



Education
SUPERHIGHWAY

School Funding Interim Commission

January 13, 2015

About EducationSuperHighway

Mission-driven non-profit, non-partisan organization



Our Mission: To upgrade the Internet access in every public school classroom in America so that all students can take advantage of the promise of digital learning

Partnership overview

EducationSuperHighway is a mission-driven non-profit, non-partisan organization

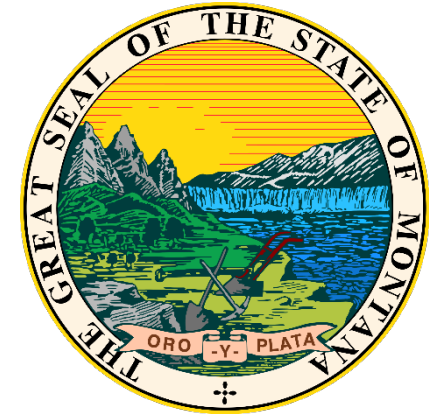
In September 2015, EducationSuperHighway launched two programs in partnership with Montana.

1. Fiber program

- Identify schools lacking scalable broadband infrastructure and help them upgrade

2. Connectivity Report

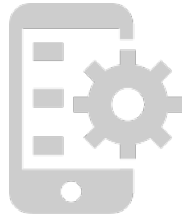
- Report on K-12 connectivity & identify opportunities to improve equity and access



opi.mt.gov



Digital technology is transforming education in MT



Teachers use Khan Academy to check for student understanding and **adjust lessons on the fly**



MT Digital Professional Learning Network **provides online professional development courses to over 10k educators throughout the state.**



Montana Digital Academy **serves 97% of high schools** and offers every course needed to graduate

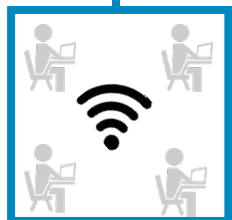


Hinsdale Public Schools moved most services to SaaS/Cloud based – **reducing IT management burden**

Connectivity infrastructure is a necessity for 21st century schools

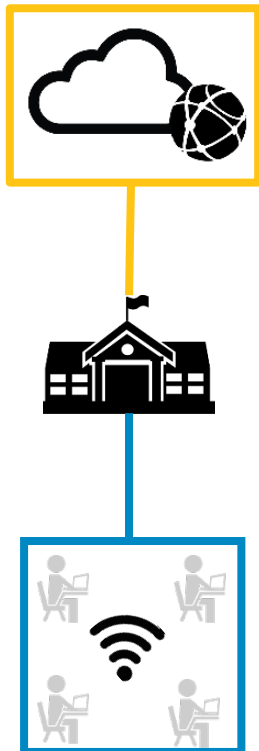


Fiber broadband Internet access
in every school



Wi-Fi/Local Area Network (LAN)
access in every classroom

How MT can optimize federal E-rate funding



Fiber: E-rate subsidizes deployment of fiber to every school PLUS additional 10% match of new state funds

- In NM, E-rate + a \$700k state match got 45 schools on fiber at zero cost to districts

Common denominator =
state funding + leadership

Wi-Fi: \$11 million of federal funding available for MT to upgrade internal infrastructure in the next four years

- NC created a sustainable program to put 1 Wireless Access Point in every classroom – and received 60% discounts from vendors

Models of state action to improve access & affordability

High state intervention



Low state intervention

Operate

Operate a state network

- Operate backbone and/or middle mile network
- Provide technical and procurement support

Aggregate

Aggregate procurement

- State master contracts
- State consortium
- Regional consortium

Fund

Fund districts

- Qualifying grant
- Matching fund
- Competitive grant

Appendix: Examples of state action + E-rate info

Low intervention: California's BIIG Grant Program

Provided \$27M to connect over 200 of the most in-need schools sites to 1 Gbps fiber services

PROBLEM

- Schools lacked funding and expertise needed to upgrade Internet connectivity
- Field tested online assessment program to identify schools lacking adequate infrastructure



Out-of-date infrastructure



Not affordable for districts

SOLUTION

- Governor Brown created a one-time \$27M fund to upgrade broadband infrastructure
- Schools were qualified based on need
- The state executed an RFP on behalf of qualified sites to connect to the state network

OUTCOME

- Schools involved in the program have scalable Internet connections to California's statewide network



90% of grant sites upgraded to 1 Gbps or greater



95% of grant sites connected to fiber

Medium intervention: Pennsylvania's E-Fund

\$60M grant to aggregate purchasing, resulting in a 534% statewide increase in school bandwidth

PROBLEM

- Fractured district purchasing resulting in:
 - High costs
 - Low bandwidth
 - Poor equity



\$486/Mbps average IA



54 Mbps average district b/w



40% fiber

SOLUTION

- Service providers paid into E-Fund in exchange for relaxed regulatory guidelines (\$60M over 6 years)
- Established grant program that incentivized district cooperation (PA E-Fund)

OUTCOME

- Intermediary units formed regional networks to receive E-Fund money
- Regional networks interconnected to form a state backbone (PAIUNet)



Bandwidth up 534% statewide



\$1/Mbps state IA



83% fiber (2012)

High intervention: Network Nebraska

Partnered with higher ed to build a statewide fiber network to serve 100% of public school districts

PROBLEM

- Regional distance learning networks had outdated infrastructure
- The networks lobbied the state to intervene on their behalf



Fractured regional networks



Out-of-date infrastructure

SOLUTION

- Formed the Distance Education Enhancement Task Force
- K-12 partnered with higher-ed to support the state backbone
- Postalized district membership fees (\$236/mo) fund the network

OUTCOME

- Single, sustainable K-20 network funded by affordable membership fees



\$1/Mbps Internet access



100% district participation (July 2015)

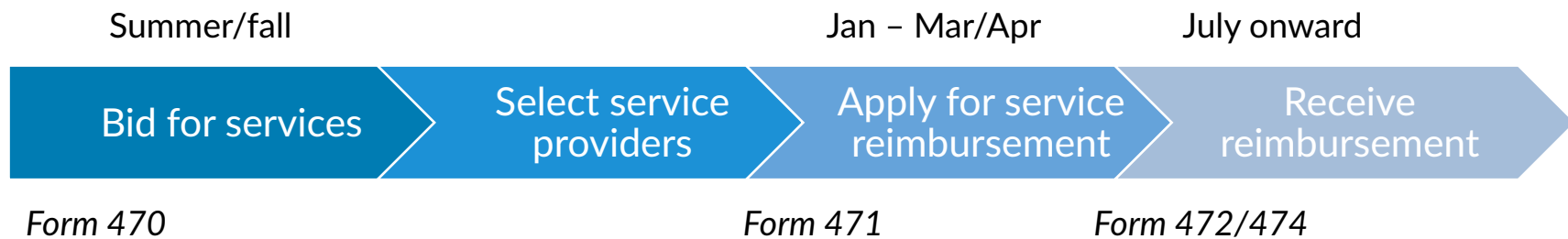


99% fiber (2015)

E-rate funds up to 90% of the cost of connectivity for schools

E-rate provides discounts to schools and libraries in the United States on their telecommunications, Internet access, and internal networks. The program is administered by the Universal Service Administrative Company (USAC) under the oversight of the Federal Communications Commission (FCC).

Timeline:



Discounts range from 20% to 90% of the cost of services, depending on poverty levels and location (urban or rural)

Individual schools, school districts, or school consortia can apply for E-rate funds.

Source: http://www.usac.org/_res/documents/sl/pdf/handouts/sl-overview-brochure.pdf

E-rate match for state contribution



FIBER

Example: Sample School District wants to procure a fiber connection to one of their schools currently on a T-1 connection. The district received multiple bids for both lit and dark services and determined that a \$100,000 bid for a fiber build was the most cost-effective option. How much money would this fiber project cost the district?

Fiber build quote from vendor		\$100,000
E-rate reimbursement rate	70%	\$70,000
State contribution	10%	\$10,000
Bonus E-rate match	10%	\$10,000
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Total cost to Sample SD	10%	\$10,000

Note: Sample SD can pay their match over 4 years, if agreed to by the service provider. $\$10,000 / 48 \text{ months} = \208 per month .

Key Modernization Changes: Fiber Construction



FIBER

Change

- Fiber construction costs can be charged in one fiscal year
- Non-discounted portion of special construction costs can be paid over 4 years
- Dark fiber acquired by IRU or construction is a fully eligible service
- E-rate will match state funding up to an additional 10% for special construction

Outcome

- More districts will evaluate fiber builds as an option
- Ability to extend payment window makes this more affordable for districts
- Lit service must also be bid to compare to dark fiber option
- Districts with an 80% discount rate could have 100% of costs covered

Key Modernization Changes: Program Funding

Change	Outcome
<ul style="list-style-type: none">• Annual funding cap increased from \$2.4B to \$3.9B	<ul style="list-style-type: none">• Districts should receive more of their requested funding, including fiber construction and Wi-Fi
<ul style="list-style-type: none">• \$1B Cat 2 funding target is extended to 2019	<ul style="list-style-type: none">• Wi-Fi Upgrades can be planned over the next four years
<ul style="list-style-type: none">• Cat 2 budget is up to \$150 per student pre-discount	<ul style="list-style-type: none">• Per student funding helps larger districts meet connectivity targets

Fiber Construction Matching Funds

E-rate will pay up to an additional 10% above an applicant's discount rate if states provide matching funds for fiber construction



FIBER

What state funds are eligible for the additional fiber construction match from E-rate?

- New funding, if possible. Contact the FCC to see if existing funding qualifies.
- Funding must be administered by an agency of the state.
- Must include language that
 1. Dedicates the funds to construction of broadband infrastructure by E-rate applicants
 2. Recognizes that the new infrastructure must deliver service that meets or exceeds FCC goals to the E-rate facility
- E-rate will not match beyond the cost of services
 - Example: If a district has an 85% discount rate and the state matches 10% of the costs, E-rate will kick in an additional 5%
- Case Study: CA BIIG Fiber Grant

Category 2 funding cap changes



WI-FI

How are Category 2 funds currently capped?

- Category 2 funding is calculated on a “per student” basis, and is capped over a 5-year period
- Five-year period starts with the 1st year of funding and ends 4 years later
- The “2 in 5 rule” – where applicants could only access funds within 2 out of any 5 sequential years – is no longer in effect.
- FCC rule applies to applicants first funded between 2015 and 2019
- Once funded in any year from 2015 to 2019, the applicant is locked into the pre-discount budget process for the full 5 years
- In 2020 and beyond, it is unclear how the FCC rule will apply

Category 2 budget calculation



WI-FI

- Pre-discount budget for a school = # students x \$150
- Minimum of \$9,200 if the school has fewer than 62 students
- **Example: school with 1,000 students**

85% discount rate (the maximum for Cat 2)

Pre-discount budget: \$150,000

E-rate discounts: up to \$127,500

Budget is capped to a 5-year window

Other Resources

- FCC Modernization Order Summaries:
 - <https://www.fcc.gov/page/summary-e-rate-modernization-order>
 - <https://www.fcc.gov/page/summary-second-e-rate-modernization-order>
- Summaries
 - [Modernization Order – December 2014 – Wisconsin DPI](#)
 - [A Summary of Major Changes to the E-Rate Program from the December 11 FCC Report and Order – American Library Association: January 2015](#)
 - [FCC Releases Second E-Rate Order On Modernizing The E-Rate Program – Wemble Carlyle: January 7, 2015](#)
 - [The FCC Delivers Phase II of E-Rate Modernization – Open Technology Institute: January 14, 2015](#)
- E-rate Training (3rd party): <http://erate.training/start-here/>