



Education
SUPERHIGHWAY

**Connectivity Report for the
State of Minnesota**

**Presented to the Governor's
Task Force on Broadband**

October 14, 2015

Overview and statement of goals

The Minnesota Legislature has established clear goals in statute to guide the state's overall broadband development efforts. The Governor's Task Force on Broadband aims to identify and correct disparities in broadband access and adoption throughout the state.

In August 2015, ESH began supporting Minnesota with data verification and analysis on the state of K-12 broadband in schools and districts.

This report inventories the current status of K-12 connectivity and and highlights opportunities to improve equity and access for all students.



Every student has a right to access digital learning



To individualize instruction and maximize each student's progress, each student needs access to a device, a **broadband Internet connection**, high quality digital content and teachers trained to help them use it.

Without ubiquitous broadband access and adoption and one-to-one mobile computing devices, we have left students at the side of the road without a "bus" to school.

- Minnesota Online and Digital Learning Advisory Council

Source: ISD 535

Schools are shifting to 1:1 and blended models

Individual Classroom Technology Use

- Basic network infrastructure in place
- Infrastructure supports basic and media-rich assessments or classrooms at the same time
- Additional classroom use is typically approved by staff and curriculum development

Everyday 1:1 Campus-wide Technology Use

- Technology is widely available
- Most students interact with a device on most days
- Teachers have basic digital literacy
- Digital curriculum, but not necessarily rich media, is critical one or more subjects

Media-rich Blended Learning Technology Use

- Every student experiences technology-enabled learning during the school day
- Video and rich media are central to everyday learning
- Instruction would not be productive if the Internet were unavailable for the day

Moderate Bandwidth

1 access point per 1.5 classrooms
100 Kbps per student Internet bandwidth

High Bandwidth

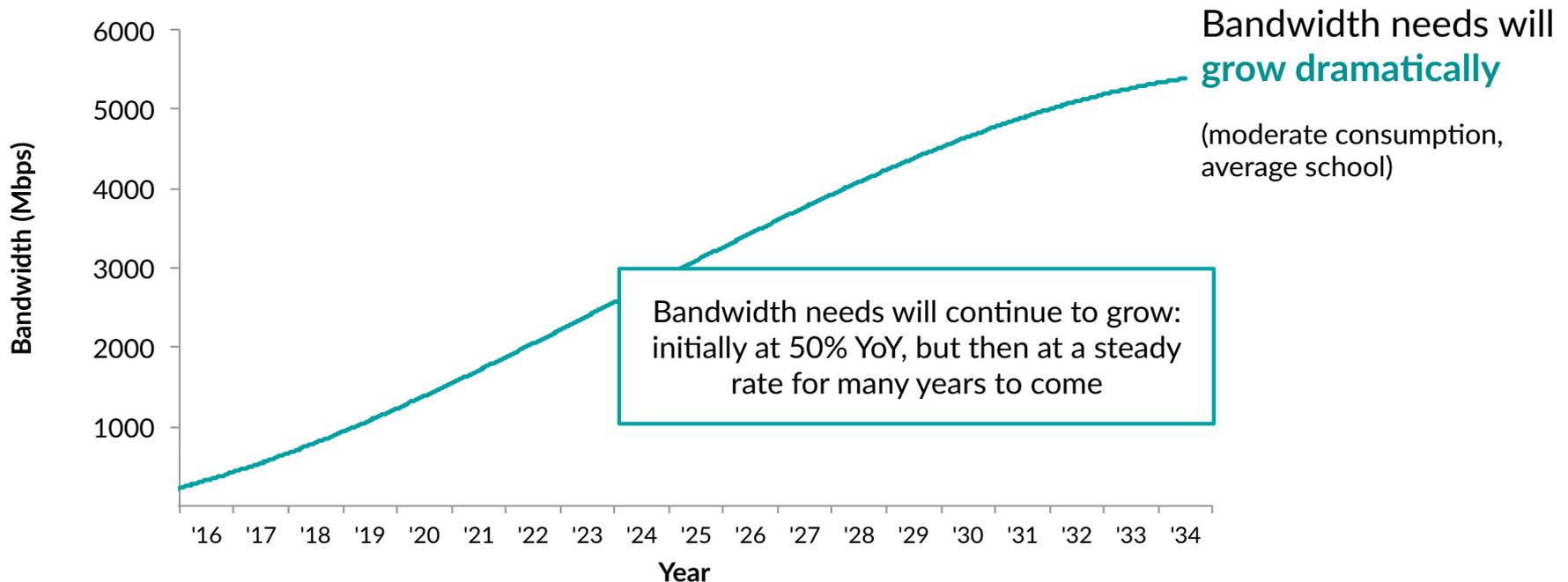
1.2 access points per classroom
1 Mbps per student Internet bandwidth

Very High Bandwidth

1.2 access points per classroom
1+ Mbps per student Internet bandwidth

Which leads to dramatic growth in bandwidth needs

Bandwidth needed over the next 20 years



Goals can guide action and promote equity

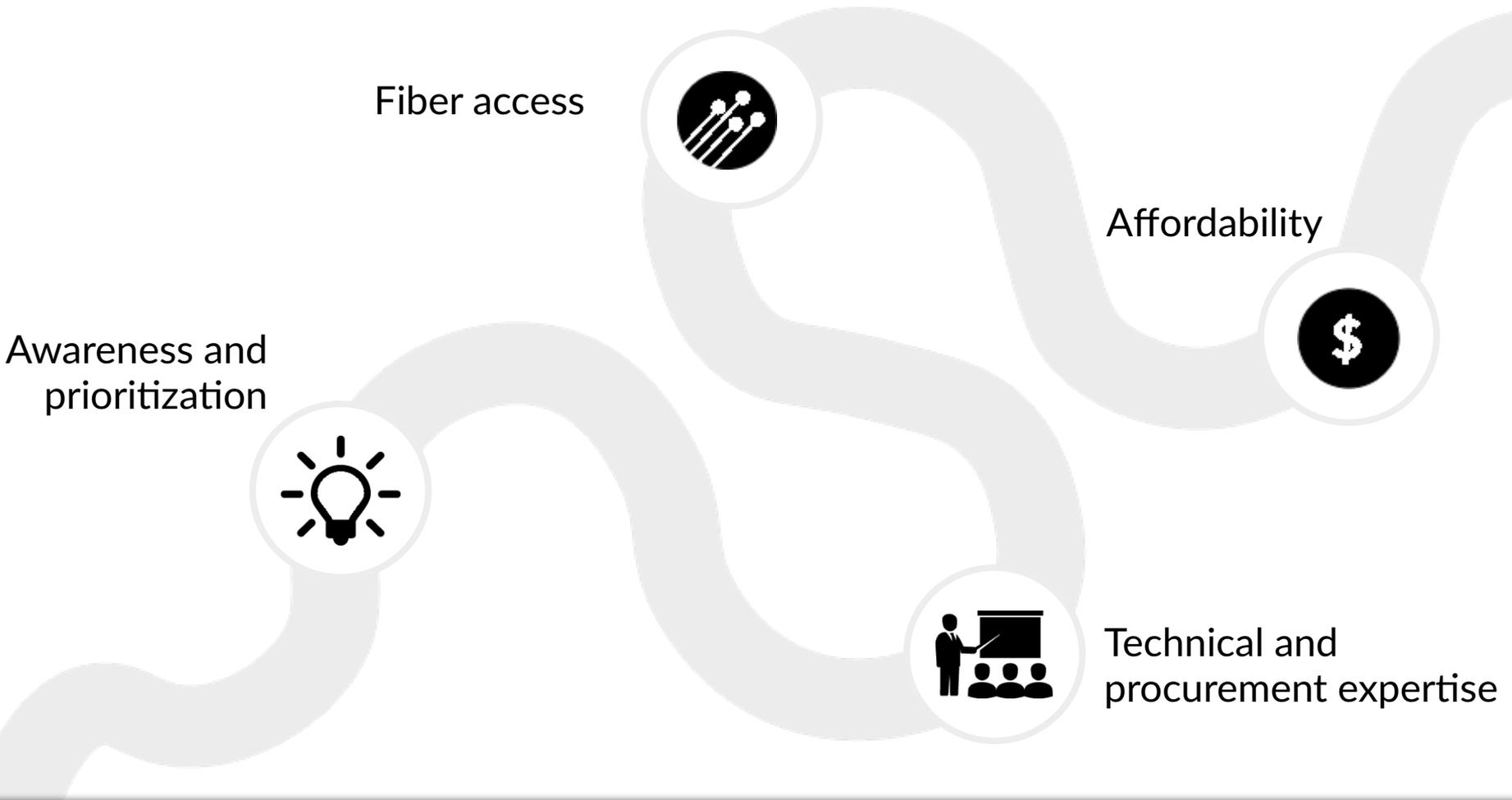
- FCC goals can be used as a benchmark for Minnesota's districts
- The 2014 goal represents a **minimum threshold** for every school
 - Once minimum thresholds are met, we suggest either monitoring utilization or pursuing 2018 goals to stay ahead of demand

Purpose	2014	2018
Internet access	100 Kbps per student/staff	1 Mbps per student/staff
District transport (WAN)	*1 Gbps per school	Scalable to 10 Gbps per school

More information: <https://www.fcc.gov/page/summary-e-rate-modernization-order>

*2014 WAN targets were recommended by SETDA, but the FCC did not adopt any short term WAN goals

States can help districts address common barriers



MN can immediately support district upgrades



GOALS

- **~22%** of districts are not meeting 2014 Internet access goals and over 80% of are not meeting 2018 goals
- **Set clear state goals to identify need and target support**



FIBER

- **~26%** of schools need fiber upgrades
- **Start identifying and supporting these schools this year**



AFFORDABILITY

- **\$10/Mbps** is the average cost of Internet access (3x target)
- Top quartile districts in Minnesota achieve **\$2.5/Mbps**
- **Leverage transparency to increase bandwidth for schools**

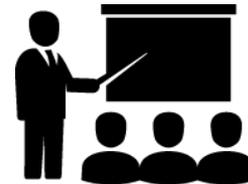


WI-FI

- **\$65M** of Category 2 funding is still available
- **More effective procurement can maximize value**

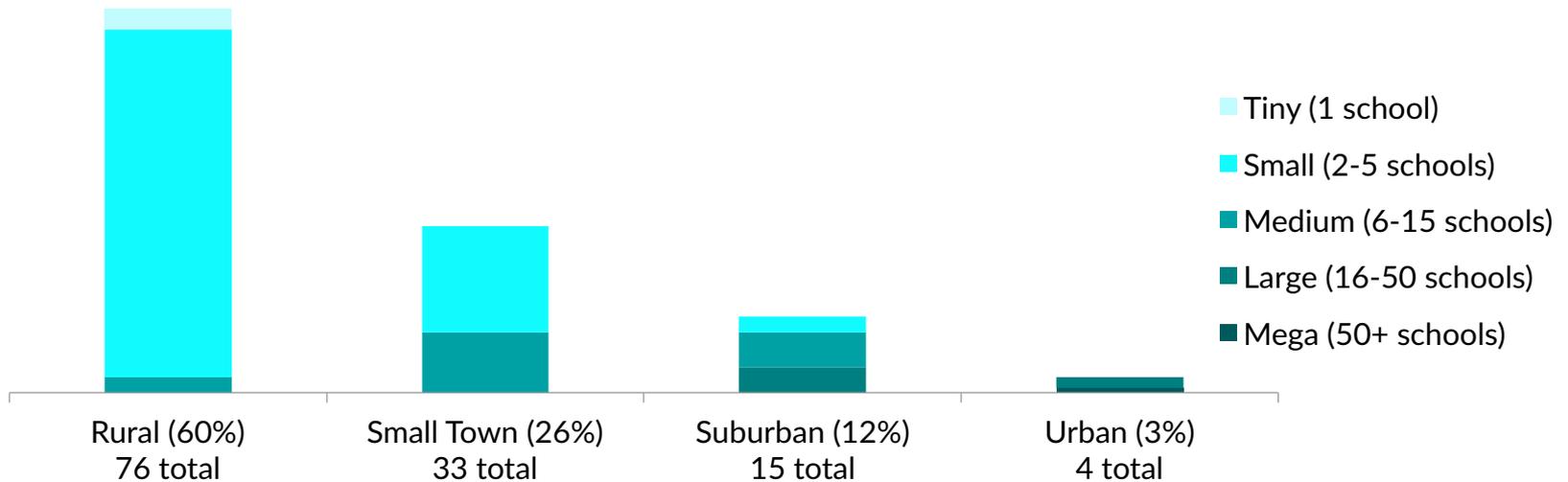
Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

Findings and recommendations



Our data represents the state with 95% confidence

- Our data is based on E-rate funding requests for 2015-16
- Our data does not include charter schools
- Our data is a representative sample with a 95% confidence level
 - Representative sample of 38% traditional school districts in Minnesota
 - Includes a distribution of districts based on locale and size



Are schools meeting connectivity goals?



GOALS

- Are schools and districts meeting 2014 and 2018 goals for K-12 broadband connectivity?



FIBER

- Are schools on fiber? If not, where are the gaps and how can the state help?



AFFORDABILITY

- Is Internet access affordable for all districts? If not, which districts pay too much and how can the state help?



WI-FI

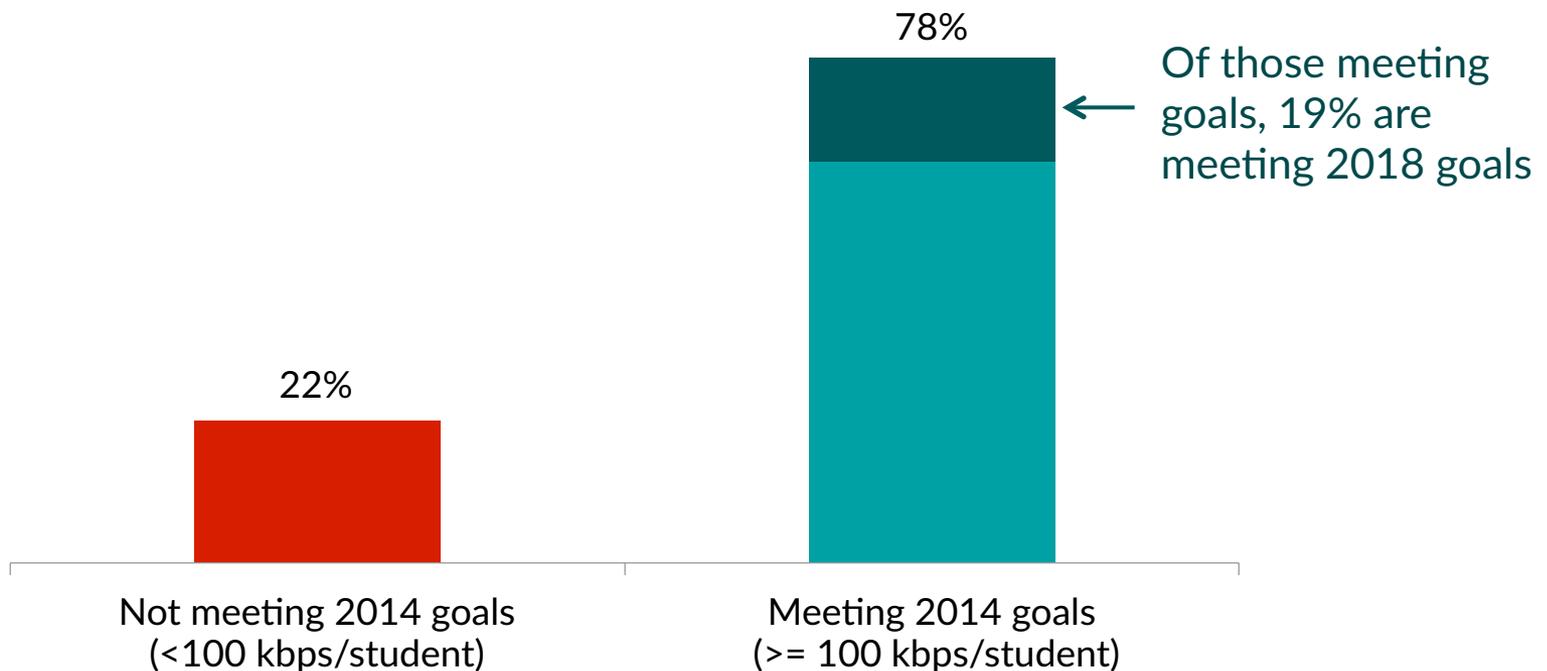
- How can the state support districts in leveraging E-rate funding to upgrade Wi-Fi and LAN connectivity?

22% of districts are not meeting 2014 Internet access goals



GOALS

Districts meeting 2014 goals for Internet access



Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

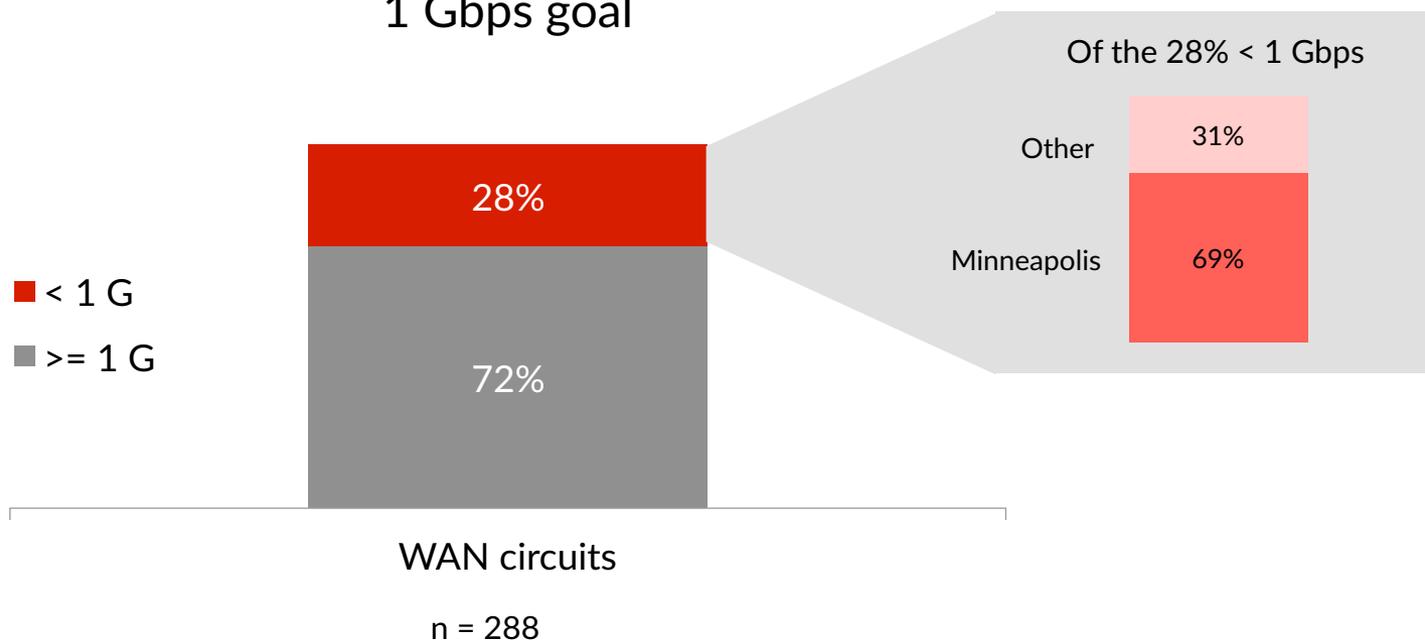
Note: concurrency adjustment was not used to determine meeting 2014 goals; concurrency was applied for 2018 goals

28% of school WAN connections are < 1 Gbps



GOALS

School WAN connections meeting 1 Gbps goal



Note: ~25% of schools did not report WAN data

Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

Districts can meet future needs in two ways



GOALS

MN districts not meeting 2014 goals	Current situation
District A 257 students 6 Kbps/student	T-1 1.5 Mbps \$1,262/month
District B 999 students 45 Kbps/student	Lit fiber 45 Mbps \$2,616/month

Upgrade to fiber or an equivalent



FIBER

Negotiate better options, buy more bandwidth



AFFORDABILITY

Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

How can Minnesota improve fiber connectivity?



GOALS

- Are schools and districts meeting 2014 and 2018 goals for K-12 broadband connectivity?



FIBER

- Are schools on fiber? If not, where are the gaps and how can the state help?



AFFORDABILITY

- Is Internet access affordable for all districts? If not, which districts pay too much and how can the state help?



WI-FI

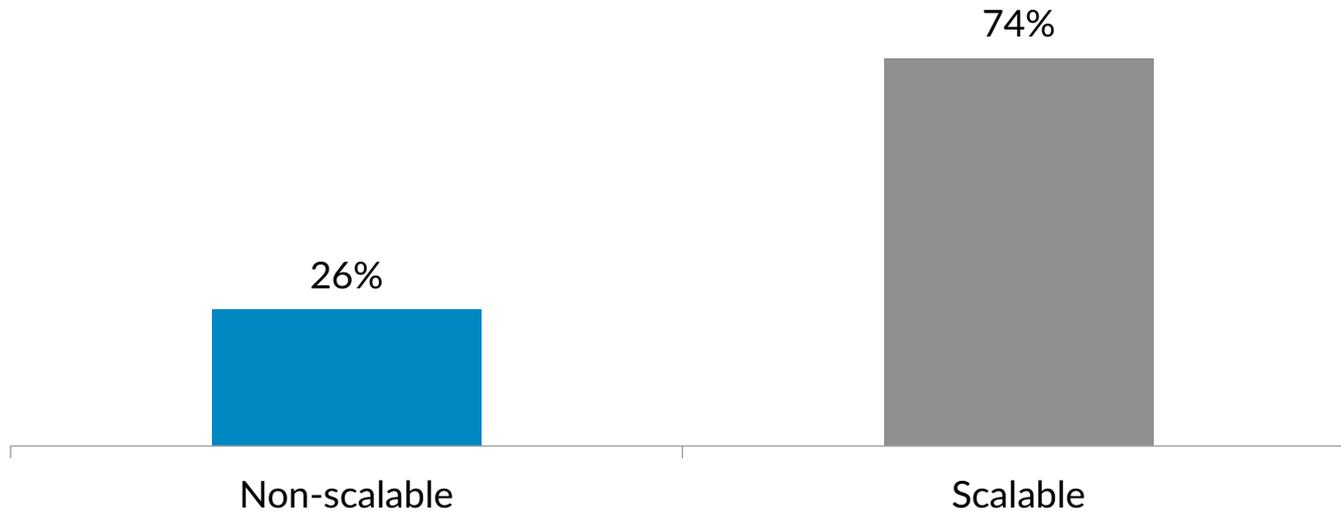
- How can the state support districts in leveraging E-rate funding to upgrade Wi-Fi and LAN connectivity?

~26% of schools need infrastructure upgrades



FIBER

Scalable and non-scalable school buildings



n = 653 buildings

Scalable includes:

- fiber
- fixed wireless
- cable in districts < 100 students

Sources: 2015 FCC Form 471 E-rate applications

E-rate makes new fiber deployments feasible



FIBER

Cost to connect a school in district ABC to fiber:	\$100,000
- E-rate discount for district ABC (68% rate):	- \$68,000
<hr/>	
Remaining costs to district ABC:	\$32,000

State matching can reduce costs even further



FIBER

If the state funds up to 10% of the cost for a school's fiber build, then the FCC will match. This opportunity is available for at least the next two years

Cost to connect a school in district ABC to fiber:	\$100,000
- E-rate discount for ABC (68%):	- \$68,000
- Minnesota funds 10% of the build:	- \$10,000
- FCC matches Minnesota's 10%:	- \$10,000
<hr/>	
Remaining costs to district ABC:	\$12,000

Next steps → fiber to all schools



FIBER

1. Identify initial schools that need access to fiber
2. Work with those schools to find a solution this E-rate cycle
3. Identify and work with other schools to find a solution for the next E-rate cycle
 - Explore state resources for a state matching fund for self construction

ESH Fiber Program



FIBER

ESH team works with districts to bring affordable, scalable high-speed broadband access to all schools in the state

- Program Steps



- Approach

- Three person consulting team
- Working directly with districts (through the state)
- Providing technical, procurement and project management expertise

Is access affordable for all districts?



GOALS

- Are schools and districts meeting 2014 and 2018 goals for K-12 broadband connectivity?



FIBER

- Are schools on fiber? If not, where are the gaps and how can the state help?



AFFORDABILITY

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WI-FI

- How can the state support districts in leveraging E-rate funding to upgrade Wi-Fi and LAN connectivity?

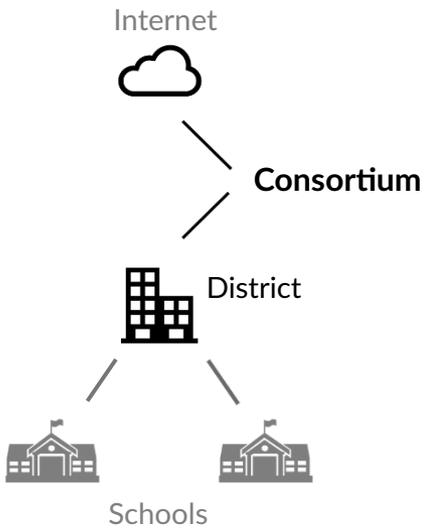
Consortia support schools through aggregation, support and procurement expertise



AFFORDABILITY

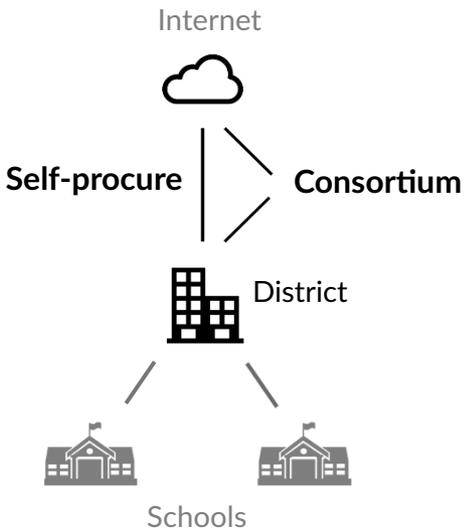
A 73%

Districts and schools access the Internet through a **consortium**



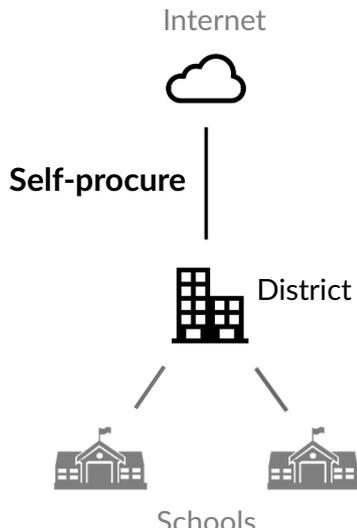
B 9%

Districts receive services from **consortia** and **self-procure**



C 18%

Districts **self-procure**



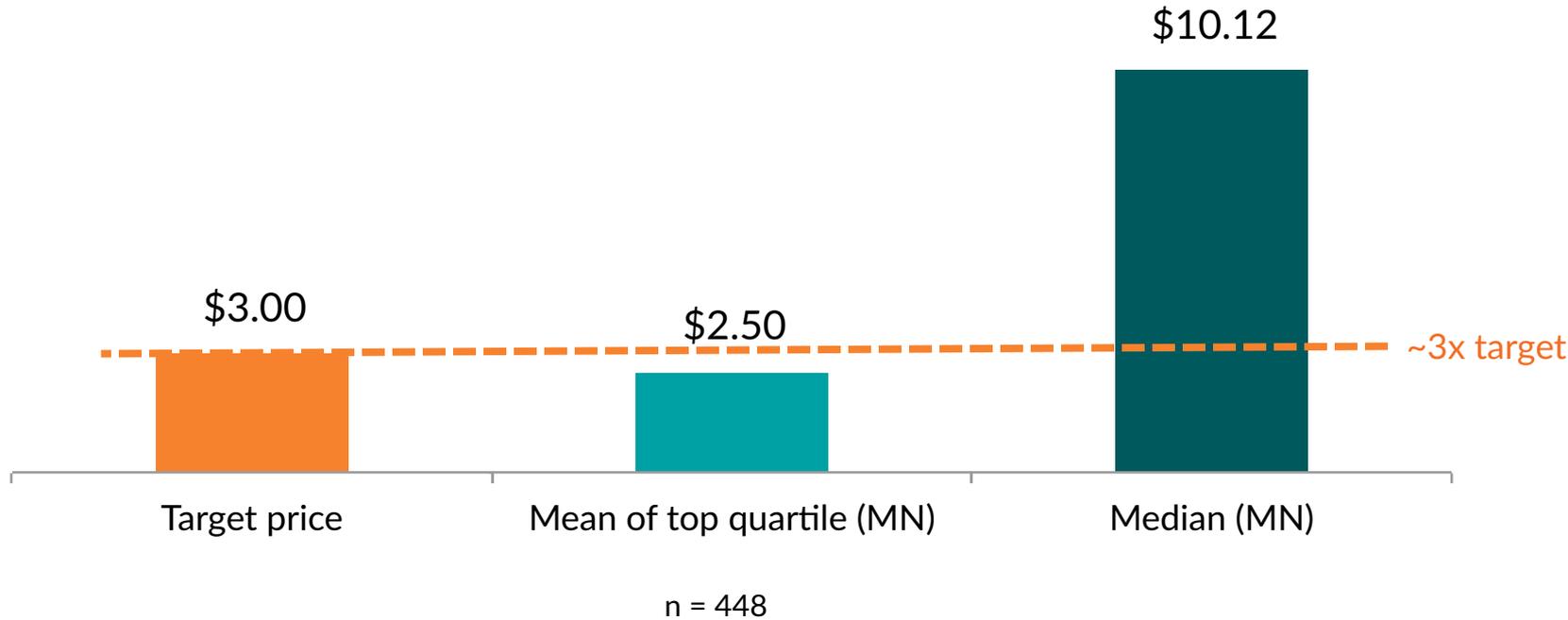
Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

Current Internet costs are 3x target, but some districts in MN are below target



AFFORDABILITY

Internet access cost per Mbps per month
(all connection types)



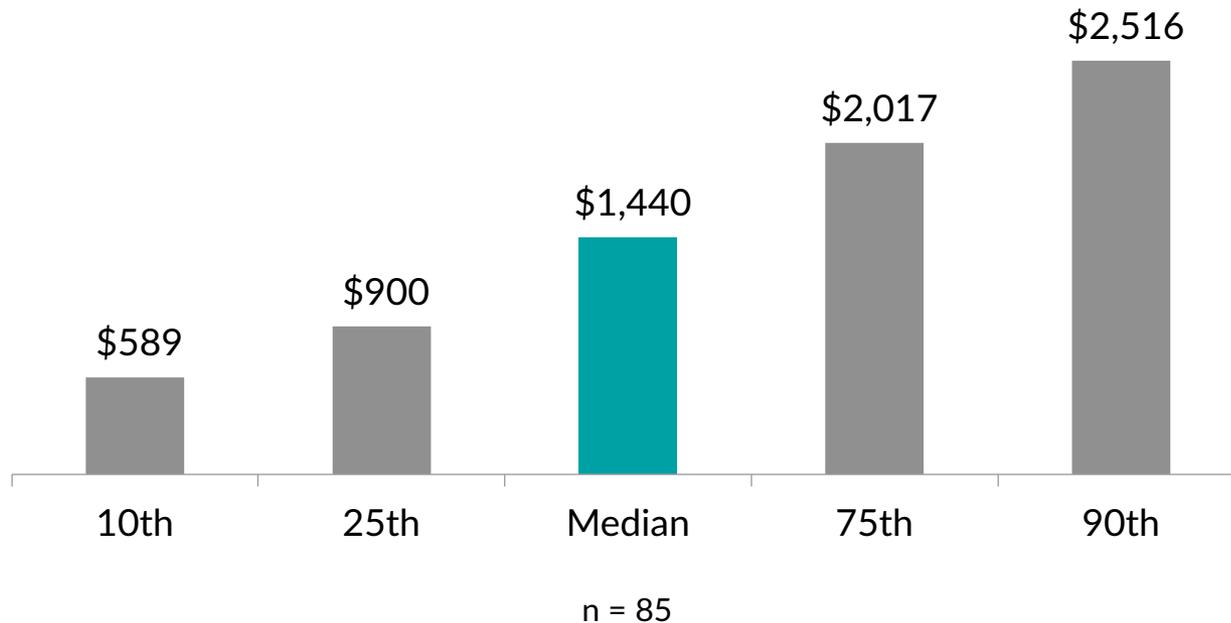
Sources: 2015 FCC Form 471 E-rate applications

Low bandwidth fiber connections are more costly



AFFORDABILITY

Monthly Internet access cost
100 Mbps Lit Fiber



Sources: 2015 FCC Form 471 E-rate applications

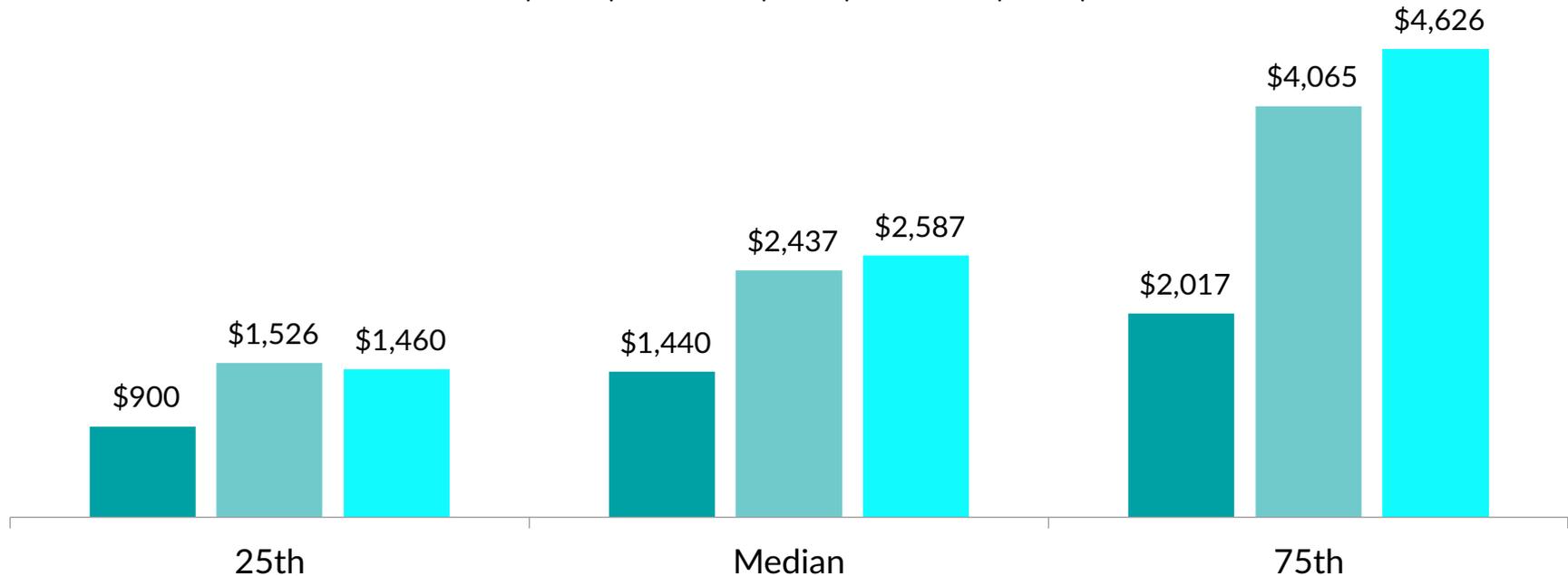
There may be opportunities to significantly increase bandwidth for incremental costs



AFFORDABILITY

Monthly Internet access cost
100, 200 and 1,000 Mbps Lit Fiber

■ 100 Mbps (n=85) ■ 200 Mbps (n=31) ■ 1 Gbps (n=14)



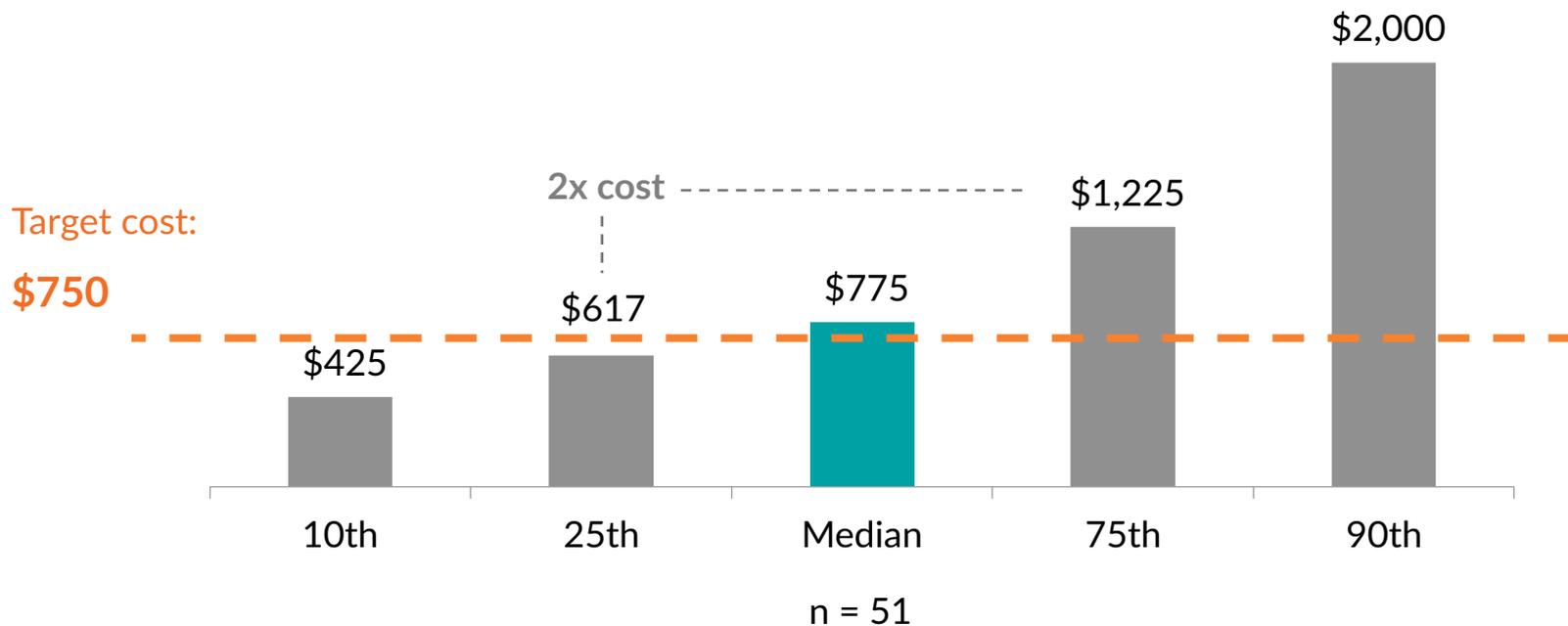
Sources: 2015 FCC Form 471 E-rate applications

WAN pricing is on target, but costs vary



AFFORDABILITY

Monthly WAN cost per circuit
1 Gbps Lit Fiber



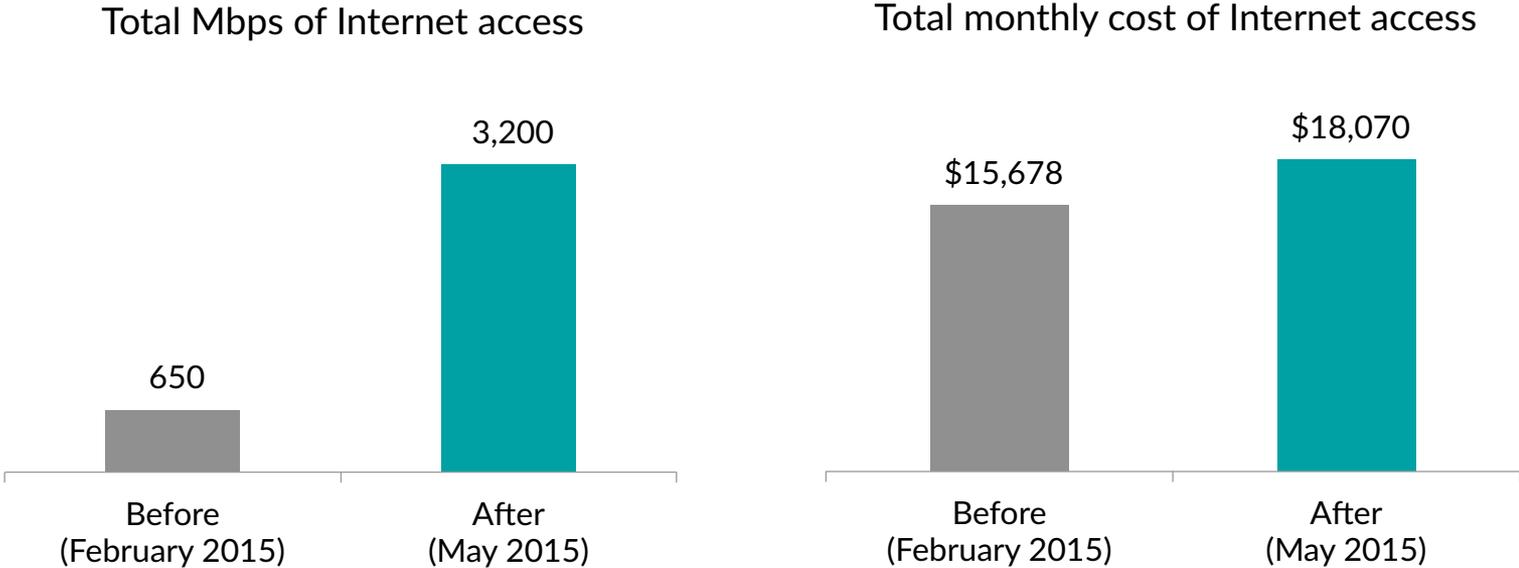
Sources: 2015 FCC Form 471 E-rate applications

In VA, 5x bandwidth for marginal increase in cost



AFFORDABILITY

In 2014, Virginia piloted a program with 15 districts to leverage group buying power. By sharing bandwidth and cost data, 5 of 15 districts worked with providers to negotiate more bandwidth for little to no extra cost.



Next steps → reducing broadband costs statewide



AFFORDABILITY

1. Use price transparency data to assist districts and consortia with negotiations this E-rate cycle
2. Learn about best practice regional or statewide aggregation models and where Minnesota can further optimize performance and cost

Compare & Connect K-12

CCK12 is an online tool for state and school district leaders

- Leverages open E-rate data to provide regional broadband and pricing information
- Provides key information to support negotiations for more bandwidth with service providers
- Will be available to support the 2016 E-rate cycle

Education
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COMPARE & CONNECT K-12

Find out what other school districts pay for connectivity.

Enter your school district

GET STARTED

Compare & Connect K-12 makes broadband and pricing data transparent so that state and school district leaders have the information they need to negotiate for enough bandwidth to support digital learning today and in the future.

Compare prices

Learn about what other districts are paying to enable you to negotiate more bandwidth at lower costs.

[COMPARE PRICES](#)

Track state connectivity

Track your state's progress toward broadband connectivity goals and compare against other states.

Enter your state

Understand the data

Learn how we gathered and analyzed school district connectivity data.

[About the data](#)

How can Minnesota improve Wi-Fi connectivity?



GOALS

- Are schools and districts meeting 2014 and 2018 goals for K-12 broadband connectivity?



FIBER

- Are schools on fiber? If not, where are the gaps and how can the state help?



AFFORDABILITY

- Is Internet access affordable for all districts? If not, which districts pay too much and how can the state help?



WI-FI

- How can the state support districts in leveraging E-rate funding to upgrade Wi-Fi and LAN connectivity?

\$65 million in E-rate eligible funding is available



WI-FI

Minnesota by the numbers:

\$65 million

of the state's five year E-rate budget for wired and wireless networks in the building is still available

94%

of districts still have the opportunity to use their \$150/student budget

55%

of districts have requested Category 2 funding

- Minnesota is already identifying best practices for implementing 1:1 to ensure maximum effectiveness
- To complement these efforts, the state can support districts with support and outreach on effective Category 2 procurement

Sources: 2015 FCC Form 471 E-rate applications

Building Wi-Fi procurement expertise in Georgia

Georgia partnered with ESH to deliver a webinar for districts on effective Wi-Fi procurement



WI-FI

Helping districts to be **effective buyers**

- What equipment to buy from which manufacturer
- How to solicit competition and negotiate rates

The School Wi-Fi Buyer's Guide is a free, online tool for technology directors

UNDERSTAND YOUR WIRELESS OPTIONS

Equip yourself with the knowledge needed to make smart decisions on wireless solutions.

LEARN

A photograph of a teacher and a student looking at a tablet together. The teacher is pointing at the screen while the student looks on. The background shows other students in a classroom.

CUSTOMIZE YOUR WIRELESS REQUIREMENTS LIST

Create a list of the wireless features your district needs to support digital learning.

BUILD

A photograph of two students sitting at a desk, looking at a laptop. One student is pointing at the screen while the other looks on.

SAVE TIME AND MONEY FOR YOUR DISTRICT

Take steps to procure an appropriate and affordable wireless solution.

PROCURE

A photograph of several tablets and laptops on a desk. A hand is visible in the foreground, interacting with one of the devices.

Next steps → improve Wi-Fi and LAN in schools



WI-FI

1. Educate districts on effective Wi-Fi procurement practices
2. Explore possible opportunities to aggregate Wi-Fi purchasing at a regional or state level

Summary and recommendations



Set K-12 connectivity goals to ensure equity and access for all MN students

Issues & Trends



26% of schools can use help today with fiber upgrades; data is missing for many others



At \$10/Mbps for Internet access, affordability is a challenge, but districts in top quartile achieve \$2.5/Mbps



\$65 M of Category 2 funding is available for the next 4 years

Recommendations

Begin connecting schools to fiber this year. Identify schools that need more robust support next year while securing resources for a state matching fund

Support districts and cooperatives with price transparency tools and resources. Explore aggregation opportunities

Educate and support districts on effective Wi-Fi procurement

ESH services created to support states and districts

Organize and catalyze



Connectivity Report

- ✓ Report on the current state of K-12 connectivity
- ✓ Identify high-impact actions that states can take to accelerate upgrades

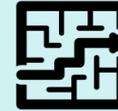
Close the fiber gap



Fiber Consulting Program

- Work with districts to identify options, create strategies and implement solutions for all schools that do not have fiber
- Incorporate fiber program into long-term state connectivity plans

Make informed decisions



State Advisory Services

- Share best practices and connect with peer states
- Improve affordability through data transparency tools
- Facilitate regional procurement collaboration among districts

Discussion and next steps

We've shared a snapshot of the status of Minnesota's K-12 connectivity

- The information is meant to inform future discussions
- The data is based on a representative sample, but the state could invest further in collecting more detailed data to target support

Next steps

- Develop K-12 connectivity goals to support equitable and affordable access for **all schools**
- Continue to leverage ESH as an external support – we stand ready with tools, programs and advisory services

Methods



Goals calculations



Methods

Metric	Method
Percent of districts meeting the 2014 SETDA Internet Access goal (100 Kbps/student)	<ul style="list-style-type: none">• Calculated on our representative sample• When the per student amount is 100 Kbps or more, the district is meeting goals. When the per student amount is under 100 Kbps, the district is not meeting goals.• Sum of total bandwidth (bw) of Internet lines (bw * number of lines) (accounts upstream bw) being received by school's within the district divided by the sum of the district's number of students (NCES).• No concurrency multiplier is applied as 100 Kbps/student is a floor/ requirement regardless of size.

Goals calculations



Methods

Metric	Method
<p>Percent of districts meeting the 2018 SETDA Internet Access goal (100 Kbps/student)</p>	<ul style="list-style-type: none"> • Calculated on our representative sample • Sum of total bandwidth of Internet lines (bandwidth * number of lines) (accounts for upstream bandwidth) being received by a district divided by the number of students (NCES). A concurrency multiplier is applied based upon a district's size (number of schools). <ul style="list-style-type: none"> • Tiny/ Small (1-5 schools) = 1 • Medium (6-15 schools) = 1.5 • Large (16-50 schools) = 1.75 • Mega (51 + schools) = 2.25
<p>Percent of WAN circuits at the 2014 SETDA WAN goal (1 Gbps)</p>	<ul style="list-style-type: none"> • Calculated based upon our representative sample • Sum the circuits received by school's across districts within our rep sample. For those at and above 1 Gbps, they are meeting goals and otherwise they are not meeting goals. • Includes all connect types (lit fiber, dark fiber, non-fiber, etc...) and <i>wan_conditions_met</i> is TRUE. • A district's circuits can fall on both sides of the meeting goals / not meeting goals because it is a circuit level analysis. • Only includes E-rated WAN line items.

Fiber/scalable campuses



Methods

Metric	Method
Percent of schools in need of infrastructure upgrades	<ul style="list-style-type: none">• By district, compare the total number of campuses (accounts for co-location) to the number of scalable circuits received by schools in that district (NIFs not included).• We assume all circuits go directly to campuses and we also assume a medium, large and mega district without reported WAN have fiber WAN whereas for tiny and small districts without WAN we assume non-scalable circuits.• We take the total count of scalable circuits/campuses and divide by the total number of campuses.• Scalable: Fiber (lit, dark, OCN, Ethernet > 100 Mbps for WAN and >150 Mbps for Internet), cable for <100 students, fixed wireless.

Affordability calculations



Methods

Metric	Method
Internet cost per Mbps	<ul style="list-style-type: none">• Calculated at the line item level.• Data set is agnostic of speed and connect type and includes all Internet circuits.
Internet circuit pricing	<ul style="list-style-type: none">• Calculated at the line item level, the monthly cost per circuit is calculated based upon total cost / number of circuits / 12.• The data set is agnostic of speed and connect type and includes all Internet circuits.
WAN circuit pricing	<ul style="list-style-type: none">• Calculated at the line item level, the monthly cost per circuit is calculated based upon total cost / number of circuits / 12.• The data set is for 1 Gbps Lit Fiber WAN circuits (since this is the goal). The percentiles are based upon line items.

Category 2 (C2) calculations



Methods

Metric	Method
Funding remaining	<ul style="list-style-type: none">• Post-discount – amount of funding remaining to be reimbursed based upon number of students x \$150 x average C2 reimbursement rate• Number of students is based upon NCES and accounts for traditional public school students and charter students
Exhausted C2 budget %	<ul style="list-style-type: none">• Count of of public and charter districts / total public and charter districts in state that have not requested the full \$150 per student in this first year.
Districts not requesting any C2	<ul style="list-style-type: none">• Count of public and charter districts / total public and charter districts without a C2 funding request (as of September 2015) for this cycle.

Concurrency factor



Methods

As the district size increases, we assume that there will be a smaller portion of the district's student population served at any given moment.

Therefore we calculate the bandwidth per student using number of students reduced by a concurrency factor.

# schools	Factor	Example
1-5	1	<i>District A has 20 schools with 10,000 students. If we were to apply the 2018 SETDA goals directly, they would require a 10 Gbps connection for Internet.</i> <i>With oversubscription: 10,000 x 1 Mbps = 10 Gbps / 1.75 = 5.7 Gbps</i>
6-15	1.5	
15-50	1.75	
51+	2.25	

Appendix



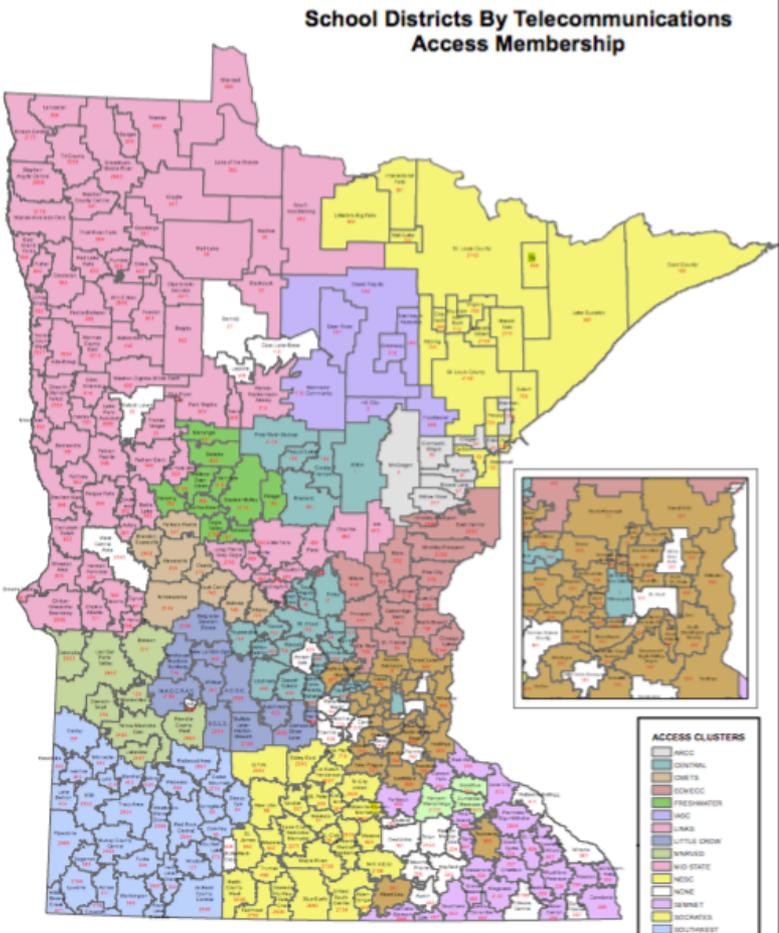
About EducationSuperHighway

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

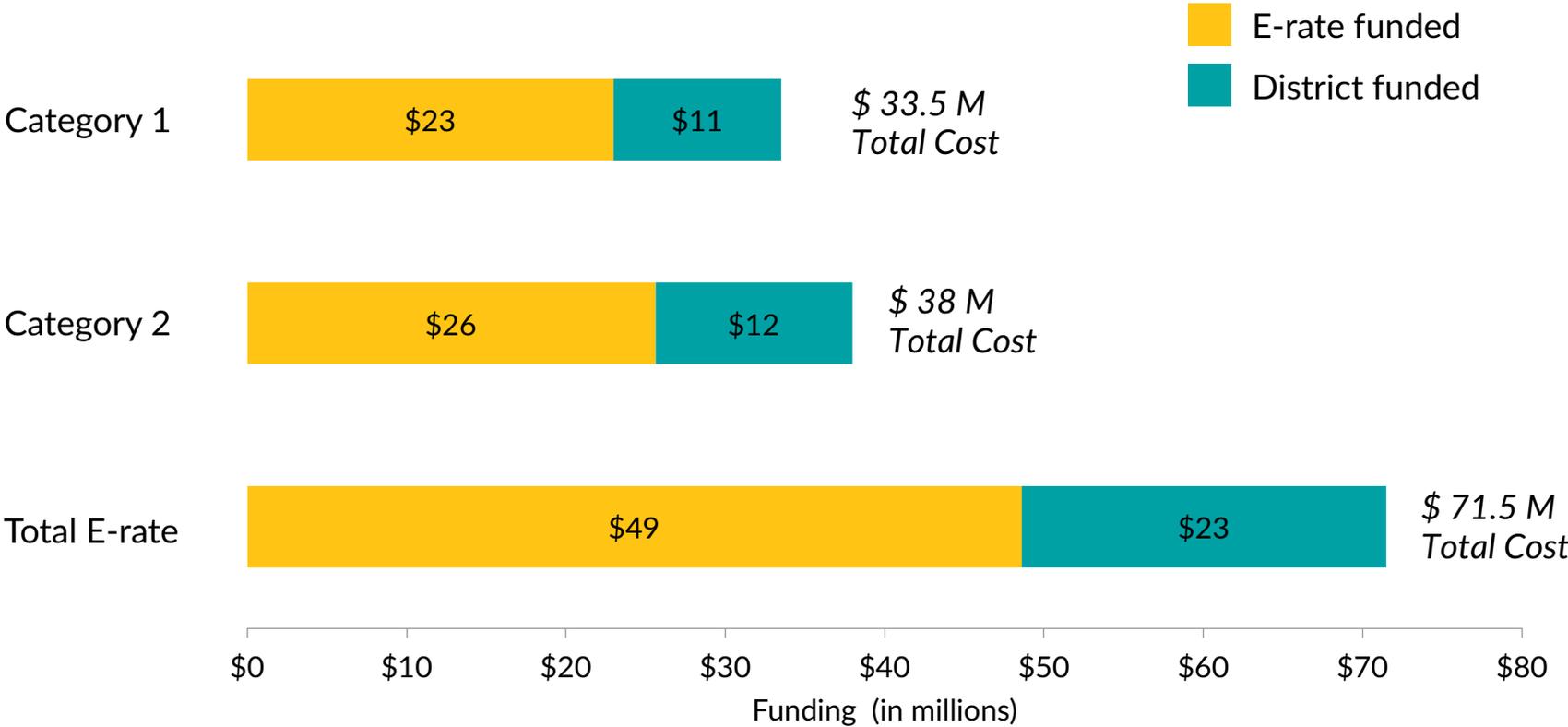
Minnesota Telecommunications Clusters



Source: <http://www.metn.k12.mn.us/>

Minnesota's 2015 E-rate funding

Minnesota's discount rate: 68%



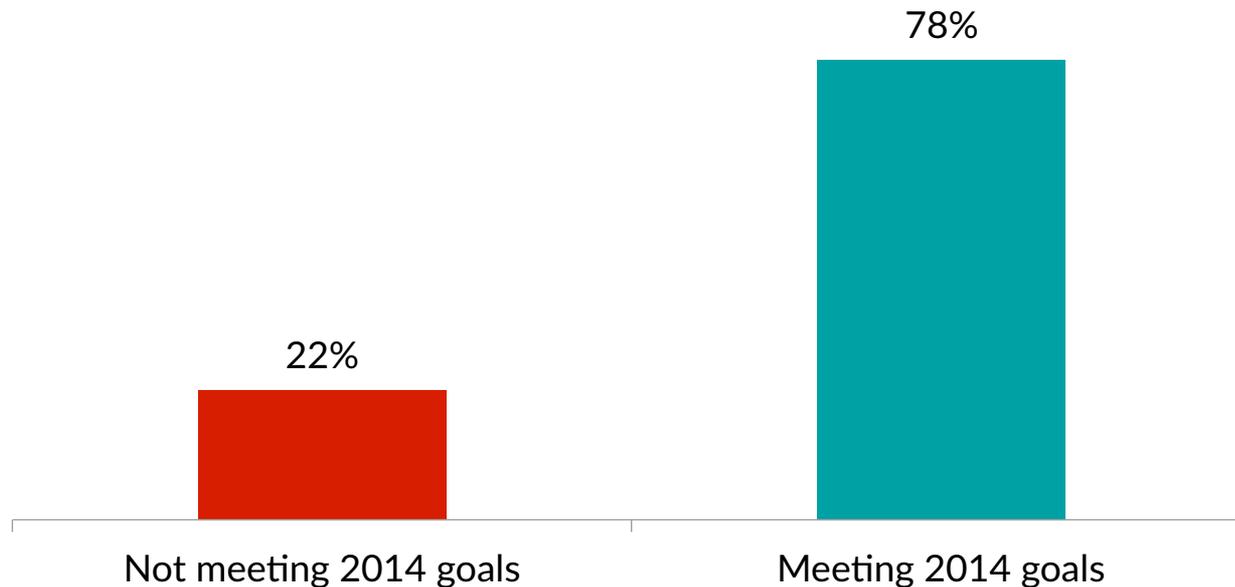
Sources: 2015-16 E-rate data

22% of districts are not meeting 2014 Internet access goals



GOALS

33% of those not meeting goals are < 50 Kbps/student



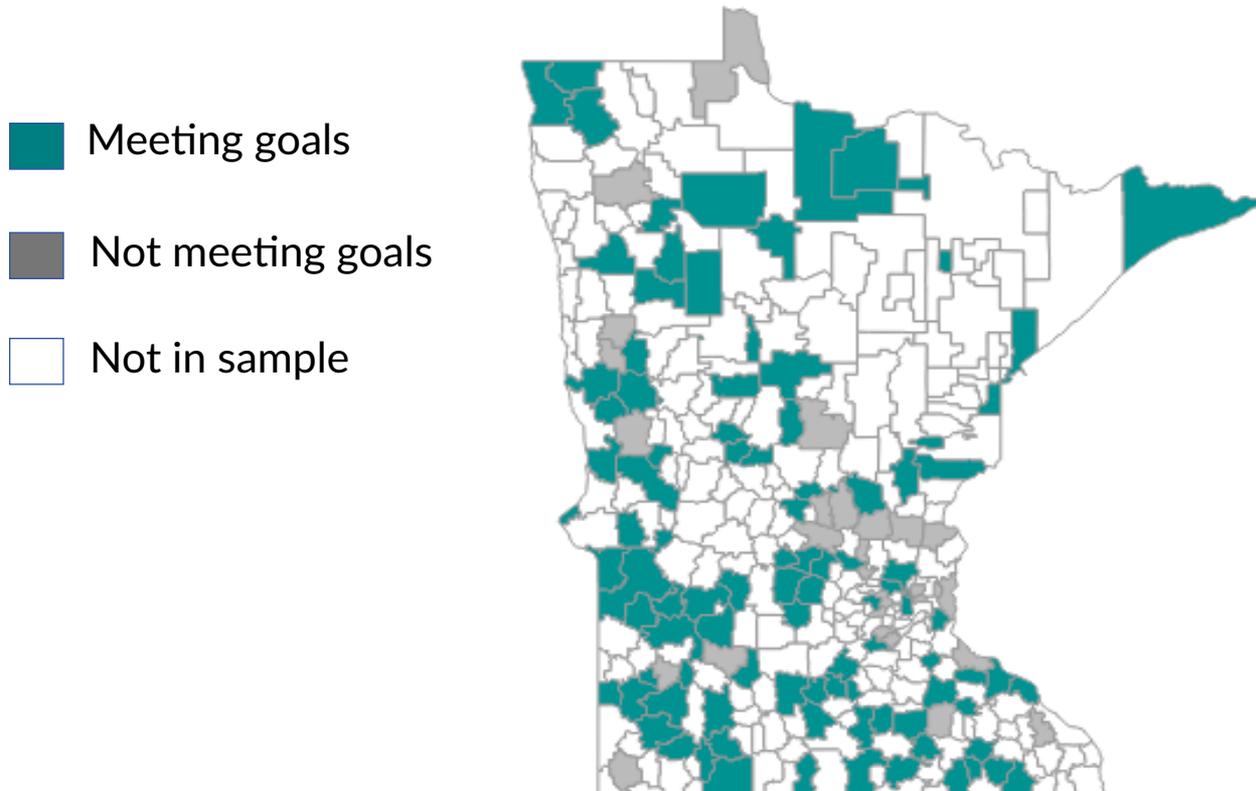
Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

Note: concurrency adjustment was not used to determine meeting 2014 goals; concurrency was applied for 2018 goals

MN districts meeting 2014 Internet access goals



Districts meeting 2014 Internet access goals
(Representative sample)



Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

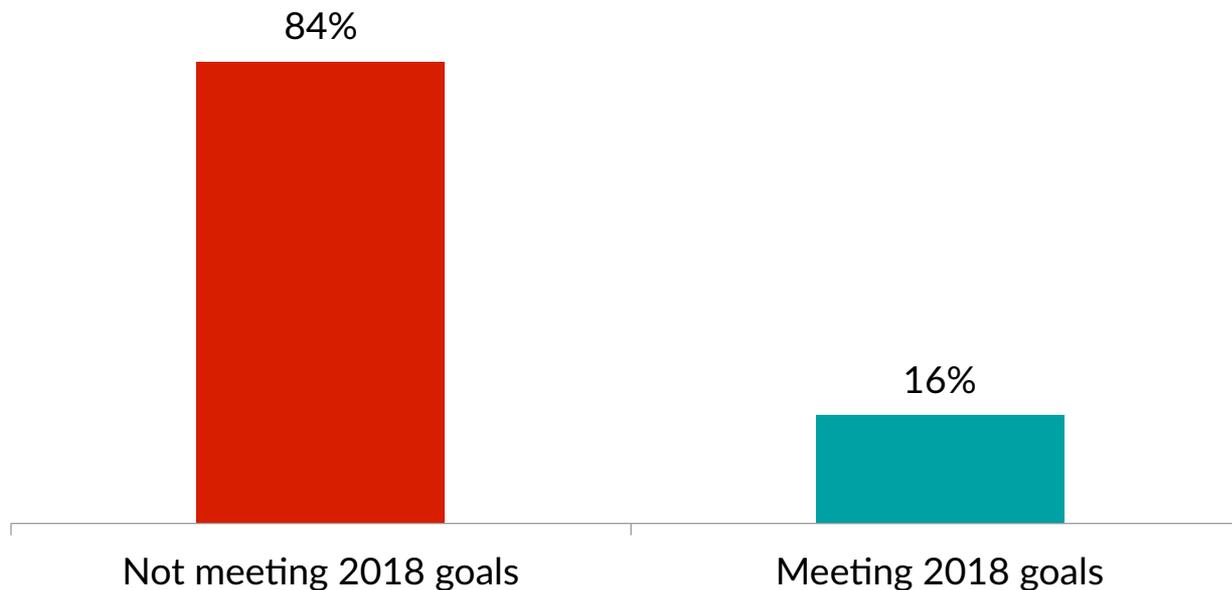
Note: concurrency adjustment was not used to determine meeting 2014 goals; concurrency was applied for 2018 goals

And 84% are not meeting 2018 goals



GOALS

7% of those not meeting goals are < 50 Kbps/student



Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

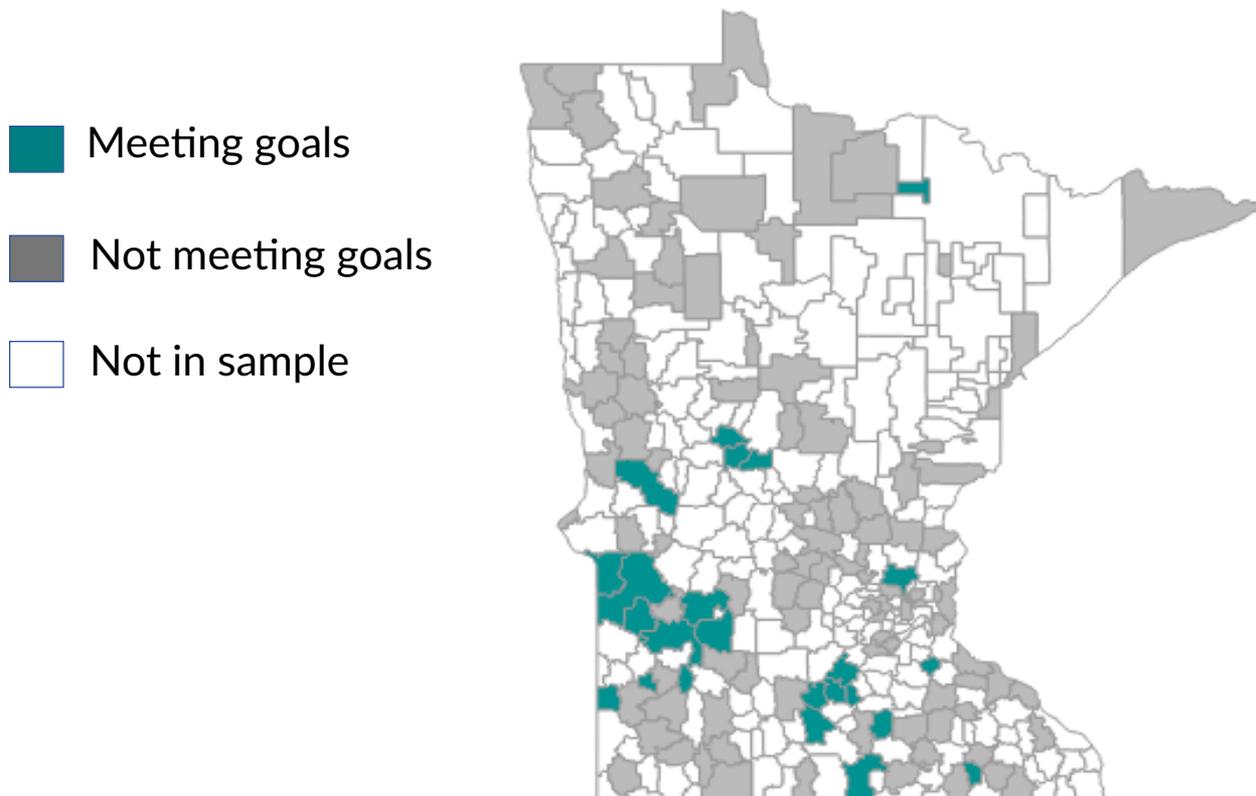
Note: concurrency adjustment was not used to determine meeting 2014 goals; concurrency was applied for 2018 goals

Minnesota districts meeting 2018 goals



GOALS

Districts meeting 2018 Internet access goals (Representative sample)



Sources: 2015 FCC Form 471 E-rate applications, data clarification calls to various districts

Note: concurrency adjustment was not used to determine meeting 2014 goals; concurrency was applied for 2018 goals

Suggested next steps for schools that need fiber



FIBER

All schools that need fiber (or equivalent)

Schools that do NOT need capital to upgrade

Schools that DO need capital to upgrade

CRITERIA

- Fiber assets are local and accessible so no build-out is necessary, OR
- Local fiber providers offer affordable options

- Fiber assets are not immediately accessible, so build-out is necessary, AND
- There is limited competition and fiber is not affordable

TIMING

- These schools can apply for the 2016-17 E-rate cycle **if they start now**

- Schools will secure funding (via state/local match) to apply for **2017-18 E-rate cycle**

Owning dark fiber is a more scalable option



FIBER

"Rent" model	"Own" model
Leased lit fiber	Dark fiber IRU or self construction
<ul style="list-style-type: none">• Higher monthly recurring costs• No upfront costs• Carriers provide fiber and fully managed services• Good option if you have a good local provider	<ul style="list-style-type: none">• Lower monthly recurring costs• Higher upfront cost• Schools lease/IRU dark fiber, or build their own network• Responsible for support, operation and maintenance• Outsourced services are E-rate eligible• Better scalability, flexibility and security

Federal Wi-Fi funding support is available



WI-FI

- \$84 million of potential Category 2 funding for MN over 5 years (\$150 / student)
- Of that amount, Minnesota used \$19 million in 2015-16 and 4% of E-rate applicants used the full amount for their district
- Category 2 funding can be used for infrastructure equipment and tools needed to upgrade Wi-Fi

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

Source: <http://e-ratecentral.com/archive/News/News2015/weekly-news-2015-0323.asp>

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

Source: http://www.usac.org/_res/documents/sl/training/2014/8-Setting-Applicant-Budgets.pdf

Compare & Connect K-12

Landing Page



Education SUPERHIGHWAY

COMPARE & CONNECT K-12

Find out what other school districts pay for connectivity.

Enter your school district

GET STARTED

BETA

Compare & Connect K-12 makes broadband and pricing data transparent so that state and school district leaders have the information they need to negotiate for enough bandwidth to support digital learning today and in the future.

Compare prices

Learn about what other districts are paying to enable you to negotiate more bandwidth at lower costs.

[COMPARE PRICES](#)

Track state connectivity

Track your state's progress toward broadband connectivity goals and compare against other states.

Enter your state

Understand the data

Learn how we gathered and analyzed school district connectivity data.

[About the data](#)

Compare & Connect K-12

School District Landing Page



COMPARE & CONNECT K-12

Arkansas

Hughes School District

FAQ

Compare Prices

BETA

Hughes School District Member of South Western Consortia

Schools	12	Bandwidth per student	32 Kbps
Students	5,097 (Large)	Internet access cost	\$11 / Mbps
Locale	Rural	WAN Bandwidth	100Mbps - 1 Gbps
NCES ID	0509000	WAN cost	\$710 / connection
BEN ID	139544		

[Compare Districts Near Me](#)



What you are paying:

Internet Access [Compare Prices for Your Provider](#)

Service Provider	Connection Type	Connections	Bandwidth	Cost/Connection	Non-recurring cost	End Date
Windstream Communications C	Lit Fiber	1	1,000 Mbps	\$6,996	\$0	06/30/2015

District WAN ? [Compare Prices for Your Provider](#)

Service Provider	Connection Type	Connections	Bandwidth	Cost/Connection	Non-recurring cost	End Date
Unite Private Networks	Lit Fiber	56	1,000 Mbps	\$1,554	\$0	06/30/2018

Inaccurate Data?

[Contact Us](#)

Compare & Connect K-12

Service Provider Comparison Page

Compare School Districts

Use these filters to find subset of districts

Size <input type="checkbox"/> Tiny (1) <input type="checkbox"/> Small (2-5) <input checked="" type="checkbox"/> Medium (6-15) <input checked="" type="checkbox"/> Large (16-50) <input type="checkbox"/> Mega (51+)	Locale <input checked="" type="checkbox"/> Urban <input checked="" type="checkbox"/> Suburban <input type="checkbox"/> Small Town <input type="checkbox"/> Rural	Location <input type="text" value="Arkansas"/> <input type="text" value="Hughes"/> <input checked="" type="radio"/> < 50 miles <input type="radio"/> < 100 miles	Service <input checked="" type="radio"/> Internet Access <input type="radio"/> Wide Area Network <input type="radio"/> Both Filter by Service Provider <input +"="" button="" providers"="" select="" to="" type="text" value="+ Click the "/>	Speed <input type="radio"/> 100Mbps <input checked="" type="radio"/> 1Gbps <input type="radio"/> 10Gbps <input type="radio"/> Any	Connection <input checked="" type="checkbox"/> Fiber <input type="checkbox"/> Wireless <input type="checkbox"/> Cable/DSL <input type="checkbox"/> Any
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All **medium** and **large**, **urban** and **suburban** school districts in **Arkansas** with **1 Gbps** internet access with **fiber connections** from **any** service provider.

School District ▼	IA \$/Mbps	IA Bandwidth	IA kbps/student	Service Provider	Total Cost	Schools	Students	Cost/Student
Bearden SD	\$5	650	142	Affiniti	\$90,235	7	3,820	\$19
Cossatot SD	\$7	1,142	89	AT&T, + 2 others	\$37,220	25	10,931	\$12
Dewitt SD	\$4	1,004	221	SkyRider Com.	\$42,295	42	17,294	\$22
Glen Rose SD	\$12	2,100	124	SkyRider Com.	\$120,429	8	5,392	\$14
Gurdon SD	\$3	1,241	42	Affiniti	\$92,382	17	4,023	\$22
Horatio SD	\$13	540	155	B2B Computer	\$131,932	38	5,293	\$12
Hughes SD	\$4	200	35	Affiniti	\$42,421	9	3,201	\$25
Perrville SD	\$14	1,004	145	Northern Arkan.	\$542,032	12	15,234	\$43
West Sild SD	\$5	160	232	Affiniti	\$552,201	29	2,602	\$26
White Hall SD	\$5	800	36	SkyRider Com.	\$85,813	48	29,123	\$16



The Internet2 Community helps K-12 schools:

- Easily access **advanced networking**, including quality layer 1, 2, 3 and global services
- Easily access vetted, next-generation **cloud services and applications**
- The ability for I2 members to access the “right services, at the right time, with the right protections and **privacy considerations**, while supporting easy **collaboration globally**”
- Achieve **durable measure of control** over the community's operating environment

Learn more: <https://internet2.box.com/internet2-k-12>

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