The state, however, must play an increasing leadership role in the design, administration and management of the

resulting integrated network. To meet local needs, centralized coordination and expertise must be available in order to ensure the resulting network is standards-based, provides interoperability, utilizes shared infrastructure where feasible, and complies with the overall state enterprise architecture. On the state level, there are several agencies and partners that can be used to foster a network that serves the K-12 schools and public libraries community:

- **The Department of Children, Families & Learning**

At the present time, CFL reviews TARP and RLTA funding requirements and disburses funding, reviews and approves school district and public library technology plans, provides technical assistance on the federal E-rates application process, formulates state-level education technology policy and manages the development and implementation of the statewide plan for technology in K-12 education. As the primary service agency for K-12 schools and public libraries, CFL is a logical agent for future funding disbursement with input from appropriate agencies.

- **The Department of Administration**

The Department of Administration has formed a Joint Powers Agreement with the University of Minnesota and MnSCU to aggregate high-speed demand and to negotiate services for all parties. K-12 schools and public libraries can be brought into this structure, in two ways. In the current structure, the Department of Administration can bid on individual district or regional contracts, offering the schools its preferred pricing. A second scenario involves the state allocating aggregated support dollars to the joint venture to provide services at a cost-savings to all school districts and public libraries. As part of the Department of Administration, the Office of Technology plays a leadership role in the current Joint Powers Agreement. The Office of Technology's Project Management Office and technology analyst staff is also an excellent resource for providing management and planning expertise to city planners, local school administrators and superintendents.

- **The Minnesota Education Telecommunications Council (METC)**

The Minnesota Education Telecommunications Council (METC) helps to coordinate needs assessment from the local level, coordinates and fosters the sharing of information among higher education institutions, K-12 school districts, and public libraries, and provides a forum for this to happen on a regular basis.

- **Telecommunications Access Clusters and Associated Entities**

Under the TAG program structure, telecommunications access clusters were developed to aggregate school district and public library needs, coordinate

procurement of services, and manage funding. The majority of the telecommunications access clusters continue to serve their member school districts and public libraries and coordinate effective regional solutions that provide cost savings and increased service.

- **Higher Education Institutions**

The state's higher education institutions are creating a framework for an integrated network. The University of Minnesota, MnSCU and the private colleges are represented on the Technology Steering Committee of HEAC (Higher Education Advisory Council), working to coordinate networking issues and to incorporate K-12 schools and public libraries into an integrated K-12 school, public library, and higher education perspective and solution. The University and MnSCU are active and essential partners with the Department of Administration in the Joint Powers Agreement that allows for combined procurement of high-speed bandwidth for all three institutions. The University of Minnesota is the leader in introducing the capabilities of Internet 2 to the state.

## **POSSIBLE DISTRIBUTION STRUCTURES**

The ultimate purpose of providing state funding for technology infrastructure is to create an educational system that delivers the learning tools that will build a highly and appropriately educated workforce. State funding and management should result in better learning through the leveraging of resources.

As states across the nation grapple with the issues of local control in a new world of connected communities and limited resources, the solutions to statewide infrastructure vary greatly. Many of the states considered most successful in educational technology, including South Dakota, Illinois, Tennessee, and Washington, have in common a centralized approach to the funding and provisioning of infrastructure that ensures a standards-based and interoperable approach to its deployment, and results in a single integrated statewide network. Whether or not Minnesota chooses to build and maintain such an integrated network on behalf of the K-12 schools and public libraries community or it chooses to encourage through funding and leadership local and regional initiatives to fashion such an integrated network from a grassroots level, how the state funds technology infrastructure becomes crucial to the success or failure of its interoperability. In either case, there must be centralized leadership and distribution of funds.

- **State aggregated dollars.**

The most direct means of ensuring aggregated and integrated service and a consistent direction for deployment is for state funding to be distributed not to individual school districts, but to a state agency or organization that will either purchase statewide services for an integrated network, or will distribute funds

regionally/locally based on need. At this time, the foundation for a statewide network is in existence, created under the Joint Powers agreement between the Department of Administration, MnSCU, and the University of Minnesota. It maximizes buying power for these state institutions. There does not yet exist an efficient means for bringing the K-12 schools and public libraries community into this structure, except on a local and/or regional basis. How the state encourages such statewide coordination and efficient buying power may well center on how telecommunications access funds are distributed to the K-12 schools and public library community in the future.

- **State administration of a permanent funding program.**

At the current time, TARP reimbursement funds and the RLTA are managed by CFL, which requires that school districts and regional public library systems submit a technology plan, apply for federal E-rate discounts, and maintain an audit trail that substantiates actual costs. One option is to alter the current TARP and RLTA models to performance-based aid programs that focus funding on performance-based eligibility criteria. This would significantly increase the administrative burden at the state level. The pay-off is that such a model would create a far more compatible and interoperable network, would minimize the state's costs for K-12 school and public library infrastructure, and would promote improved technology planning on both the state and local levels.

Other options exist for the state in administering telecommunications aid funding and providing leadership in the area of technology planning in the future. These options include:

- Distribution of all funding for schools and public libraries through CFL, including allocating a portion of the available funding to provide designated staff at CFL to administer the funding application process.
- Proportionally divide and allocate all funding to regional organizations that would be responsible for reviewing funding applications and administering funds for area schools and public libraries. Allocate a portion of the available funding to those regional organizations for administrative/coordination costs.
- Allocate telecommunications aid funding to an oversight agency, such as METC, with distribution by the appropriate state agency serving as fiscal agent, in much the same manner that technology funds for higher education are allocated, giving such a designated agency the authority to set criteria and oversee the administrative process.
- If the state opts for funding a statewide infrastructure rather than allocating funds on a district level, a statewide E-rate application should be submitted by CFL. Those districts not opting to participate in the state network would apply individually.

### **District-based funding.**

While distributing state funds directly to each school district for discretionary expenditure supports operating philosophies of local control and choice, for telecommunications infrastructure this model can potentially result in disparate developmental direction, fewer economies of scale, and fragmented infrastructure, thereby perpetuating difficulties in achieving interoperability and lost opportunities to connect to other education institutions within the state, higher education, and national institutions. Any school district focused, formula-based funding scenario for technology infrastructure, including telecommunications access should encompass the following:

- The funding formula should be based on factors other than a pure per student ratio, and include calculation strategies that equalize actual costs and that balance inherent inequities due to geographic as well as demographic considerations. An example of a funding formula that addresses these types of issues is the formula used to calculate transportation aid for school districts.
- The funding scenario should include incentives for school districts to adhere to interoperability standards and guidelines that will enable exchange of data, and collaboration among institutions.
- Districts should be required to apply the funds for their original purpose and the potential diversion of such funds to other school needs should be restricted.

Ultimately, the goal of any telecommunications access funding disbursement model is to encourage school districts and public libraries to make equipment purchases and telecommunication access decisions based on providing the highest possible access to technology-based learning, school administration, and information access at the lowest possible price. To accomplish this goal, incentives for efficient aggregation of service and creative use of technology should be built into the funding mechanism. This is extremely difficult to do under formula funding and nearly impossible under a cost reimbursement program.

A successful funding model, therefore, maintains a basic support appropriation for all schools and public libraries, but incorporates funding criteria which continue to address disparate access costs, and also encourages and rewards community collaboration and efficiency, ensures that schools and public libraries are funded to the appropriate levels for their individual technology applications, and rewards schools, school districts, and public libraries that are contributing to an advancement of technology learning beyond their local borders.

Basic funding criteria could include:

- A technology plan that demonstrates a school district's or public library's compliance with state minimum standards for interoperability.
- An implementation plan that outlines a school district's or public library's efforts to minimize costs including collaborating for services with local community and state resources, competitive bidding of local services, and the purchase of equipment that maximizes bandwidth efficiency.
- An outline of a school district's or public library's projected bandwidth use and needs for teaching, administration, and information access; i.e., its application of the technology.
- Special funds might also be granted to school districts or public libraries that model a new kind of technology application, a new kind of community collaboration and share their findings, or share online curriculum or other technology resources with other school districts and public libraries. Special funds might also be set aside for the operational costs of regional organizations that successfully represent and coordinate area school district or public library services, equipment purchases and cost-saving measures.

## RECOMMENDATIONS

The following section represents the recommendations of the Permanent Funding Steering Committee for establishing a funding source, organizational structure, and funding disbursement methodology for school district and public library telecommunications access support. This recommended model eliminates separate funding streams for school districts and public libraries, allows for future growth, promotes collaboration, partnership, and economies of scale, and is needs-driven and performance-based. It also moves funding support for telecommunications access for schools and public libraries out of the biennial budget process, thereby creating a stable, long-term source of funding.

### FUNDING SOURCE - UNIVERSAL SERVICES FUND

The state of Minnesota should work with its Public Utilities Commission (PUC) and Legislature to adopt a universal service fund model for permanently funding the telecommunications access costs of K-12 schools and public libraries.

- Under this model, funding would be generated by telecommunications service providers, who would collect a nominal surcharge based on a certain amount per wire and wireless customer as part of their monthly billing. A nominal monthly surcharge on the three million wire line and two million wireless access lines in Minnesota would generate the approximately \$24 million in annual funding needed to support K-12 schools and public libraries telecommunications access. These funds would be transferred to a special revenue fund in the Department of Revenue.
- In addition to the national universal service model associated with the federal E-rates program, Wisconsin, Texas, and other states have adopted this model successfully at the state level, so there are existing practices and precedents that Minnesota can adapt to its needs.
- This would provide a relatively stable, permanent source of funding for telecommunications access for schools and public libraries and would eliminate the need for these constituencies to continue seeking telecommunications access funding from the Legislature each biennium. Revenues from this fund would pay the full operational costs of a shared, statewide infrastructure that connects K-12 schools and public libraries to each other and to worldwide learning and information resources.
- Telecommunications access for nonpublic schools could also be supported from a universal service fund model.
- The level of bandwidth deployed for schools and public libraries would be based on demonstrated need.
- The universal service fund dollars would support ongoing wide area network telecommunications access costs for schools and public libraries, including monthly line leases, Internet access fees, network maintenance support, and installation costs. The line of demarcation for costs the funds would support is a

connection point at each school and public library, including maintenance on the router and codec, or similar point of presence equipment deployed to deliver access to that connection point.

- K-12 schools and public libraries have been working in partnership with higher education in the delivery of curriculum and information over the existing telecommunications network for the past several years. This partnership will continue. To move towards a fully integrated network infrastructure, the next phase of adopting a universal service model for funding telecommunications access for education is the inclusion of higher education institutions in this model.

## **ORGANIZATIONAL MODEL - STATE LEVEL COORDINATION OF TELECOMMUNICATIONS INFRASTRUCTURE AND LOCAL NEEDS**

The telecommunications infrastructure for K-12 schools, higher education, and public libraries should be coordinated by an appropriate state level agency that represents the telecommunications interests and needs of school districts, public libraries, and higher education, along with appropriate state agencies such as CFL, HESO, and the Department of Administration.

- The appropriate state level agency would set criteria for funding and procurement of services based on needs, cost effectiveness, network efficiency, and existing telecommunications infrastructure available throughout the state.
- Experience has demonstrated that procuring and delivering telecommunications access through a regional model is very effective. Such a model lends itself to aggregation of needs and services, cooperative purchasing, cost savings on technical support, network efficiencies, interoperability, shared responsibility in curriculum and information delivery, and elimination of network redundancy. School districts and public libraries should work with appropriate regional organizations to aggregate needs and procure services based on criteria established by the appropriate state level agency.
- School districts and public libraries are presently required to prepare technology plans for review and approval by CFL in order to be eligible for the federal E-rates discount program and other federal programs relating to technology. Outcomes and measures for the use of the services delivered through telecommunications and technology should be further emphasized in school district and public library technology plans.
- Regional technology plans that focus on the efficient delivery of capacity to schools and public libraries, emphasize interoperability and network reliability, and which meet objectives established by the state for deployment of telecommunications in schools and public libraries should also be required.
- As part of the technology planning process, needs analysis would be performed by school districts and public libraries in conjunction with their telecommunications access cluster, regional public library system, or other appropriate regional entities in their area.

## **FUNDING DISTRIBUTION – STATE LEVEL**

1. Funds to support telecommunications access for K-12 schools and public libraries that are generated by a state level universal service fund mechanism to support operation and maintenance of the shared, statewide telecommunications infrastructure should be distributed in a manner similar to that presently used to fund the higher education network. In other words, telecommunications access clusters, regional public library systems or other appropriate regional agencies work to assess local needs, procure services through cooperative purchasing, promote network efficiency and reduce service redundancies, and present proposals to the appropriate state agency for funding. Funding would then be distributed by the appropriate state agency acting as fiscal agent.
  - An appropriate state level agency would establish criteria for distribution of funding for school and public library telecommunications based on needs, cost effectiveness, network efficiency, and existing telecommunications infrastructure available throughout the state.
  - Funding for nonpublic schools would flow through the school district of residence as is currently the case for other types of funds for nonpublic schools.
  - Incentives for aggregating needs and service, collaboration on service delivery, and continuous improvement in network efficiency and cost reductions should be provided.
  - Funding should be provided for evaluation of emerging technologies through a competitive grant process.
2. Funding for “total cost of ownership,” which includes operation of building level infrastructure, computers and servers, local area network hardware and software, local network maintenance, local technical support, educational content and any required network security should be provided as part of the general education funding formula for K-12 schools and as part of regional library basic system support for public libraries. While some of these needs are now partially funded through discretionary use of local funds by school districts and libraries, these needs are not specifically supported in any existing school district or public library funding formula.

## **ACTION PLAN**

1. The Legislature should develop an action plan to address the issue that there is no state funding available to support telecommunications access for schools, and insufficient funding available to support telecommunications access for public libraries, in FY2003 and any succeeding years until the universal service fund model is implemented.

2. The Legislature should appoint a working group to immediately begin working towards establishment of a universal service fund model for permanently funding telecommunications access for K-12 schools and public libraries.

## **EVALUATION**

The appropriate state agency should define a clear, measurable set of objectives for the telecommunication infrastructure shared among K-12 schools, public libraries, and higher education. The statewide infrastructure should be regularly assessed against those objectives.

**APPENDIX A**

**PERMANENT FUNDING STEERING COMMITTEE MEMBERSHIP**

<b>NAME</b>	<b>REPRESENTING</b>
<b>Nancy Anderson</b>	<b>Information Technology Division, Minnesota Department of Children, Families &amp; Learning</b>
<b>Audrey Bomstad</b>	<b>Education Program Finance, Minnesota Department of Children, Families &amp; Learning</b>
<b>Cathy de Moll</b>	<b>Minnesota Department of Administration/Office of Technology</b>
<b>John Fredericksen</b>	<b>School District Representative Member, Minnesota Education Telecommunications Council (METC)</b>
<b>Steve Hallan</b>	<b>East Central Minnesota Education Cable Cooperative/Central Telecommunications Access Cluster Member, METC</b>
<b>Ken Hasledalen</b>	<b>Office of Management Services, Minnesota Department of Children, Families &amp; Learning Member, METC</b>
<b>Ann Hutton</b>	<b>Southeast Libraries Cooperating (SELCO) Member, METC</b>
<b>Steve Jatczak</b>	<b>ESV Region I/Project LINKS Telecommunications Access Cluster</b>
<b>Myron Lowe</b>	<b>Office of Information Technology, University of Minnesota Member, METC</b>
<b>Robert Meeks</b>	<b>Minnesota School Boards Association</b>
<b>Mary Mehsikomer</b>	<b>Division of Information Technologies, Minnesota Department of Children, Families &amp; Learning</b>
<b>Tom Melcher</b>	<b>Education Program Finance, Department of Children, Families &amp; Learning</b>
<b>Jack Ries</b>	<b>Intertech, Minnesota Department of Administration</b>
<b>Lois Rockney</b>	<b>Minnesota Association of School Business Officials</b>
<b>Joyce Swonger</b>	<b>Library Development &amp; Services, Minnesota Department of Children,</b>

NAME	REPRESENTING
	<b>Families &amp; Learning Member, METC</b>
<b>Nancy Walton</b>	<b>Library Development &amp; Services, Minnesota Department of Children, Families &amp; Learning</b>
<b>Peg Werner</b>	<b>Viking Library System Member, METC</b>
<b>Rod Wrege</b>	<b>Southwest Minnesota Telecommunications Cooperative/Southwest Telecommunications Access Cluster</b>

## APPENDIX B

### TELECOMMUNICATIONS FUNDING FOR SCHOOLS AND LIBRARIES HISTORY AND PROGRAM COMPARISON

#### TELECOMMUNICATIONS ACCESS GRANT APPROPRIATIONS

The appropriations listed here for FY1996-FY1999 included funding for both K-12 school districts and public libraries.

FY1996-1997	\$15.5 million
FY1998-1999	\$23.0 million
*FY2000-2001	\$5 million

\*These funds were a one-time appropriation to school districts for equipment.

#### TELECOMMUNICATIONS ACCESS REVENUE PROGRAM (TARP)

Additional Operating Capital Revenue for Telecommunications

FY2001	\$4.8 million
FY2002	\$4.8 million

Telecommunications Access Revenue Program – 90/10

FY2001	\$16,668,000
FY2002	\$1,852,000

FY2002	\$15,387,000
FY2003	\$1,565,000

Additional Operating Capital Revenue for FY2001-2002. Each school district receives an additional \$5 per adjusted marginal cost per pupil unit (AMCPU) in operating capital revenue to be used for ongoing telecommunications access costs associated with data, video, and Internet access. If a school district can pay all of their costs using this amount, any funds remaining may be used to purchase computers, hardware, or other technology-related equipment. The state total for this additional operating capital is approximately \$4.8 million per year.

If a school district's costs for ongoing telecommunications access associated with data, video, and Internet exceed the \$5 per AMCPU in operating capital revenue, they may submit projected costs to the CFL for reimbursement. There is \$18,520,000 available in FY2001-2002, which is distributed in a 90/10 scenario, with \$16,668,000 available in FY2001 and the remaining \$1,852,000 to be held back for adjustments based on actual cost data in FY2002. For FY2002, the appropriation is split at \$15,387,000 for FY2002 with \$1,565,000 held in reserve for adjustments in FY2003. There is no further appropriation for FY2003.

Telecommunications access revenue is provided to charter schools and nonpublic schools on a formula basis.

## **REGIONAL LIBRARY TELECOMMUNICATION AID**

*FY2000-2001	\$4.8 million
FY2002-2003	\$2.4 million

\*For FY2000-2001, the appropriation for regional library telecommunication aid included \$1.2 in base funding each year, plus \$2.4 million in one-time funding for upgrades that included equipment and installation costs.

For FY2000-2001, Regional Library Telecommunication Aid (RLTA) was a grant program. Eligible applicants were the 12 regional public library systems, who applied on behalf of their branches/system members. In FY2000, grant applications were based upon estimated actual cost with requests exceeding funds available. Grant allocations were prorated at 74 percent of estimated costs. In FY2001, grant applications were based upon estimated actual cost of existing or upgraded lines. A one-time \$2.4 million allocation was provided for upgrades. Applications requested upgrades for approximately 50 percent of existing 56Kb lines to T1 lines, plus equipment necessary for the upgrades. In FY2002-2003, RLTA becomes a categorical aid program. \$1.2 million will be distributed each year based on actual costs and will be prorated to maintain “adequate” connectivity across the state’s public libraries.

New legislation for the FY2002-2003 biennium also increases Regional Library Basic System Support Grants (categorical aid) by \$1,153,000 in FY2004 and by \$1,152,000 in FY2005. The purpose of this is to begin to fund the directive in legislation that a permanent method to fund telecommunications for public libraries be incorporated into this program rather than continue separately in the RLTA categorical aid beyond FY2002-2003.

**COMPARISION OF PROGRAM PARAMETERS**

<p align="center"><b>TELECOMMUNICATIONS ACCESS GRANTS FY1996-FY2000</b></p>	<p align="center"><b>TELECOMMUNICATIONS ACCESS REVENUE FY2001-FY2003</b></p>	<p align="center"><b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (GRANT PROGRAM) FY2000-FY2001</b></p>	<p align="center"><b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (CATEGORICAL AID PROGRAM) FY2002-FY2003</b></p>
<p><b>Payment.</b> School districts and public libraries grouped into telecommunications access clusters. The clusters applied on behalf of their member school districts and public libraries to the Minnesota Education Telecommunications Council (METC) and the Department of Children, Families &amp; Learning (CFL) for funding based on projected costs for the cluster. Proposed budgets were reviewed and approved by the METC based on criteria established by METC. Funds were paid to a central fiscal agent for the cluster and telecommunications access invoices were paid to service providers by the fiscal agent.</p>	<p><b>Payment.</b> School districts, charter schools, and nonpublic schools receive entitlements based on a combination of per pupil formula and projected costs. School districts whose telecommunications access costs exceed the additional \$5 per AMCPU in operating capital revenue can submit projected costs to CFL for reimbursement of the difference. Payment is made directly to school districts and charter schools, and payment to nonpublic schools is made through the school district of residence. Payment may be prorated if demand exceeds funds appropriated.</p>	<p><b>Payment.</b> In FY2000, the 12 regional public library systems applied for noncompetitive grants directly or through a telecommunications cluster to the CFL. Proposed applications were reviewed and approved by CFL in cooperation with METC based on criteria and allowable expenses established by CFL and in keeping with the previous criteria set by METC under the telecommunication access grant program. Payments were made to the regional public library systems on behalf of their branches/system members, which in turn paid the telecommunications access cluster or service provider for delivery of services.</p>	<p><b>Payment.</b> In FY2002-FY2003, the 12 regional public library systems will submit applications for categorical aid on behalf of their branches/members to CFL. Legislative changes have made this a categorical aid rather than a grant program. Applications will be based on estimated actual line lease and maintenance costs reviewed and approved by CFL. Funding will be prorated based on actual costs. Aid payments will be made to the 12 regional public library systems on behalf of their branches/system members. The systems will pay either the telecommunications cluster or service providers directly.</p>
<p><b>Eligible entities.</b> School districts, education cooperatives, intermediate units, public libraries, and charter schools.</p>	<p><b>Eligible entities.</b> School districts, charter schools, and nonpublic schools.</p>	<p><b>Eligible entities.</b> Regional public library systems recognized by CFL under M.S. 134.34, Subd. 3, on behalf of their branches/system members.</p>	<p><b>Eligible entities.</b> The 12 regional public library systems recognized by CFL under M.S. 134.34, Subd. 3, on behalf of their branches/system members.</p>
<p><b>What the funding provided:</b></p>	<p><b>What the funding provides:</b></p>	<p><b>What the funding provided:</b></p>	<p><b>What the funding provides: In</b></p>

<b>TELECOMMUNICATIONS ACCESS GRANTS FY1996-FY2000</b>	<b>TELECOMMUNICATIONS ACCESS REVENUE FY2001-FY2003</b>	<b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (GRANT PROGRAM) FY2000-FY2001</b>	<b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (CATEGORICAL AID PROGRAM) FY2002-FY2003</b>
<p>Connectivity delivered to the school district or the public library. One T1 or 56Kb connection to school districts and other educational entities (depending on eligibility), one T1 connection between groups of school districts and existing ITV networks, one T1 connection to each regional public library system, and one 56Kb connection to each eligible public library. Equipment needed for delivering data, Internet, and video, such as codecs, routers, MCUs, bandwidth managers was allowable. Maintenance and installation were also allowable.</p>	<p>Financial support for the ongoing telecommunications access costs associated with data, Internet access, and video, for a school district up to the bandwidth speed of one T1 connection per elementary, middle, and secondary school in the district. School districts may also submit projected costs associated with ongoing telecommunications access through cooperative arrangements for reimbursement. For charter schools and nonpublic schools, an amount of revenue is provided based on enrollment that is to be used for ongoing telecommunications access costs for data, Internet access, and video. No equipment purchases are eligible, with the exception of school districts that are able to meet all of their costs out of the additional \$5 per AMCPU and have funds remaining. Maintenance and installation charges for new circuits are also allowable.</p>	<p>Connectivity was delivered to the regional public library systems and their branches/system members. In FY2000, this included one T1 connection to each system and one 56Kb connection to each eligible public library. Line lease and maintenance costs were allowable. Purchase and installation costs for equipment needed for delivering data, Internet, and video, such as codecs, routers, MCUs, and bandwidth managers were allowable. In FY2001, two T1s were provided to each system, additional T1 lines for eligible branch/system member libraries to a total of 50 percent of public library MnLINK sites, and one 56Kb connection to the remaining branches/system members. One-time money was provided for upgrades, maintenance, and installation. Other allowable expenses included interactive television, equipment, and other costs of moving to new technologies (ATM, DSL) and the replacement and/or upgrade of other equipment</p>	<p>FY2002-2003, connectivity will be delivered to the regional public library systems and their branches/system members. Details as to what is allowable will be determined by CFL under M.S. Statutes 134.47 and is based upon maintaining “adequate” connectivity to all eligible public library buildings across the state.</p>

<b>TELECOMMUNICATIONS ACCESS GRANTS FY1996-FY2000</b>	<b>TELECOMMUNICATIONS ACCESS REVENUE FY2001-FY2003</b>	<b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (GRANT PROGRAM) FY2000-FY2001</b>	<b>REGIONAL LIBRARY TELECOMMUNICATIONS AID (CATEGORICAL AID PROGRAM) FY2002-FY2003</b>
		necessary to improve or maintain connections.	
<b>Coordination.</b> Funding was set aside to assist with coordination of ITV activities, TAG grant and E-rate application, procurement, troubleshooting, and network operation.	<b>Coordination.</b> No specific allowance for coordination is provided, however, school districts may claim the costs of cooperative arrangements used to deliver telecommunications services.	<b>Coordination.</b> No funding was set aside.	<b>Coordination.</b> May include costs associated with “cooperative arrangements with postsecondary institutions, school districts, and other governmental agencies.”
<b>E-Rate requirement.</b> Clusters were required in statute to apply to the federal government for E-rate discounts on eligible telecommunications services funded by the state through the TAG program.	<b>E-Rate requirement.</b> School districts are required to apply for E-rate discounts, either individually or through consortia, in order to be eligible to receive state TARP funds. There is no E-rate requirement in statute for the charter schools and nonpublic schools.	<b>E-Rate requirement.</b> In FY2000, either the regional public library systems or their telecommunications access cluster were required to apply to the federal government for E-rate discounts on eligible telecommunications services funded by the state through the RLTA grant program on behalf of their branches/system members.  In FY2001, the regional public library systems were required to apply directly for federal E-rate discounts on eligible telecommunications services funded by the state through the RLTA grant program on behalf of their branches/system members.	<b>E-rate requirement.</b> For FY2002-2003, the regional public library systems will be required to apply to the federal government for E-rate discounts on eligible telecommunications services funded by the state through the RLTA categorical aid program on behalf of their branches/system members.

**APPENDIX C**

**RANGE OF TELECOMMUNICATIONS ACCESS COSTS FOR SCHOOLS**

Telecommunication Services Cost Disparities  
(Data as of Mar 26, 2001)

<b>Small Schools (Enrollment &lt; 500)</b>	<b>K-12 Enrollment</b>	<b>Annual T1 Data/Internet Cost</b>
ASHBY	347	20,298
EAGLE VALLEY	466	18,606
FLOODWOOD	404	32,586
GRYGLA	204	22,895
HENNING	404	16,675
KITTSOON CENTRAL	472	24,601
LYLE	305	20,805
NETT LAKE	49	15,240
NICOLLET	433	17,844
TRUMAN	482	17,892
<b>Medium Schools (Enrollment &gt;500 but &lt; 3000)</b>		
ACGC	1,081	23,760
BARNESVILLE	760	24,162
BELGRADE-BROOTEN-ELROSA	963	19,740
CANNON FALLS	1,799	27,216
CROOKSTON	1,748	22,987
FERTILE-BELTRAMI	612	22,563
INTERNATIONAL FALLS	1,769	32,580
KENYON-WANAMINGO	1,198	30,909
LAKE SUPERIOR	2,176	21,864
MAPLE LAKE	933	14,050
MESABI EAST	1,338	17,694
MORRIS	1,124	15,852
NEW ULM	2,873	12,516
PEQUOT LAKES	1,280	13,126
WATERVILLE-ELYSIAN	1,128	20,628
WIN-E-MAC	499	23,599
<b>Large Schools (Enrollment &gt; 3000)</b>		
ALEXANDRIA	4,199	20,208
BEMIDJI	5,556	18,026
BLOOMINGTON	10,833	10,700
CENTENNIAL	6,946	9,620
EDINA	7,025	16,800
ELK RIVER	8,927	18,267
HIBBING	3,350	16,320
HOPKINS	8,404	9,620
HUTCHINSON	3,400	11,993
MANKATO	7,305	12,504

<b>Small Schools (Enrollment &lt; 500)</b>	<b>K-12 Enrollment</b>	<b>Annual T1 Data/Internet Cost</b>
MONTICELLO	3,459	14,650
MOORHEAD	5,736	15,732
OSSEO	22,017	9,620
ROBBINSDALE	13,706	13,000
ROCHESTER	18,224	28,563
WAYZATA	9,317	11,300

1. The cost of telecommunications services depends in part on the distance between the school district or public library and the telephone company facilities that serve it. This distance is often referred to within the industry as "the last mile". Although the equipment that provides popular voice telephone services is installed in virtually every telephone company office, the equipment to provide high speed data transfer and Internet access may not be located in the school district's or library's home community. Equipment that supports videoconferencing is spread out even further. Consequently, especially in rural areas, "the last mile" is often many miles. Even with standardized contracts, the cost of providing the same service to locations around the state varies dramatically.
2. Dedicated data/Internet telecommunications circuits are priced according to transmission capacity, but are not readily scalable. Most schools quickly outgrew the 56kb connections provided through TAG. The next step up is a DS1 or "T1" circuit, containing twenty-four 56 kilobyte channels. Current legislation supports a maximum of one T1 circuit per elementary, middle or high school, regardless of the number of students or connected computers.
3. Voice telephone bills typically have two components - a basic monthly charge and a usage charge. Data/Internet circuits have a fixed monthly cost regardless of the amount of use. The monthly cost is not lower for smaller schools, nor is it reduced during the summer months or if enrollment declines.
4. The number of T1 circuits necessary to provide adequate service to a district depends on the volume and type of telecommunications traffic. Most small and medium-sized districts have one or two T1s, but large districts often have two or more.

## APPENDIX D

### PUBLIC LIBRARY TELECOMMUNICATIONS COST DISPARITY DATA BY COUNTY

#### REGIONAL LIBRARY TELECOMMUNICATIONS AID PROGRAM FY 2002 COST DISPARITIES (BY COUNTY)

The following chart illustrates the estimated total line lease and maintenance costs for T1 and 56 Kb (or equivalent) lines installed in regional public library system branch/member libraries. The estimated costs were submitted to Library Development and Services (LDS) by the regional public library systems as part of their application for FY 2002 Regional Library Telecommunications Aid (RLTA) funding. The chart shows the least expensive 56 Kb line to most expensive T1 line for each county to show the range in cost. The chart does not show the estimated costs for every public library that belongs to the twelve designated regional public library systems. The actual line lease and maintenance costs will not be known until the submission of a final report to LDS at the end of the FY 2002.

- Columns with an “n/a” in them indicate that there is no T1 and/or Kb line for that county.
- In the column entitled “Estimated Total Cost 56 Kb or ½ T1 Line FY 2002,” the asterisk “\*” is used to indicate those communities which were seeking to install a ½ T1 line at the time of the application for FY 2002 RLTA. The estimated costs for ½ T1 lines were being negotiated by the regional public library systems on behalf of their branches/members at the time of the application for FY 2002 RLTA.
- Under some counties, there will be an additional line indicated for the regional public library system headquarters (such as Blue Earth County, which has Mankato with the Blue Earth County Library headquarters and the Traverse des Sioux Library System headquarters).
- The cities of Minneapolis (Hennepin County) and St. Paul (Ramsey County) are listed under their respective counties.

County Name	Regional Public Library System Name	City Name T1 Line	Estimated Total Cost T1 Line FY 2002	City Name 56 Kb or 1/2 T1 Line	Estimated Total Cost 56 Kb or 1/2 T1 Line FY 2002
Aitkin	East Central	Aitkin	\$22,122	McGregor	\$7,277
Anoka	MELSA	Anoka (County Sys HQ)	\$18,912	n/a	n/a
Becker	Lake Agassiz	Detroit Lakes	\$42,553 (Data/Video)	n/a	n/a
Beltrami	Kitchigami	n/a	n/a	Blackduck	\$5,191
Benton	Great River	n/a	n/a	Foley	\$5,465
Bigstone	Pioneerland	n/a	n/a	Graceville	\$4,810
Blue Earth	Traverse des Sioux	Mankato (County Sys HQ)	\$13,089	Lake Crystal	\$5,065
Blue Earth	Traverse des Sioux (Regl Sys HQ)	Mankato (Regl Sys HQ)	\$31,156 (Data/Video)	n/a	n/a
Brown	Traverse des Sioux	New Ulm	\$13,610	Hanska	\$9,105
Carlton	Arrowhead	Cloquet	\$12,581	Carlton	\$935
Carver	MELSA	Norwood-Young America	\$10,800	n/a	n/a
Cass	Kitchigami	n/a	n/a	Cass Lake	\$5,876
Cass	Kitchigami (Regl Sys HQ)	Pine River (Regl Sys HQ)	\$20,771	n/a	n/a
Chippewa	Pioneerland	n/a	n/a	Clara City	\$3,631
Chisago	East Central	Lindstrom	\$21,627	Rush City	\$4,098
Clay	Lake Agassiz	Moorhead	\$14,437	Barnesville	\$18,556 *
Clearwater	Lake Agassiz	n/a	n/a	Hawley	\$16,479 *
Cook	Arrowhead	Grand Marais	\$31,802	n/a	n/a
Cottonwood	Plum Creek	n/a	n/a	Westbrook	\$4,356
Crow Wing	Kitchigami	Brainerd	\$14,048	n/a	n/a
Dakota	MELSA	Eagen (County Sys HQ)	\$19,287	n/a	n/a
Dodge	SELCO	n/a	n/a	Dodge Center	\$2,946
Douglas	Viking	Alexandria	\$18,335	n/a	n/a
Faribault	Traverse des Sioux	Blue Earth	\$13,609	Winnebago	\$4,905
Fillmore	SELCO	Spring Valley	\$7,133	Preston	\$2,442
Freeborn	SELCO	Albert Lea	\$4,898	n/a	n/a
Goodhue	SELCO	Red Wing	\$24,875	Zumbrota	\$3,077
Grant	Viking	n/a	n/a	Elbow Lake	\$3,983
Hennepin	MELSA	Minnetonka (County Sys HQ)	\$11,400	n/a	n/a
Hennepin	MELSA	Minneapolis (City Sys HQ)	\$15,687	n/a	n/a
Houston	SELCO	Caledonia	\$4,969	Spring Grove	\$3,045
Hubbard	Kitchigami	n/a	n/a	Park Rapids	\$22,934 *
Isanti	East Central (Regl Sys HQ)	Cambridge (Regl Sys HQ)	\$37,437	n/a	n/a
Itasca	Arrowhead	Grand Rapids	\$12,581	Bovey	\$1,107

County Name	Regional Public Library System Name	City Name T1 Line	Estimated Total Cost T1 Line FY 2002	City Name 56 Kb or 1/2 T1	Estimated Total Cost 56 Kb or 1/2 T1 Line FY 2002
Jackson	Plum Creek	n/a	n/a	Heron Lake	\$4,380
Kanabec	East Central	Mora	\$19,765	n/a	n/a
Kandiyohi	Pioneerland	n/a	n/a	Spicer	\$4,691
Kandiyohi	Pioneerland (Regl Sys HQ)	Willmar (Regl Sys HQ)	\$46,437 (Data/Video)	n/a	n/a
Kittson	Northwest	n/a	n/a	Hallock	\$16,283 *
Koochiching	Arrowhead	International Falls	\$30,747	n/a	n/a
Lac Qui Parle	Pioneerland	n/a	n/a	Dawson	\$21,130 *
Lake	Arrowhead	Silver Bay	\$22,285	n/a	n/a
Lake of the Woods	Arrowhead	n/a	n/a	Baudette	\$4,752
Le Sueur	Traverse des Sioux	LeSueur	\$16,826	Waterville	\$5,875
Lincoln	Plum Creek	n/a	n/a	Lake Benton	\$4,671
Lyon	Plum Creek	n/a	n/a	Marshall	\$346
McLeod	Pioneerland	n/a	n/a	Brownston	\$4,570
Mahnomen	Lake Agassiz	n/a	n/a	Mahnomen	\$19,746 *
Marshall	Northwest	n/a	n/a	Warren	\$22,006 *
Martin	Traverse des Sioux	n/a	n/a	Truman	\$5,664
Meeker	Pioneerland	n/a	n/a	Dassel	\$4,594
Mille Lacs	East Central	Princeton	\$13,757	Milaca	\$5,830
Morrison	Great River	Little Falls	\$17,108	Pierz	\$5,465
Mower	SELCO	Austin	\$4,898	Brownsdale	\$2,765
Murray	Plum Creek	Slayton	\$18,970	Fulda	\$4,604
Nicollet	Traverse des Sioux	St. Peter	\$12,340	North Mankato	\$10,108
Nobles	Plum Creek (Regl Sys HQ)	Worthington (Regl Sys HQ)	\$21,890	n/a	n/a
Norman	Lake Agassiz	n/a	n/a	n/a	n/a
Olmsted	SELCO	Stewartville	\$5,135	n/a	n/a
Olmsted	SELCO (Regl Sys HQ)	Rochester (Regl Sys HQ)	\$67,498 (Date/Video)	n/a	n/a
Ottertail	Viking	Fergus Falls PL	\$18,263	New York Mills	\$14,672 *
Ottertail	Viking (Regl Sys HQ)	Fergus Falls (Regl Sys HQ)	\$17,878	n/a	n/a
Pennington	Northwest	Thief River Falls (PL)	\$10,878	n/a	n/a
Pennington	Northwest (Regl Sys HQ)	Thief River Falls (Regl Sys HQ)	\$17,880	n/a	n/a
Pine	East Central	Pine City	\$4,220	Hinckley	\$4,076
Pipestone	Plum Creek	n/a	n/a	Edgerton	\$5,289
Polk	Lake Agassiz	n/a	n/a	McIntosh	\$26,988 *
Pope	Viking	n/a	n/a	Glenwood	\$15,737 *

<b>County Name</b>	<b>Regional Public Library System Name</b>	<b>City Name T1 Line</b>	<b>Estimated Total Cost T1 Line FY 2002</b>	<b>City Name 56 Kb or 1/2 T1 Line</b>	<b>Estimated Total Cost 56 Kb or 1/2 T1 Line FY 2002</b>
Ramsey	MELSA	Shoreview (County Sys HQ)	\$19,287	n/a	n/a
Ramsey	MELSA	St. Paul (City Sys HQ)	\$19,032	Rice St. Branch	\$1,467 (INET 10 Mb)
Ramsey	MELSA (Regl Sys HQ)	St. Paul (Regl Sys HQ)	\$17,832	n/a	n/a
Red Lake	Northwest	n/a	n/a	Red Lake Falls	\$24,210 *
Redwood	Plum Creek	Redwood Falls	\$44,222 (Date/Video)	Morgan	\$3,432
Renville	Pioneerland	n/a	n/a	Fairfax	\$3,995
Rice	SELCO	Faribault	\$5,076	n/a	n/a
Rock	Plum Creek	n/a	n/a	Luverne	\$22,243 *
Roseau	Northwest	n/a	n/a	Greenbush	\$5,388 (DSL)
St. Louis	Arrowhead	Ely	\$16,722	Kinney	\$935
St. Louis	Arrowhead (Regl Sys HQ)	Virginia (Regl Sys HQ)	\$11,129	n/a	n/a
Scott	MELSA	Savage (County Sys HQ)	\$20,487	n/a	n/a
Sherburne	Great River	Becker	\$17,018	Big Lake	\$5,465
Sibley	Traverse des Sioux	Gaylord	\$15,411	Gibbon	\$4,544
Stearns	Great River	Albany	\$17,108	Belgrade	\$5,465
Stearns	Great River (Regl Sys HQ)	St. Cloud (Regl Sys HQ)	\$17,108	n/a	n/a
Steele	SELCO	Owatonna	\$3,701	Blooming Prairie	\$2,828
Stevens	Viking	n/a	n/a	Morris	\$9,892 *
Swift	Pioneerland	Benson	\$21,348	Kerkhoven	\$5,092
Todd	Great River	Long Prairie	\$17,108	Eagle Bend	\$5,465
Traverse	Viking	n/a	n/a	Wheaton	\$4,998
Wabasha	SELCO	Lake City	\$10,937	n/a	n/a
Wadena	Kitchigami	n/a	n/a	Wadena	\$16,438 *
Waseca	Traverse des Sioux	Waseca	\$17,494	New Richland	\$5,093
Washington	MELSA	Woodbury (County Sys HQ)	\$19,887	n/a	n/a
Watonwan	Traverse des Sioux	St. James	\$16,229	Butterfield	\$5,477
Wilkin	Lake Agassiz	n/a	n/a	Breckenridge	\$20,617 *
Winona	SELCO	St. Charles	\$4,969	n/a	n/a
Wright	Great River	Buffalo	\$17,108	Annandale	\$5,465
Yellow Medicine	Pioneerland	n/a	n/a	Granite Falls	\$18,300 *

## **APPENDIX E**

### **SCHOOL DISTRICT FORMULA SIMULATION SAMPLE**

The attached spreadsheet illustrates the results of the sample formula simulation for school district telecommunications costs described in the Permanent Formula-Based Funding section of this report.

## APPENDIX F

### ACRONYMS

ADM	Average Daily Membership
AMCPU	Adjusted Marginal Cost Per Pupil
CFL	Minnesota Department of Children, Families & Learning
DLRN	Digital Learning Resource Network
DSL	Digital Subscriber Line
DS3	Telecommunications line carrying a digital signal speed of 44.7 Mbs
FY	State Fiscal Year or July 1 (current year) to June 30 (next year)
HEAC	Higher Education Advisory Council
HESO	Minnesota Higher Education Services Office
IDEAS	Integrated Department of Education Aid System
ILS	Integrated Library System (part of MnLINK)
INTASC	Interstate New Teacher Assessment and Support Consortium Standards
ISDN	Integrated Service Digital Network
ISTE	International Society for Technology in Education
ITV	Interactive Television
K-12	Kindergarten through 12 <sup>th</sup> Grade
Kb	Measure of bandwidth speed on an individual channel for transmission – kilobits per second
LDS	Library Development and Services (Department of Children, Families & Learning)
LNM	Learning Network of Minnesota
Mbs	Measure of bandwidth speed on a telecommunications line or other media – million bits per second
METC	Minnesota Education Telecommunications Council
MnLINK	Minnesota Library Information Network
MnSCU	Minnesota State Colleges and Universities
PUC	Public Utilities Commission
PVC	Private Virtual Circuits
RLBSS	Regional Library Basic System Support
RLTA	Regional Library Telecommunications Aid
TAG	Telecommunications Access Grant
TARP	Telecommunications Access Revenue Program
T1	Telecommunications line or other transport medium that transmits at 1.54 million bits per second
TEB	Technology Enterprise Board
TEF	Technology Enterprise Fund

## **APPENDIX G**

### **HIGHER EDUCATION ADVISORY COMMITTEE (HEAC) TECHNOLOGY SUBCOMMITTEE REPORT**

**December 10, 2001**

#### **Growing Use and Reliance on Network Technology by Education**

Higher education institutions, K-12 schools, and public libraries in Minnesota use network technology to access resources for research and instruction, and to exchange information. Some examples include:

- Access to library material;
- Distributed instruction through video conferencing;
- Access to research and curriculum databases;
- Internet online learning systems; and
- Access to administrative information systems.

Some content such as advanced mathematics, languages, and some vocational training (especially health services and nursing) is scarce for many schools and they rely on content from other areas of the state to complement their curriculum requisites. There is a risk of program disruption when one institution eliminates source curriculum shared by others because network resources are unavailable or unaffordable. Unless the network technology is integrated and universally available at affordable prices, access to learning resources and information exchange is limited and fragmented.

#### **Progress Toward a Statewide Network Infrastructure for Minnesota Education**

Many states such as Michigan, Illinois, Wisconsin, and North Dakota have, in varying ways, developed networks connecting Higher education institutions, K-12 schools, and public libraries statewide. Basic, advanced, and innovative resources are shared among the entities. Schools also have access to more resources by connecting their network with a growing number of other state, national, and global research and education networks. Some Minnesota network initiatives that have a statewide focus include:

- Learning Network of Minnesota;
- Regional Network Consortium Reports;
- Joint Powers Agreement for Technology;
- Integrated Network Report;
- Extension Offices and Research Stations;

- Northern Lights GigaPoP; and
- Internet2.

### **Coordinating Network Infrastructure Funding**

State supported funding for network technology in Minnesota is very complex and has many sources. Available access, readiness to use, and need all vary among different institutions and areas of the state. Information about where the existing resources are, how they are being used, and where additional resources are needed will help us support better coordinated planning and decision-making. Some current activities include:

- Gap funding for the Learning Network of Minnesota, which has no funding identified for next year;
- CFL Permanent Funding Report;
- Internet Rural Initiative; and
- Technology Enterprise Board/Technology Enterprise Fund.

### **Recommendations – Toward a Coordinated Approach to Network Technology Management**

Charge the HEAC Technology Subcommittee to develop and report on a coordinated regional recommendation to a statewide-integrated network for education with links to the CFL Permanent Funding Report, by February 1, 2002.

- Develop an equal-access funding model that includes incentives to aggregate network capacity, share learning resources, and improve overall access, collaboration and coordination.
- Identify technology initiatives that should be better coordinated on a statewide basis.
- Identify forums to better coordinate information about network technology use, needs, and the benefits of sharing and collaboration.

