Michigan State Education Network: Feasibility of Completing the SEN

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MAISA MICHIGAN ASSOCIATION OF INTERMEDIATE SCHOOL ADMINISTRATORS
SUPPORTING REGIONAL EDUCATION SERVICE AGENCIES

I. Introduction

Michigan is one of the leading states in the nation to provide high-capacity bandwidth to students. The Michigan Statewide Educational Network (MiSEN) has been providing quality network connectivity to the Michigan K-12 school children since the Technology Readiness Grant (TRIG) was awarded by the State to create a Statewide Educational Network (SEN). MiSEN is a 501(c)(3) corporation whose status under E-Rate is a non-applicant consortium lead on behalf of Intermediate School District (ISD) consortium members.

MiSEN's mission is *"to connect 100% of Michigan Intermediate School Districts (ISDs), Local Education Agencies (LEAs), and Public-School Academies (PSAs) with the networking capacity needed to deliver modern digital learning content to the classroom".* Ensuring all students' ability to access educational resources, engage in interactive learning experiences, and develop the vital digital literacy skills needed to succeed in an increasingly interconnected world.

MiSEN has proven the operational and technical benefit directly to classrooms across the state by establishing baseline connectivity using the initial investment from the legislative grant. MiSEN has continued to connect ISDs and increase capacity over a ten-year window through financial solid stewardship of grant dollars and strategic investment in E-Rate funds. However, it is apparent that even using E-Rate discounts to subsidize MiSEN Operational costs, the existing MiSEN fund balance will be depleted within the next four (4) years. Any network infrastructure needs or adding additional sites will directly impact the longevity of the SEN without additional funding.

II. Goals & Objectives

- Expand our reach to serve every school building and all Michigan K-12 students with equitable connectivity, establishing a minimum connectivity standard for all unserved and underserved Public Schools and PSAs.
- Provide every school with the connectivity needed to access modern resources, enhancing the educational experience and preparing students for a technologically advanced society.
- Close the digital access gaps and promote equity, ensure all students, regardless of background or circumstances, have connectivity to modern digital resources, enhance the quality and effectiveness of K-12 education in Michigan, and aim to equip students with the skills and knowledge necessary for future success.
- Provide a common network experience to support Statewide Collaborative projects with ISDs and Districts to enhance local networks and utilize E-Rate funding to sustain the MiSEN transport network, support Statewide initiatives, and provide a system of support for technical network staff.

III. Guiding Tenets

- **Education-Centric Service Design with Stakeholder Collaboration:** Prioritize the development of services that meet the specific needs of the K-12 Education user base and provide enhancements to ensure that teachers and students never see bandwidth as a barrier to achieving their goals in the classroom through collaboration with ISDs across the state. Regular Engagement with all relevant stakeholders, including technical staff, end users, and government entities, to ensure alignment and support aligns with the mission.
- **Security-Focused First Approach:** Enhance cybersecurity measures by adopting a security-focused mindset, ensuring that all layers of the network service—from physical to logical—are secured at the border network connections. Embed advanced security measures at the core of the service architecture to ensure uninterrupted and safe access. Regularly update security protocols in partnership with MiSecure and implement monitoring to identify emerging threats and maintain service integrity.
- **Scalable, Reliable, and Cost Effective:** Establish resilient network infrastructure design and staffing models that scale to meet growing demand and changing needs without compromising performance. Focus on reducing overhead and operational costs through efficient resource management, use of Grant and E-Rate Funding, economies of scale, and strategic investments in technology that lower long-term expenses.
- **Transparent Reporting and Accountability:** Maintain transparency in operations and decision-making processes with annual reporting on performance, challenges, and successes to build trust and accountability. Utilize data analytics to inform decisions regarding capacity planning, service improvements, support needs, and resource allocation to offer optimized and effective services. Ensure the service is sustained to be fully operational with clear metrics for measuring progress and sustainability.

IV. State of the Business

The Michigan Statewide Educational Network (MiSEN) has brought 10 Gigabit connectivity to Michigan Intermediate School Districts at a low cost by purchasing consortia-based services while offering a reliable fiber-optic State Education Network (SEN). MiSEN primarily services K-12 entities with the function of connectivity between the Intermediate School Districts for network transport and internet access.

MiSEN's support structures are managed in partnership with the Intermediate Schools Districts to connect all Schools. MiSEN was established out of the Technology Readiness Incentive Grant (TRIG) Grant Funding provided to

consortiums in service to schools. Due to the wise investments of these dollars and the strategy to leverage E-Rate funding, MiSEN has been able to sustain operations for nearly a decade. MiSEN is uniquely qualified to succeed due to the partnerships and connections established by its managing board, advisory, and staff.

The current MiSEN Service Model includes:

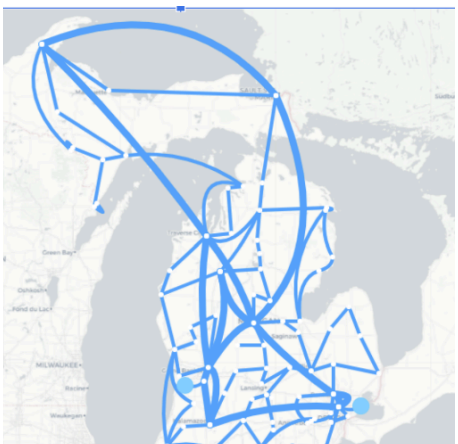
- Administration of the Network (staff, consortium, network circuits and electronics, legal, accounting, E-Rate Processing, and audit reviews)
- Engineering and E-Rate support to establish connections
- No charge to Schools and Libraries for transport services and network management
- Internet Access Service at a low cost based on statewide volume
- Denial of Service (DDoS) mitigation for MiSEN-connected schools and libraries at no charge
- Network monitoring and capacity planning

The MiSEN Board consists of one superintendent from each of the ten MAISA regions ensuring the focus of equitable access throughout the state is at the center of its work.

The MiSEN Advisory is made up of Intermediate School District technical representatives from the ten regions as well as partnering organizations to ensure technical and educational impacts are addressed at every step of the operation and expansion of the network. Partnerships include the Michigan Department of Education (MDE), Michigan Association of Intermediate School Administrators (MAISA) Projects, including MichIT and MiSecure, and Michigan Department of Technology, Management and Budget (DTMB), which have strategically supported the efforts to reduce costs for school districts through strategic and operational support. The Michigan Education Technology Leaders (METL), made up of Intermediate School District Technology leaders, provides taskforce support and feedback connections to all areas of our State.

Schools, school districts, and public libraries voluntarily elect to participate in the MiSEN consortium by signing Letters of Agency. This allows the consortium to contract for services and file for E-Rate subsidies on their behalf.

MiSEN operates a Statewide Educational Network (SEN) connecting fifty-eight (58) SEN Nodes throughout Michigan and two (2) regional ISP data centers. This builds on the local ISD initiatives to create their own fiber networks by connecting across



the state. The SEN is a fully managed, leased-lit fiber transport service provided by Merit Network, Inc. (Merit), MiSEN's network transport provider. The SEN consists of 40Gbps, 100Gbps, and 200Gbps core backbone services that deliver 10Gbps to 200Gbps transport services to each of its SEN Nodes. Every ISD has diversity built into the services provided. For details on the services utilized by the ISDs, please refer to Appendix: MiSEN Services Matrix.

The high-level statistics for the latest academic year, July 2023 - May 2024, are as follows:

- Service Uptime: 99.99%
- Tickets Serviced: 14,435
- Peak Utilization of Internet Access Bandwidth: 223.4 Gbps
- Number of DDoS Events Mitigated: 1,031

V. Summary of Feasibility

The premise of the MiSEN Feasibility Study:

Evaluate the feasibility of meeting the minimum requirements of Michigan's broadband initiative for the underserved districts and buildings to connect to the SEN. This will expand network access and improve cybersecurity and internet services statewide that address:

- **Digital Equity**
  Articulate how connecting underserved districts and schools addresses the underlying challenge of ensuring digital equity for students not currently served by Michigan's minimum connectivity standard.
- **Improved Service Delivery, Continuity, and Security and Educational Opportunities**
  Identify the benefits of connecting to the SEN regarding reliability, continuity, enhanced cybersecurity, and the availability of on-net educational opportunities.
- **Facilitated Technical and Professional Support**
  Consider the increased access to consistent, high-quality technical and professional IT support related to network operations.
- **Reduced Operational Costs**
  Analyze and demonstrate potential cost savings through Total Cost of Ownership (TCO), Return on Investment (ROI) analysis, and Net Present Value (NPV) focusing on long-term savings and reduced overhead.

The entire logic model can be found in the Appendix: MiSEN Feasibility Logic Model.

VI. Findings

This section presents the findings of the feasibility study to assess the potential of connecting the remaining 20% of schools currently not connected to the statewide educational network. The study analyzed various factors, including infrastructure, cost, technical challenges, and political implications, to determine the viability of this project.

1. **Geographic Distribution and Infrastructure Data points**:

   To evaluate the need in this study, the team utilized data collection of the current state through collaborative discussions, individual interviews, and surveys.

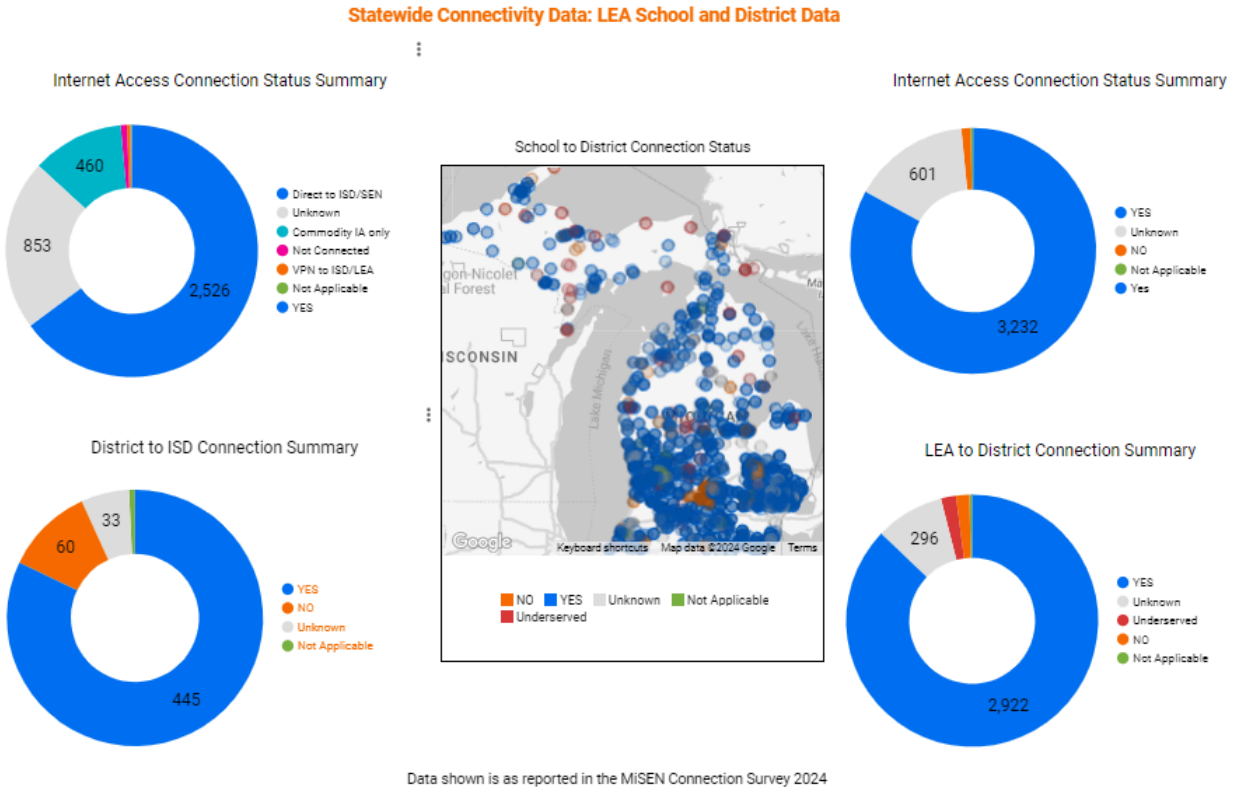
   a. MiSEN worked through the Michigan Educational Technology Leaders (METL) to collect a data set with details on each entity listed on the Educational Entity Master for every ISD. The Appendix: MiSEN Connection Data Collection Instructions details the data points collected. Due to security concerns, the full dataset will not be shared.
   b. A participation survey was sent to all Public School Academies (PSAs) to seek details on their connections and interest in participating in this feasibility study. The survey questions can be found in the Appendix: MiSEN PSA Connectivity Participation Survey. The information below shows that one-third of the PSA participants are not connected to their ISD network, preventing access to collaborative services.
   c. Map details were shared by the Michigan High-Speed Internet Office (MIHI) office to assist in evaluating existing infrastructure. Specifically, a dataset from Connected Nation's mapping project to locate fiber assets located in the public right-of-way in select areas of the state. The project did not cover the entire state; data was not collected in Wayne, Oakland, or Macomb Counties and within the borders of many of the state's larger cities.

Analysis

The geographic dispersion of unconnected schools and their proximity to existing infrastructure attached to the State Education Network will determine the complexity and cost of network extension. Areas with existing infrastructure through a provider or school networks will be more feasible to connect compared to regions with geographical challenges (islands, rural distance, rivers, dense trees, protected land, highways).

This graphic shows that MiSEN services 2,526 school buildings across Michigan with Internet Access. There is still work to be done to ensure all

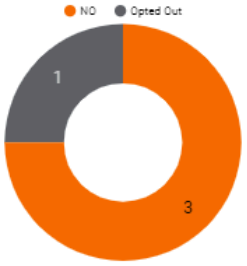
schools are able to access collaborative services across the State Education Network at the minimum standard connection speed.



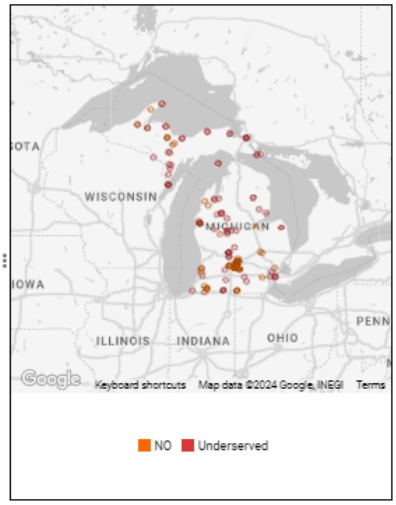
Below are maps showing the geographical distribution of the remaining schools identified as unconnected or underserved based on self-reported data and survey information.

Summary of Public Schools Not Connected or Underserved

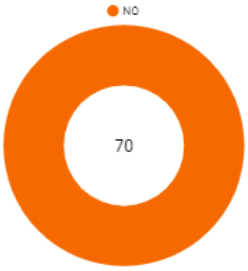
ISD not Connected to SEN



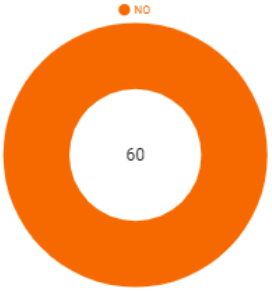
School to District Connection Status



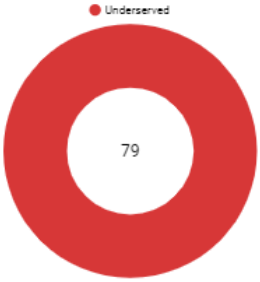
School Entities not Connected to District Network



Districts Not connected to ISD Network



School Entities Connection Underserved



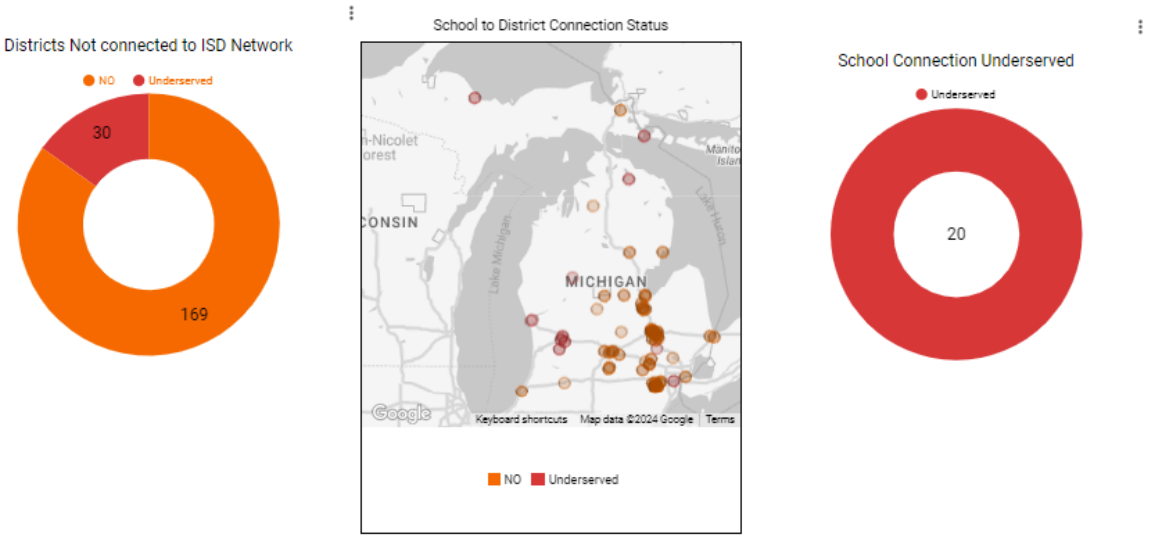
Data shown is as reported in the MiSEN Connection Survey 2024

Connectivity Summary by Transport Type

Public School Entities

					Connected to District Network Center / Record Count
Transport Connection Type	YES	Unknown	Underserved	NO	Not Applicable
null	683	248	10	25	7
Cable Modem	13	1	3	5	-
DSL	-	-	4	-	-
Dark Fiber or IRU	64	-	-	-	-
Leased Lit Fiber	424	88	33	18	2
Not Applicable	1	-	-	-	6
Other	31	-	4	1	-
Owned Fiber	2,143	13	5	20	2
Unknown	2	12	-	-	-
Wireless	-	-	3	1	-
Wireless/Cell/Satellite	3	2	17	-	-
Grand total	**3,364**	**364**	**79**	**70**	**17**

Public School Academies and State Schools Entities Not Connected or Underserved

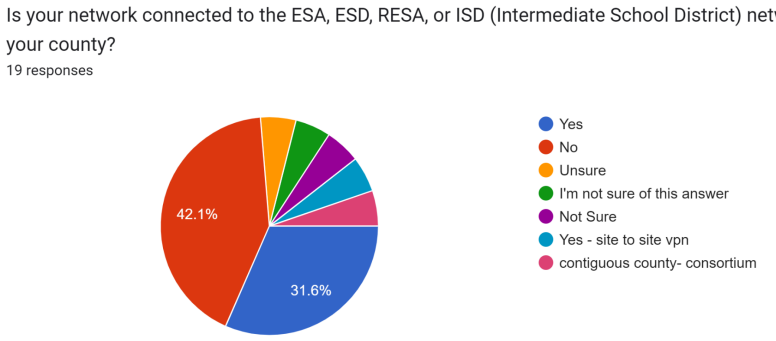


Data shown is as reported in the MiSEN Connection Survey 2024 and PSA participation Survey

Public School Academy & State of Michigan Entities

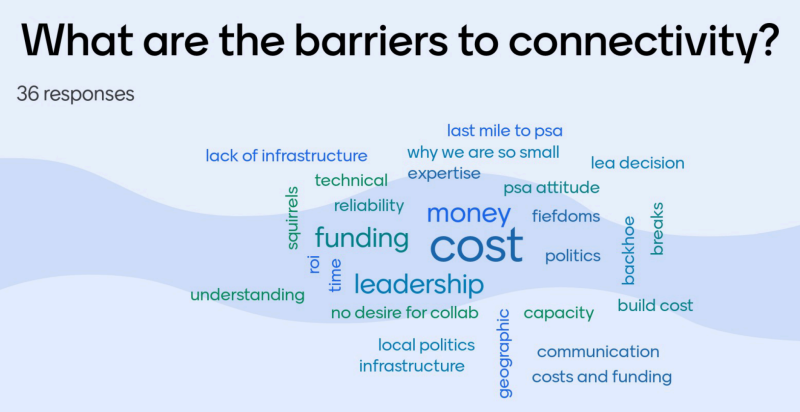
					Connected to District Network Center / Record Count
Transport Connection Type	Unknown	YES	NO	Not Applicable	Underserved
null	410	72	71	37	7
Cable Modem	2	4	5	-	5
Dark Fiber or IRU	-	1	-	-	-
Leased Lit Fiber	-	21	4	-	8
Not Applicable	-	-	31	-	-
Owned Fiber	-	29	2	-	-
Grand total	**412**	**127**	**113**	**37**	**20**

Of the 20 entities who participated in the PSA Connectivity survey, one-third indicated that their entity is connected to their ISD network, allowing for collaborative services.

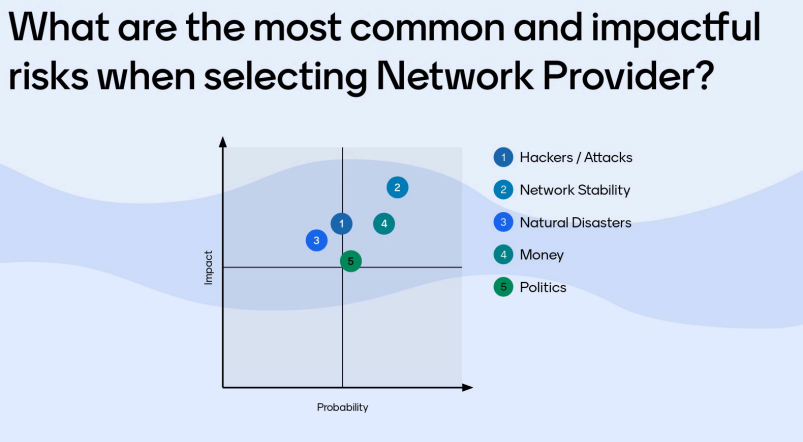


The MiSEN Connection Status Dashboard Report contains the data analysis above. For more analysis within varied areas of the State, please refer to the Appendix: Connectivity Summary by MiSEN Region

2. **Stakeholder Engagement:**
    a. During the study, feedback from stakeholders, school administrators, technical staff, business officials, and community partners regarding connectivity needs, priorities, and challenges was sought. The following engagement points provided invaluable information.
        i. MiSEN Advisory discussion on past implementation issues and challenges
        ii. METL focus study on MiSEN Annual Report and Strategic planning
        iii. METL Retreat on Feasibility study for unconnected and underserved sites
            1. Strengths, Opportunities, Aspirations, and Results (SOAR)
            2. Risk Mitigation discussion
        iv. Focus Group to develop MiSEN FAQs
    b. **Analysis**: Stakeholder input helps identify potential issues and develop strategies to address them. Building strong partnerships with stakeholders is crucial for project success. During the study, focus groups, as well as individual districts, shared many individual reasons for why they were unable to establish or support connections at the standard for high-speed access. These challenges included everything from expertise and time to infrastructure and funding.



Aside from the availability of funding, the main areas the main areas cited for impact and risk included network stability, cybersecurity, ongoing funding to maintain connections or response to natural disasters impacting fiber cabling, and politics within the community or vendor community.



MiSEN has been collaborating with ISDs to support districts through designing, procuring, and implementing network connectivity for ten years. We have been able to leverage the expertise of consultants and knowledgeable partnerships to mitigate challenges. The E-Rate process facilitates an open procurement process, ensuring all vendors who wish to respond have an opportunity.

3. Proof of Concept:

MiSEN achieved its initial operational goal of 100% Network availability to all ISDs, with 98% adoption during the last 10 years. The Return On Investment utilizing E-Rate Federal Funds exceeds $3,000,000.00 annually and has assisted in sustaining operations. In the existing network design, MiSEN has

proven that by working in concert across the state with ISDs and through State-level procurement, we can bring digital access to students at a minimal fee of ~$4/student, facilitating consolidated service delivery and low-cost, secure internet.

The service delivery model that would produce consistent service, access, and sustainable, cost-effective connectivity would be to implement network infrastructure between the Schools and Districts in addition to the connection to the ISD for local, regional, and statewide collaborations, including services available through the Michigan Statewide Educational Network (MiSEN). This will allow for continuity of service across the state and ensure equitable access to digital resources for all students.

To provide structure for how MiSEN would work with multiple entities to develop connection plans and begin the procurement process, please see Appendix: Implementation Steps and Milestones to Connect to the SEN.

This outlines the standard process MiSEN has used with other entities as they began utilizing MiSEN services and establishing connections at various levels in the network path. Some unique challenges to the identified underserved or unconnected sites include:

- Vendor availability: the lack of vendors with infrastructure available or even willing to construct new infrastructure in their geographical region
- Physical Geography: Islands, densely wooded areas, highways, rivers
- Population Density: too high or too low
- Building Ownership: Leased vs owned facilities
- Technical knowledge: Lack of staff expertise in available solutions
- Staff Time: Lack of staff or time to dedicate to the project management

The value of MiSEN is easily realized when we share the experiences across our state. MiSEN has proven that by working in collaboration, we can provide access for all schools and libraries while driving down costs for all connected. Members of MiSEN have clearly articulated the positive impact joining the SEN has brought to their schools, ranging from the experiences students have, to the ability to lower costs, to support new technologies, to the ability to collaborate with others across the state.

Josh Hiner from Regional Educational Media Center 1 in the Upper Peninsula shared “Gone are the days where all districts' online testing is spinning/crashing due to congestion. Gone are the moments where classes

stall due to high simultaneous use of valuable internet streamed educational videos and online classroom systems."

David Larson, Chief Technology Officer in Livingston ISD, shared, "The [MiSEN] internet service not only had more bandwidth but was better quality as well. Once we were able to successfully complete this one collaborative project, we were able to spiral into other projects not directly related to MiSEN."

Although we continue to capture feedback, you can view MiSEN History Timeline and Impact Stories 2024 to learn more from our members.

4. Strategic Priorities

MiSEN's priority is to fulfill our mission and continue to serve the K-12 schools and libraries with sustainable network transport with the growth capacity needed for collaboration, access to digital resources, and internet access. We hope to expand our reach to serve every school building and all Michigan K-12 students with equitable connectivity above the minimum standard for connectivity in alignment with the State MIHI office standard for anchor institutions.

In addition, MiSEN will continue to focus on supporting our members with service offerings to support staff and reduce redundant efforts across the State, including:

- Regional network architecture and engineering support through network engineering consulting
- Procure transport and network-related E-Rate services statewide
- Establish network peering to support collaborations (i.e., state assessments, direct connection to AWS for MiCloud, MiDataHub, and Center for Educational Performance and Information (CEPI) reporting to maintain secure transmission of student data)
- Transport and fiber services, e.g., analysis, design, procure, and project management services related to connectivity solutions
- Fiber maintenance
- Network security & cybersecurity monitoring alongside the MiSecure Team

The following are a series of steps that lead to our vision of long-term success. MiSEN expects to focus on the following milestones over the next 36 months:

NOW	NEXT	LATER
Study MiSEN Connections Unserved and Capacity Growth. Build the connections model for School sites.	Establish RFP and Erate filing plan and timeline for connecting Unconnected and Underserved Schools	Develop templates for RFI, RFP to connect additional sites.
Audit ISD Connections and execute Master Agreements with all parties.	Develop a MiSEN Data System	Exploration / Implementation of new Erate opportunities: Fiber Maintenance, Firewalls, Cybersecurity for the SEN
Establish a Communication Plan to Build an understanding of what MiSEN provides to prepare for the legislative ask for sustainable funding	Support Regional Connectivity requests - design and E-Rate for Matching Funds	State-wide - USF WAN bid by region- fiber build-out
Explore direct connection to SEN for secure private transport (MiCLOUD via AWS, DRC connection for Assessment Delivery)	Connect SEN, MiNOC, and MiSecure engineering to a community of support for ISDs	MiSEN/MiSecure to develop cybersecurity recommendations for the SEN (E-Rate pilot /SLCGP)

Access the MiSEN Strategic Plan For More information on upcoming initiatives.

5. Financial Analysis of Feasibility Study

*In-depth financial analyses are available for review in the appendices.

A. Underserved Schools

Entity Type	Count	Mileage (Underground)	Student Count
Underserved	**102.00**	**1674.11**	**14617**
ISD	10	45.78	35

LEA	79	1426.66	12,634
PSA	13	201.67	1,948

B. Unconnected Schools

EntityType	**Count**	**Mileage (Underground)**	**Student Count**
Unconnected to SEN	**166**	**2385.04**	**41,903**
ISD	7	70.97	577
LEA	46	651.79	14,333

C. Estimated Cost of Connection

The connection costs included in this study go far beyond the basic labor and material costs per mile to install fiber, often stated to range between $5,000 and $20,000 per mile. The costs estimated here are based on a 96 fiber strand count, splicing materials, labor for installation and splicing, permit fees, a wide range of "make ready" costs (preparing the pole for fiber attachment), project management fees, design, and route engineering, scaled drawings, and boring labor when placing fiber in the ground. The cost analysis used was also pulled from current RFPs and organizations that regularly perform this type of work. Please review the Appendix: Fiber Cost Analysis & Considerations for further information.

Source	Dollar Per-Foot	Dollar Per-Mile
Monroe ISD - Underground Fiber Build	$20.83	$109,982.40
Lapeer ISD - Underground Fiber Build	$18.49	$97,627.20
Lapeer ISD - Aerial Build	$11.15	$58,872.00
Average - Fiber Build (Only)	$19.66	**$103,804.80***

* Without prevailing wage.

Entity Type	Miles*	Per-Mile (Underground)	Extension

Costs - Underserved	1472.44	$103,804.80	$152,846,452.45
Costs - Unconnected to SEN	722.77	$103,804.80	$75,026,675.24
	2195.21		**$227,873,127.70**

*Mileage is calculated based on driving distance from the origin address to the ISD address

D. Operating Costs

Service	Annual Cost
1. Transport Services*	$3,361,604
2. Internet Access Services*	$514,631
3. Network Engineering Support	$200,000
4. E-Rate Services	$251,000
5. Security - DDOS Mitigation Services	$119,976
6. Operational Services	$246,289
7. Business Services	$100,559
8. Technical Management Services	$374,110
9. Contracted Broadband and Network Architecture Services	$275,000
Total	**$5,443,169**

* These services are eligible for a 70% E-Rate discount.

Student Count	1,360,792
Per-Student	**$4.00**

Service Descriptions:

1. **Transport Services:** Costs associated with the physical transmission of data across the network, including leased lines, fiber connections, and other telecommunications infrastructure that carry data between different sites or regions.

2. **Internet Access Services:** Expenses related to providing internet connectivity to end-users, including bandwidth, ISP charges, and any associated equipment or management services required to maintain reliable internet access.

3. **Network Engineering Support:** Costs for technical expertise and services

that ensure the design, implementation, and maintenance of the network infrastructure, including troubleshooting, upgrades, and optimization.

4. **E-Rate Services:** Expenses related to navigating and managing the E-Rate program, which provides discounts to schools and libraries for telecommunications and internet access. This includes application support, compliance, and reporting.
5. **Security — DDOS Mitigation Services:** Costs for services that protect the network from Distributed Denial of Service (DDoS) attacks, which overwhelm it with traffic. This includes monitoring, detection, and response services.
6. **Operational Services:** General expenses for the day-to-day operation of the network, including monitoring, maintenance, and management of network services to ensure consistent performance and uptime.
7. **Business Services:** Costs related to the administrative and financial management of network services, including billing, customer service, procurement, and other non-technical support functions.
8. **Technical Management Services:** Expenses for overseeing and coordinating the technical aspects of network operations, including project management, strategic planning, and ensuring that technical resources align with organizational goals.
9. **Contracted Broadband and Network Architecture Services:** Costs associated with outsourcing the design, implementation, and management of broadband networks and overall network architecture. This includes working with external vendors to ensure the network infrastructure meets current and future needs.

E. Administrative Expense

	Salary/Fringe	Annual Total*
1. *Program Manager (FT)*	$125,800 $74,200 (59%)	$200,000

- Manages and coordinates the various components of the network buildout. This includes overseeing the implementation, ensuring that the network meets its goals, staying within budget, and addressing any issues that arise during the project. (Based on actual costs of the currently contracted engineer.)

2. *Plant Engineer (FT)*	$125,800 $74,200 (59%)	$200,000

- Oversees the design, construction, and maintenance of the physical infrastructure needed to extend the SEN to the remaining underserved and

unconnected schools. (Based on costs of the currently contracted engineer.)

3. *Training:* Training on new technologies, cybersecurity practices, network management tools, and other relevant areas. $37,500
4. *Supplies:* office supplies, software licenses, meeting materials, and other necessary tools and equipment to support the network administration. $37,500
5. *Travel:* Extensive travel to job sites, training sessions, meetings, or conferences related to the network's build and operations. $75,000
6. *Legal and Insurance Expenses:* Contract management, compliance with state and federal regulations, and insurance policies that cover potential liabilities such as cyber threats, data breaches, or physical damage to infrastructure. $35,000
7. MiSEN Administrative (2% of Direct and Administrative Costs): Covers the coordination, oversight, and support tasks of the MAISA technology team in support of the network team. $855,465
8. MAISA Indirect Expense (1% of Total Costs): Includes the general administrative tasks of the MAISA general staff required to support the overall project. $444,137
9. ISD Indirect Expense (2% of Total Costs): Provides for the ISD's indirect costs related to the project, including administrative support, utilities, office space, or other overhead costs. $888,274

F. Total Project Costs

Infrastructure Costs	2024-25	2025-26	2026-27	Total
Underserved Schools	$24,964,920	$25,713,868	$26,485,284	$77,164,073
Unconnected Schools	$12,254,357	$12,621,988	$13,000,648	$37,876,993
Total Infrastructure Costs	$37,219,277	$38,335,856	$39,485,932	$115,041,065

Operational Costs

Ongoing SEN Costs	$5,443,169	$5,606,464	$5,774,658	$16,824,291
- Additional Underserved Schools	$28,649	$29,509	$30,394	$88,552
- Additional Unconnected Schools	$82,130	$84,594	$87,131	$253,855
Total Operational Costs	$5,553,948	$5,720,566	$5,892,184	$17,166,698
Total Direct Costs	$42,773,226	$44,056,422	$45,378,115	$132,207,763
Administrative Expense				
Program Management Expense	$200,000	$206,000	$212,180	$618,180
Plant Engineering Expense	$400,000	$412,000	$424,360	$1,236,360
Training	$37,500	$38,625	$39,784	$115,909
Supplies	$37,500	$38,625	$39,784	$115,909
Travel	$75,000	$77,250	$79,568	$231,818
Legal and Insurance Expenses	$35,000	$36,050	$37,132	$108,182
MiSEN Administrative Support	$855,465	$881,128	$907,562	$2,644,155
Total Operating Expenses	$1,640,465	$1,689,678	$1,740,370	$5,070,513
Total Combined Costs	$44,413,691	$45,746,100	$47,118,485	$137,278,276
Indirect Expense				
MAISA Indirect Expense (1%)	$444,137	$457,461	$471,185	$1,372,783
ISD Indirect Expense (2%)	$888,274	$914,922	$942,370	$2,745,566
Total Indirect Expense	$1,332,411	$1,372,383	$1,413,555	$4,118,349
Total Budget	$45,746,102	$47,118,483	$48,532,040	$141,396,625

Notes:
1. This model assumes a 3% Cost of Living Adjustment in Years 2 and 3.
2. The ongoing SEN operating costs were determined to be $4.00/student:

• Underserved Students	14,617	$4.00/student	$58,468/annually
• Unconnected Students	41,903	$4.00/student	$167,612/annually

G. E-Rate Consideration

E-Rate for the Schools and Libraries Program is a federal program that provides a partial refund to eligible schools and libraries for telecommunications and internet access expenses. The program is funded by the Universal Service Fund and is administered by the Universal Service Administrative Company (USAC) with oversight from the Federal Communications Commission (FCC).

	2024-25	2025-26	2026-27	Total
Est. E-Rate Discount (70%): Infrastructure	$53,170,396	$54,765,509	$56,408,474	$164,344,379
Est. E-Rate Discount (70%): Transport & IA (Operational Costs)	$2,826,063	$2,910,845	$2,998,170	$8,735,078
Total E-Rate Discount	$55,996,459	$57,676,354	$59,406,644	$173,079,457
Net Infrastructure Cost	$22,787,313	$23,470,932	$24,175,060	$70,433,305
Total Operational Costs	$2,843,186	$2,928,481	$3,016,336	$8,788,003
Net Total Direct Costs	$25,630,499	$26,399,413	$27,191,396	$79,221,308
Total Operating Expenses	$2,602,539	$2,680,615	$2,761,035	$8,044,189
	$28,233,038	$29,080,028	$29,952,431	$87,265,497
Indirect Expense				
MAISA Indirect Exp. (1%)	$282,330	$290,800	$299,524	$872,654
ISD Indirect Exp. (2%)	$564,661	$581,601	$599,049	$1,745,311
Total Indirect Expense	$846,991	$872,401	$898,573	$2,617,965

Total Budget	$29,080,029	$29,952,429	$30,851,004	$89,883,462

Financially Feasible/Not Feasible

- Leveraging regional procurement in consolidation will benefit from economies of scale, resulting in lower costs per mile.
- Leveraging additional funding sources like federal E-Rate dollars could ease the burden of cost to local districts removing the barrier and impacting a school's general fund, but requires procurements to follow all E-Rate requirements.
- Any additional sites added to the MiSEN network infrastructure will directly impact the operating costs of the project and the longevity of the SEN without additional sustainability funding.

Therefore

- The feasibility of meeting the goal to connect all underserved and unconnected sites increases exponentially with the utilization of E-Rate funding and securing three years of MiSEN operating budget, providing multiple years to secure sustainability funding or develop a self-funding method with little impact on members.
- In addition to the efforts to be efficient with consolidated services, utilizing E-Rate will stretch the return on investment at the rate of 300% or $0.70 in federal reimbursement for every $1 spent.

H. IDENTIFIED SUGGESTIONS OR RECOMMENDATIONS

A Statewide Educational Network has been in Statute since 1995:

380.1291[1] Michigan information network. Sec. 1291. (1) Not later than June 30, 1995, the Department of Management and Budget shall prepare a state plan for creation of a Michigan information network linking each local and intermediate school district, public school academy, community college, independent nonprofit college or university located in this state, and state public university and each state, local, or regional library on an equal basis by fiber optic or coaxial cable or other comparable system allowing a world-class statewide interactive video and data access and exchange system. (2) All educational entities in this state are encouraged to participate in the Michigan information network created in subsection (1) and in similar networks or systems and are encouraged to use computers, telecommunications, and other interactive technology to develop and use distance learning for educational purposes.

The ability for districts to complete legislative initiatives, including state assessments, system reporting (i.e., MiDataHub, CEPI collections), and curricular delivery, require network connectivity. MiSEN, as the statewide consortium lead, has the responsibility of managing the connectivity to facilitate this digital access on behalf of public schools, PSAs, ISD consortia, and libraries.

MiSEN provides districts significant budgetary and administrative relief for E-Rate processing, technical procurement, network architecture, and contract management. This feasibility study has highlighted the financial funds needed to support the full operation of MiSEN, to support linking the networks between ISDs, public schools, PSAs, and libraries, and to support the wide range of state initiatives available through MiSEN Transport and Internet Access.

The SEN's readily available connections between facilities provide a platform for cost-efficient sharing of local district and ISD resources. The benefits of a single statewide consortium entity filing for Federal E-Rate funding supports the FCC's goals of statewide connectivity and adopted bandwidth goals, allows for statewide discount levels, and reduces administrative burden at all levels of the K-12 educational structure.

TIERS OF FEASIBLE SUPPORT

Removing Barriers to Digital Access for all Students

As shown in the findings section, there is work to be done to implement the connection of the sites that have been identified as unconnected or underserved. It is estimated that $270 M would provide funding to support the consolidation and remove the barriers for the sites identified in this study to establish connections for local and cross-regional collaborations. MiSEN recommends leveraging available Federal and State funding sources (i.e. E-Rate, State matching funds, Bead collaboration) to lower the implementation costs. Any remaining dollars after the connection costs and all disbursements from the E-Rate program should be used by MiSEN to maintain capacity, implement new technologies, and enhance connectivity equitably for all students across the State of Michigan. Ongoing funds could be used to support additional unconnected or underserved sites who missed responding in the initial data collection window.

MiSEN requires ongoing sustained funding to meet the growing demand for fast, secure connections that protect student data and ensure all school sites are financially supported to make the reality of the legislative vision of a "*Michigan information network"*.

To sustain current operations, MiSEN would need an annual allocation of funding for costs associated with the ongoing administration, strategic operation, and management of the network that links each local and intermediate school district, public school academy, and library. As outlined in the financial section, the current transport network costs $5M annually. It is recommended that sustaining MiSEN's proven consolidation model through an annual budgetary allocation will provide long-term cost efficiencies and ensure digital access for all of Michigan's students. An example for the continuation of the current model with an annualized budget allocation is detailed below:

1. Funds are distributed directly to the fiscal agent for the Michigan Statewide Educational Network (MiSEN) for fiscal management in alignment with previously established legislative requirements defined in 380.1291[1].
2. Reimbursement of E-Rate eligible expenditures are provided to MiSEN with authorization to use the funds to maintain capacity and enhance connectivity equitably for all students across the State of Michigan.
3. The State of Michigan would recognize Michigan Statewide Educational Network (MiSEN) as the entity responsible for the coordination of technology services for the educational network defined in 380.1291[1], granting MiSEN the legal standing in Michigan to procure eligible Category 1 E-Rate equipment and services on behalf of all LEAs, PSAs, ISDs, and Libraries further reducing the administrative overhead associated with E-Rate Program participation as a statewide consortium lead.

Appendix

1. Press Release Exercise & FAQ
2. 2024 MiSEN Annual Report
3. MiSEN History Timeline and Impact Stories 2024
4. MiSEN Services Matrix
5. MiSEN Feasibility Logic Model
6. Fiber Cost Analysis & Considerations
7. MiSEN Total Cost of Operation and Return on Investment Considerations.
8. METL Retreat Strengths Aspirations, Results, Risks
9. MiSEN Strategic Plan 2024
10. Site Implementation Plan and Milestones Steps
11. MiSEN Connection Data Collection Instructions
12. MiSEN PSA Connectivity Participation Survey
13. MiSEN Connection Status Dashboard Report
14. Connectivity Summary by MiSEN Region