



Education
SUPERHIGHWAY



Southern Legislative Conference

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State Engagements

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Our mission

Upgrade the Internet access in every public school classroom in America so that all students can take advantage of the promise of digital learning.



Digital learning is transforming education



A teacher checks for student understanding and **adjusts lessons in real time** using an instant quizzing application



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



School of One sites in New York **build a personalized learning experience** for math students leading to gains 1.5 times the national average



Clintondale Community Schools (MI) **"flipped" their 9th grade classrooms** and saw increased test scores and graduation rates



Future Ready: 3k Superintendents & 20M students



The 7 Gears are as follows:

- ***Curriculum, Instruction, and Assessment***
- ***Use of Space and Time***
- ***Robust Infrastructure***
- ***Data and Privacy***
- ***Community Partnerships***
- ***Personalized Professional Learning***
- ***Budget and Resources***

All this classroom
technology use requires
broadband – and
increasingly, a lot of it!

Do our schools have enough?



But before that: K12 broadband 101

“Bandwidth”, “Megabits”, “fiber”, “Wi-Fi”

What do these terms mean? How much do you need? How does it get to the student/device?



What is Bandwidth?

A measurement of the data transmission capacity of a network connection. More bandwidth = faster speed.

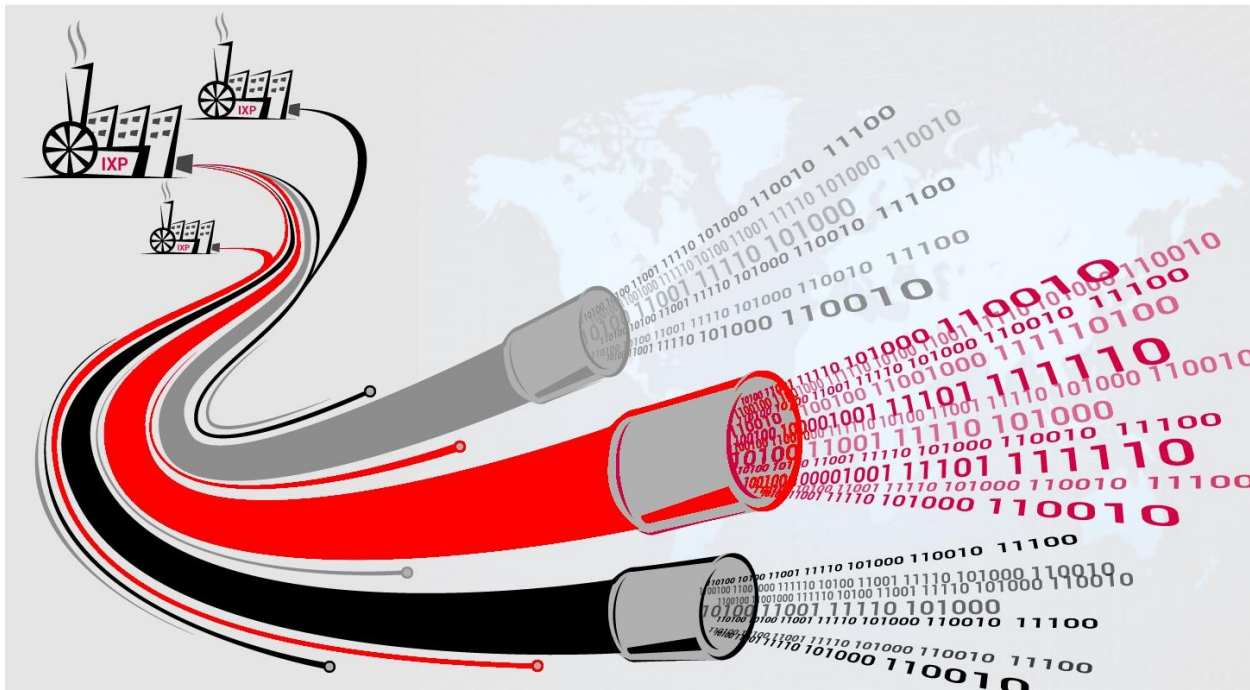


Image courtesy: The Caribbean Network Operators Group (CaribNOG)

How is Bandwidth Measured?

Bits/second are used to describe broadband speeds

A **bit** is different than a **byte**!

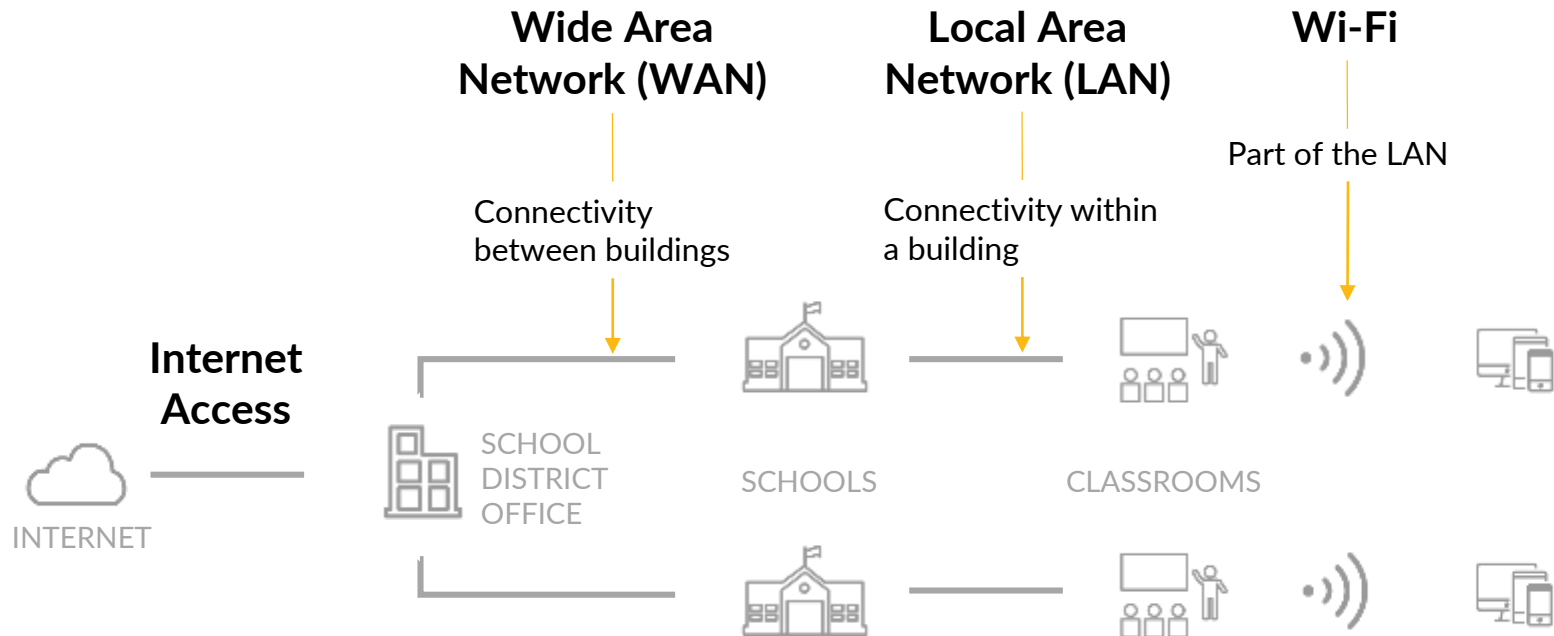
Bits = data **Bytes** = storage

kilobits per second (kbps) = 1,000 bits per second (bps)

Megabits per second (Mbps) = 1,000 kbps

Gigabits per second (Gbps) = 1,000 Mbps

How does bandwidth get to a student/device?



How much do you need?

Individual Classroom Technology Use

- Classroom technology use is variable and typically driven by individual teachers; devices are primarily in labs and on carts.
- Basic network infrastructure for the school is in place to facilitate online assessments or classroom use, but not all classrooms at the same time.

Moderate Bandwidth

100 kbps per student Internet bandwidth

Everyday 1:1 Technology Use

- Technology is widely available; most students interact with a computing device most school days.
- Digital curriculum, but not necessarily rich media, is a major part of one or more subject areas.

High Bandwidth

1 Mbps per student Internet bandwidth

Everyday Media-rich 1:1 Technology Use

- Every student has a technology-enabled learning experience during the school day.
- Video and other rich media are used as a central part of the everyday experience.

Very High Bandwidth

1+ Mbps per student Internet bandwidth



Media-rich tech requires 1+ Mbps/student



Source: "The Broadband Imperative", www.setda.org



Most broadband technologies have max capacities

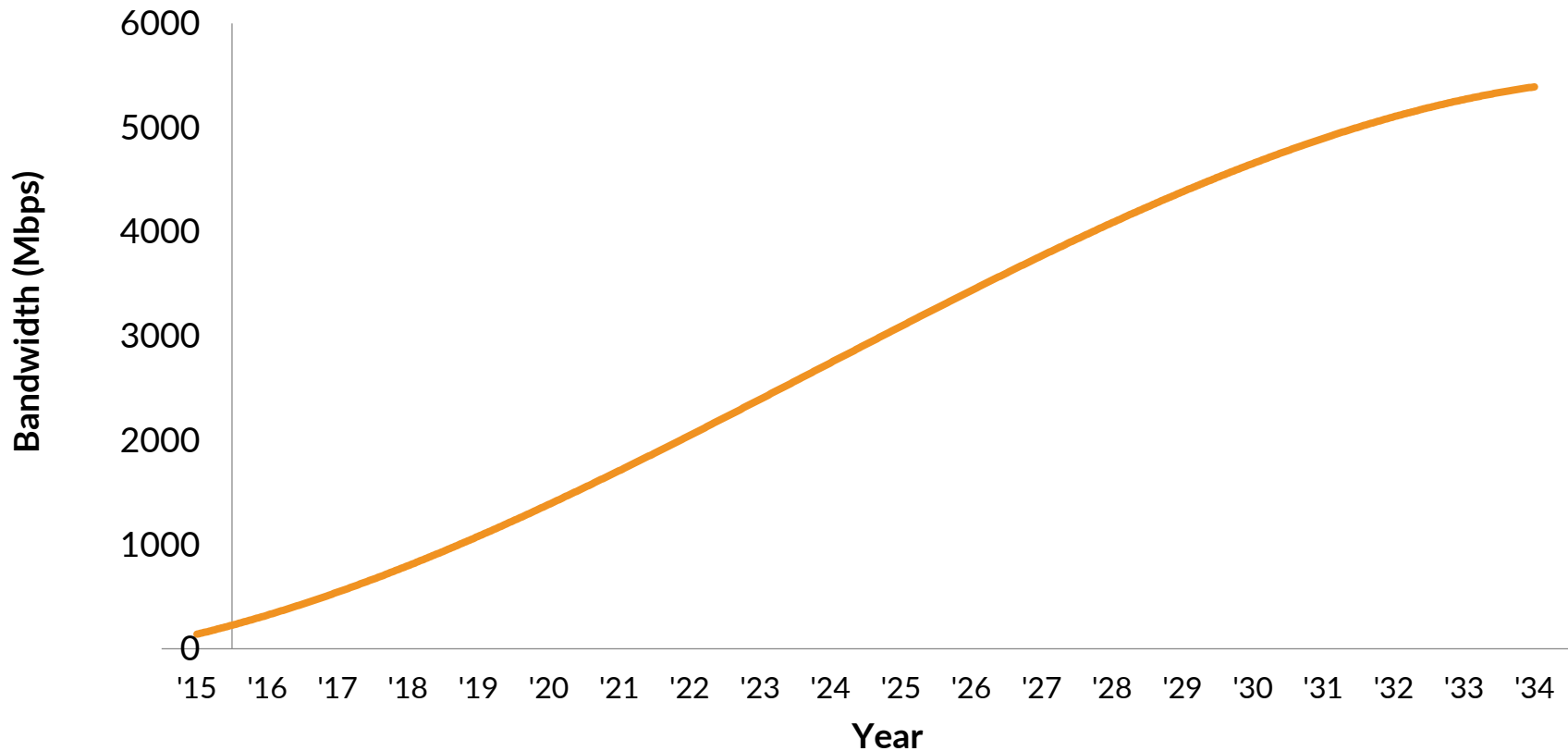
| Copper | Technology | Data Speed Capacity (Max) |
|--------|--------------------------|---------------------------|
| | Dial-up | 0.5 Mbps |
| | T1 | 1.5 Mbps |
| | DSL | 50 Mbps |
| | Cable | 150-300 Mbps |
| | Microwave/Fixed Wireless | 1,000 Mbps |
| | Fiber | 100,000 Mbps + |



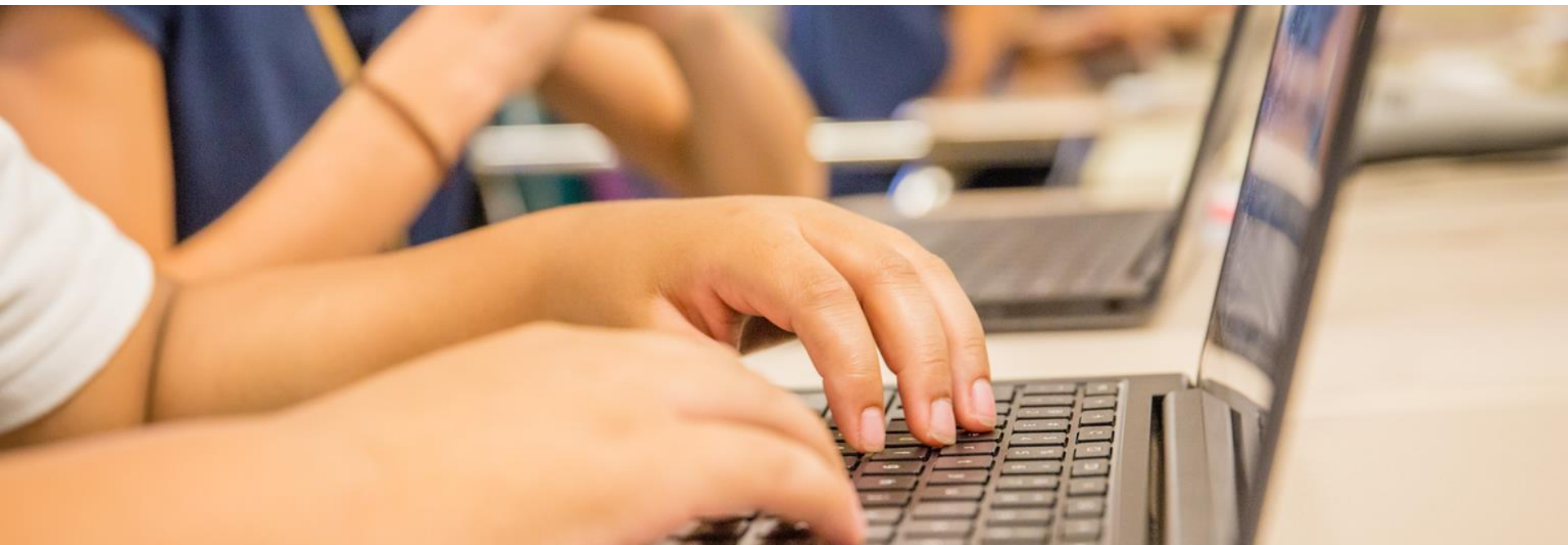
Bandwidth needs are growing

K-12 schools are increasing digital learning and number of connected devices

Bandwidth needed over the next 20 years



E-rate funding available for upgrades

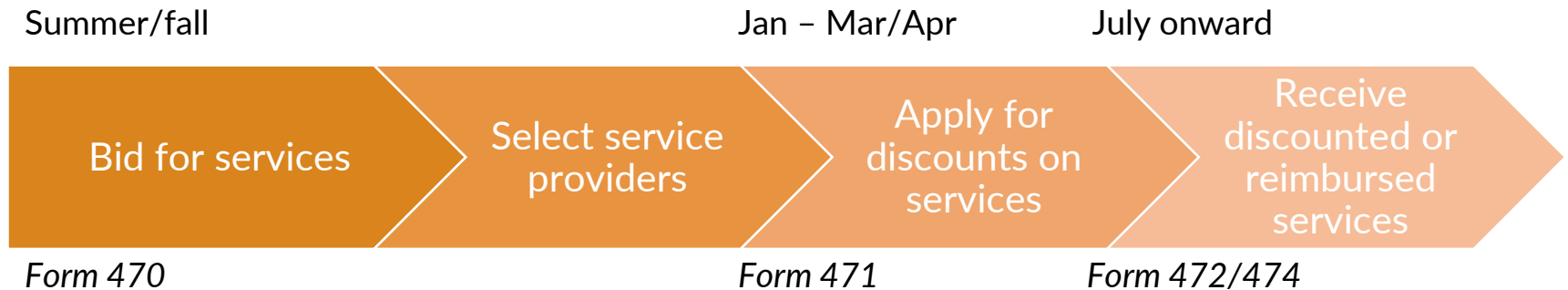


E-rate funding and rule changes have created an
UNPRECEDENTED, SHORT TERM OPPORTUNITY
to connect schools to fiber and offer more upgrade options



What is E-rate?

“The Schools and Libraries Program, commonly known as E-rate, provides discounts to eligible schools and libraries in the United States on their telecommunications, Internet access, and related services. The program is administered by the Universal Service Administrative Company (USAC) under the oversight of the Federal Communications Commission (FCC).



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

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



Each school district has its own E-rate discount rate

Based on the percent of students eligible for NSLP and urban/rural location of the district

| Percent of Students Eligible for NSLP | Category One Discount Rate | | Category Two Discount Rate | |
|---------------------------------------|----------------------------|-------|----------------------------|-------|
| | Urban | Rural | Urban | Rural |
| Less than 1% | 20% | 25% | 20% | 25% |
| 1% - 19% | 40% | 50% | 40% | 50% |
| 20% - 34% | 50% | 60% | 50% | 60% |
| 35% - 49% | 60% | 70% | 60% | 70% |
| 50% - 74% | 80% | 80% | 80% | 80% |
| 75% - 100% | 90% | 90% | 85% | 85% |

NSLP: National School Lunch Program



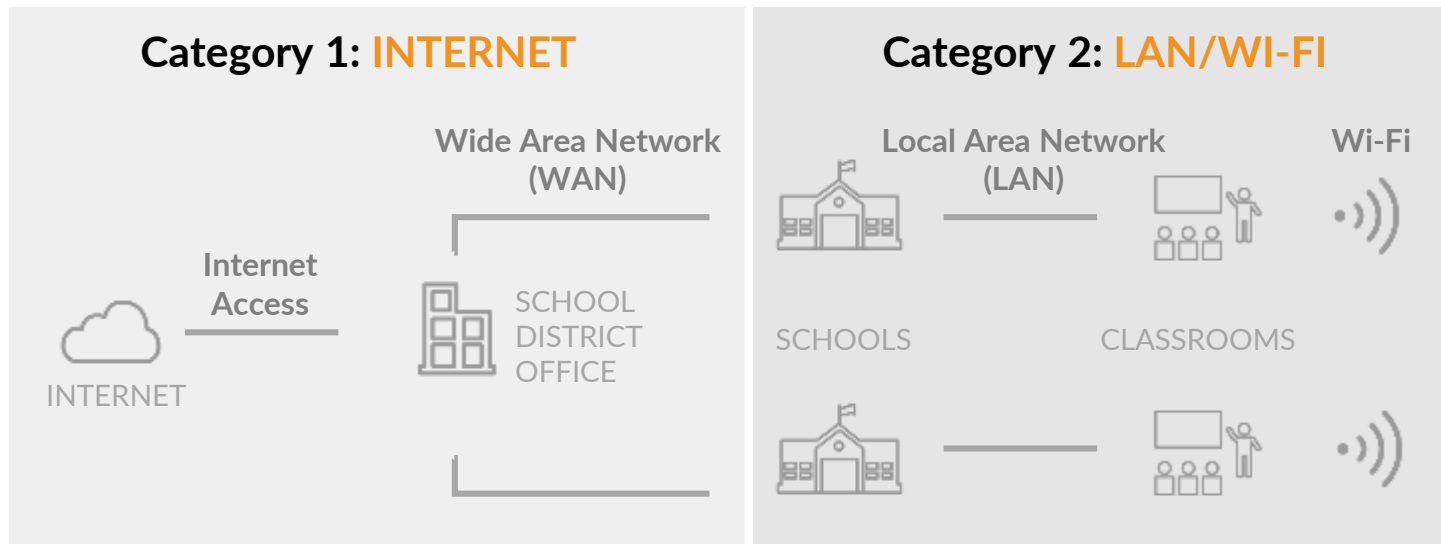
Source: Funds for Learning

E-rate funds K-12 broadband connectivity

\$3.9 BILLION ANNUALLY

Up to 90% discount on connectivity services

Operated by the Universal Service Administrative Company (USAC) under the FCC



E-rate is the key to delivering high speed broadband to schools

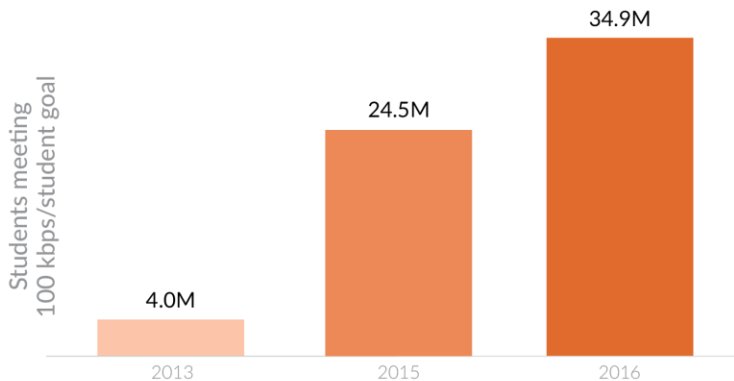
- \$3.9 billion per year FCC program to fund broadband in schools and libraries
- Program was modernized in 2014
 - Set minimum connectivity goals
 - Increased broadband funding from \$1.4 billion to 3.9 billion per year in part by phasing out \$1 billion of voice spending
 - Allocated \$1 billion per year for Wi-Fi through \$150 / student budget
 - Increased competitive options for schools including self provisioned and dark fiber
 - Created incentives for state matching funds for fiber construction
 - Increased transparency to improve affordability and accountability



Progress – we are closing the K-12 digital divide

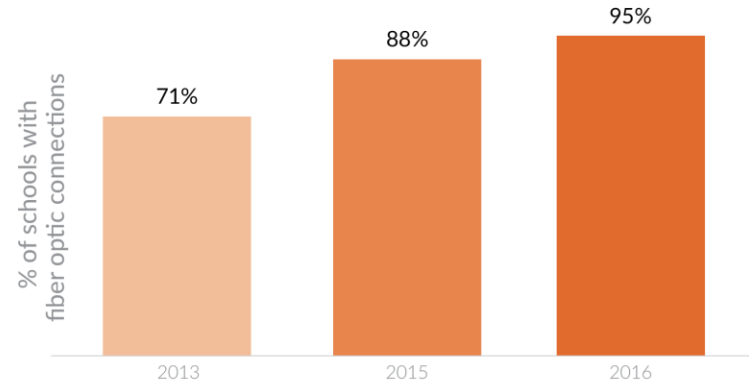
STUDENTS WITH HIGH-SPEED BROADBAND

An additional 30.9 million students have the broadband they need for educational opportunity



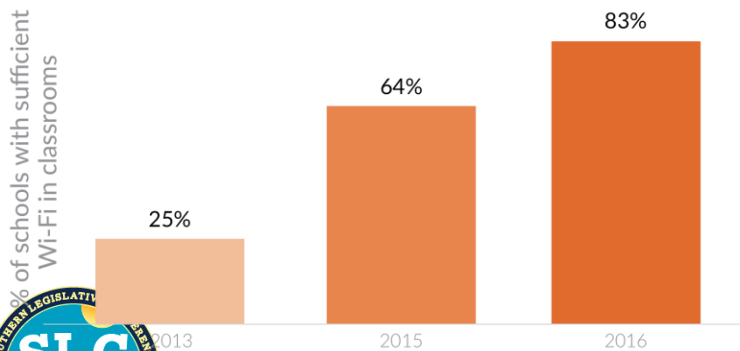
FIBER

95% of schools have the high-speed fiber connections required to meet connectivity needs



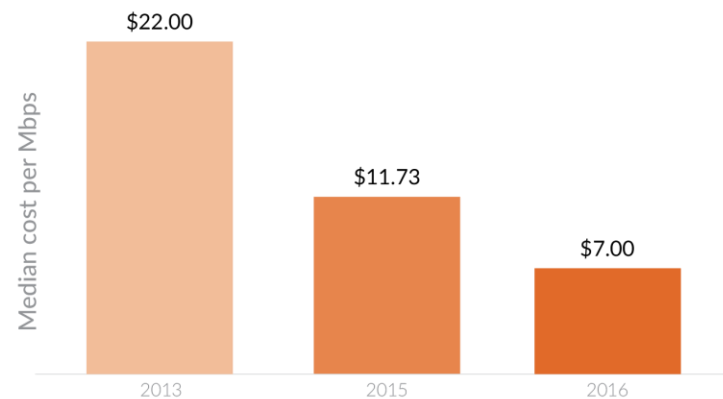
WI-FI

83% of schools report having sufficient Wi-Fi in their classrooms

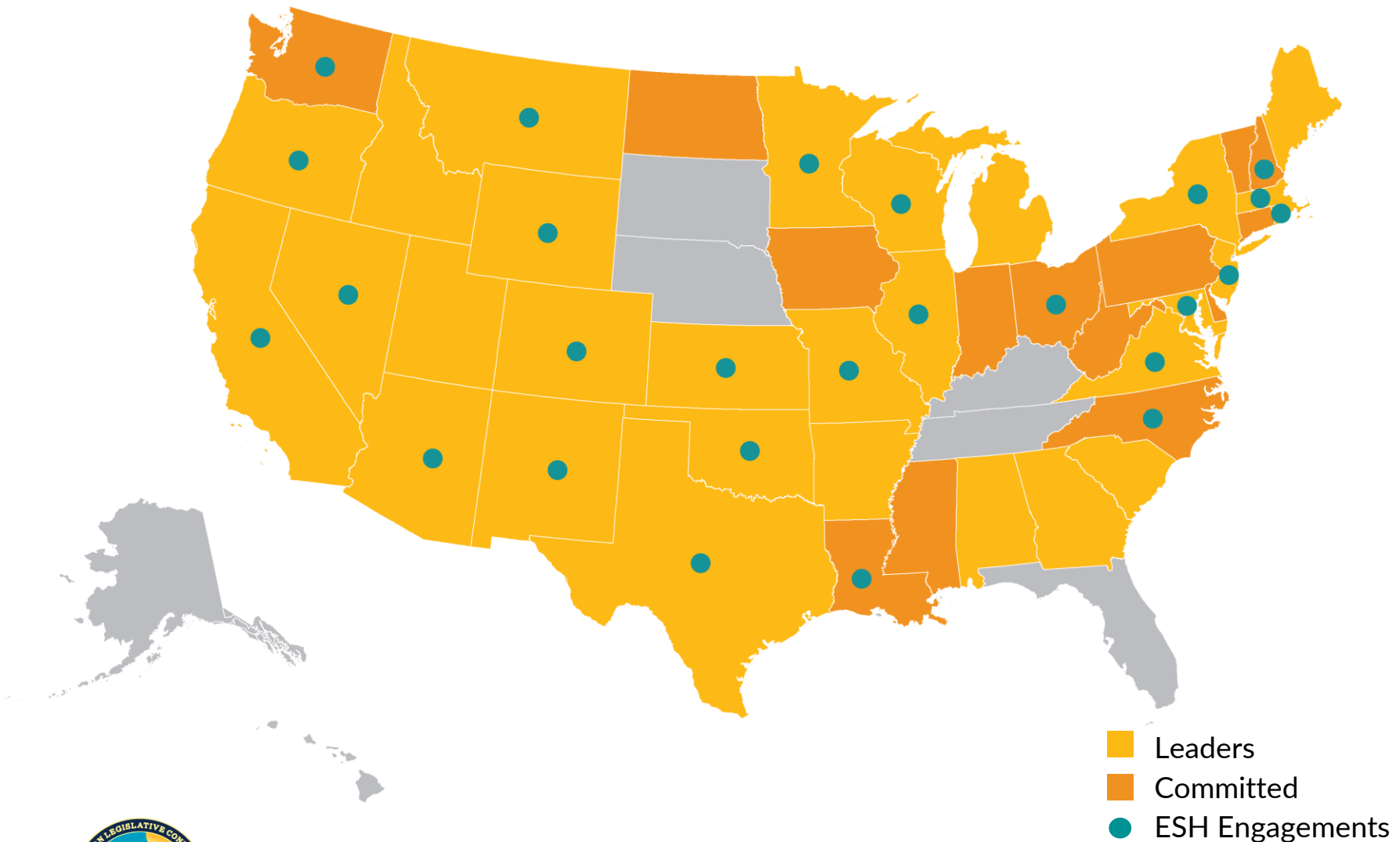


AFFORDABILITY

The cost of K-12 Internet access has declined 68%

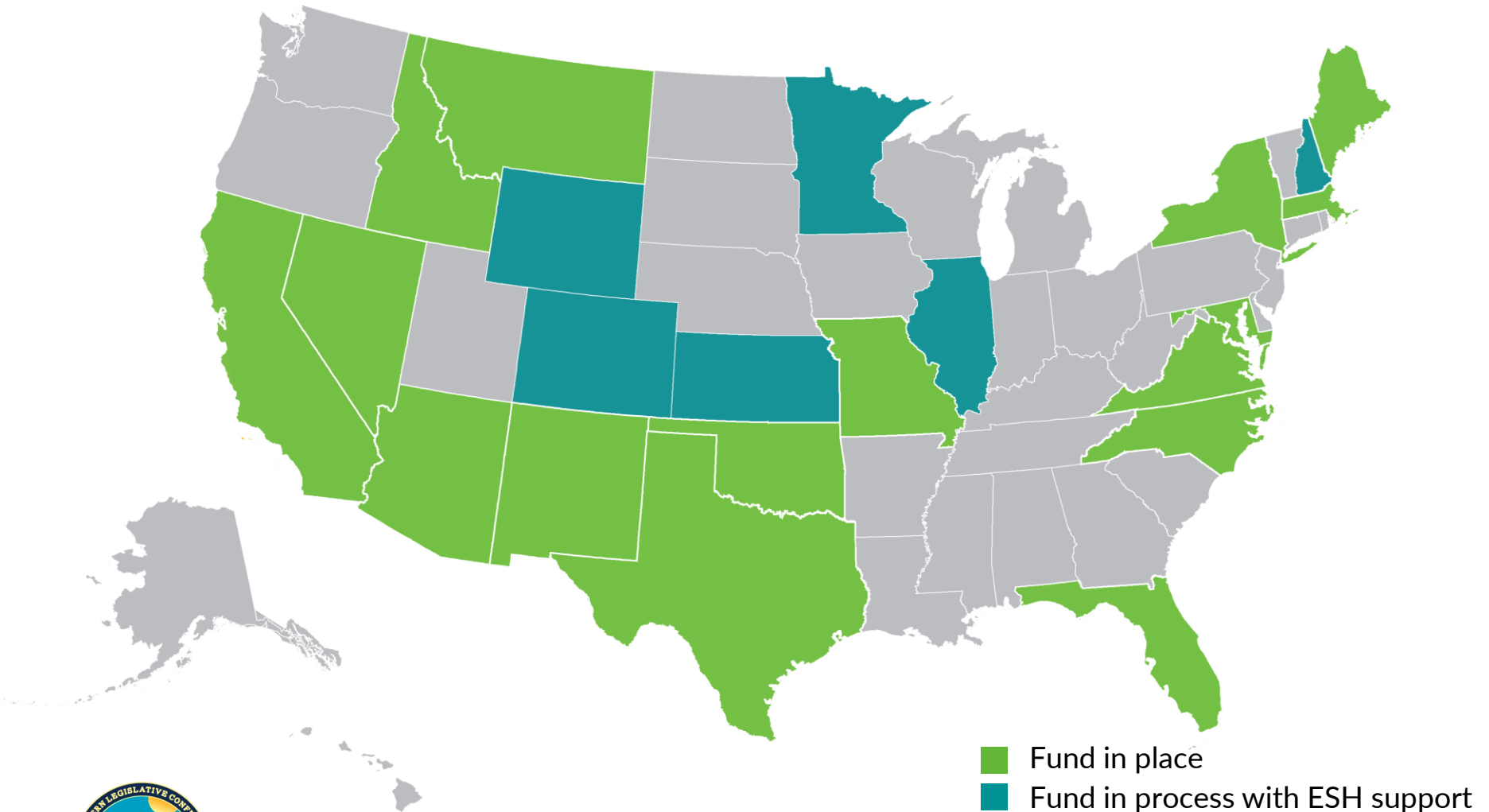


Cultivating a leveraged environment: 43 Governor Commits

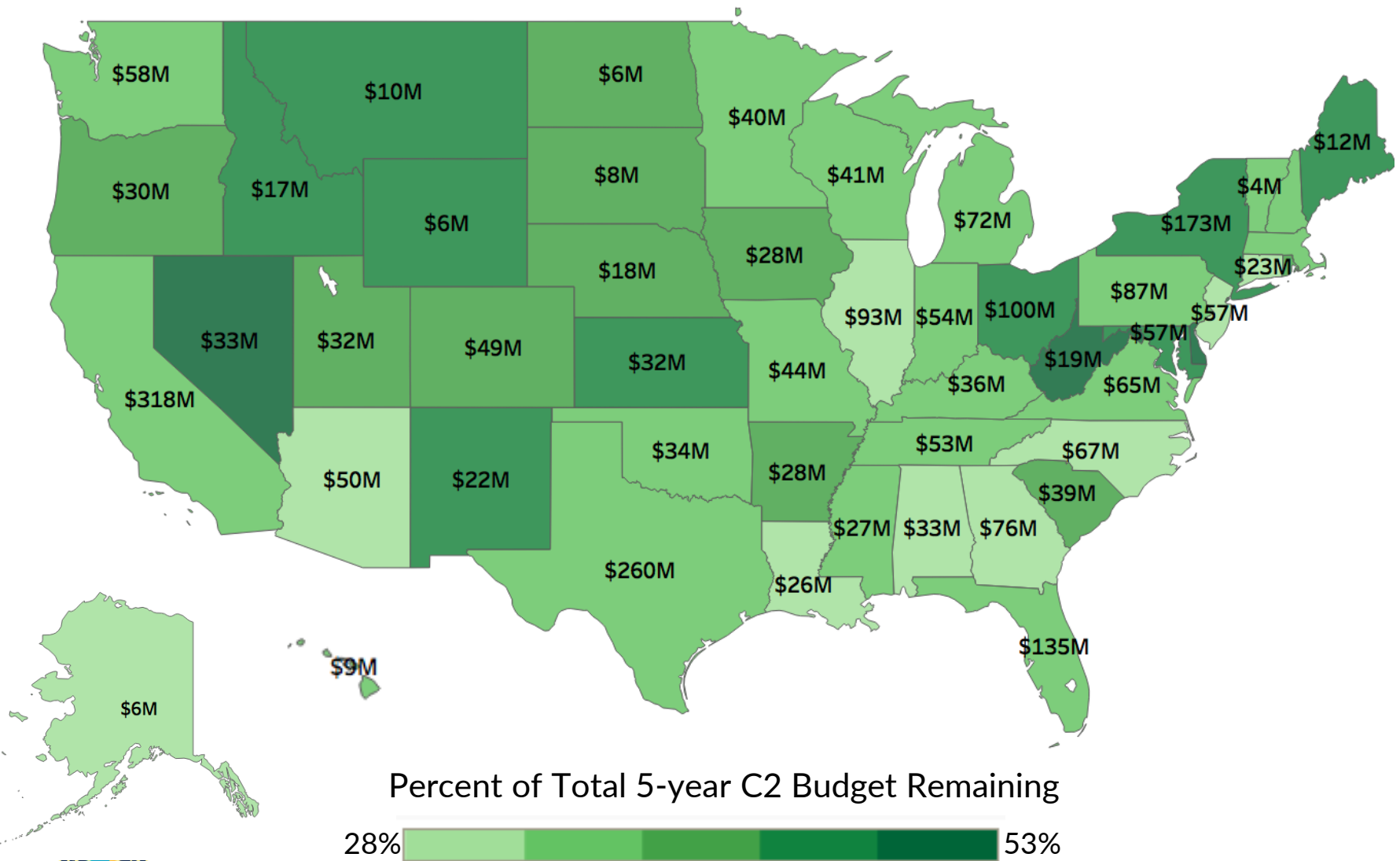


\$200M+ in state matching funds

Over 7,500 schools will leverage new fiber options in 2017

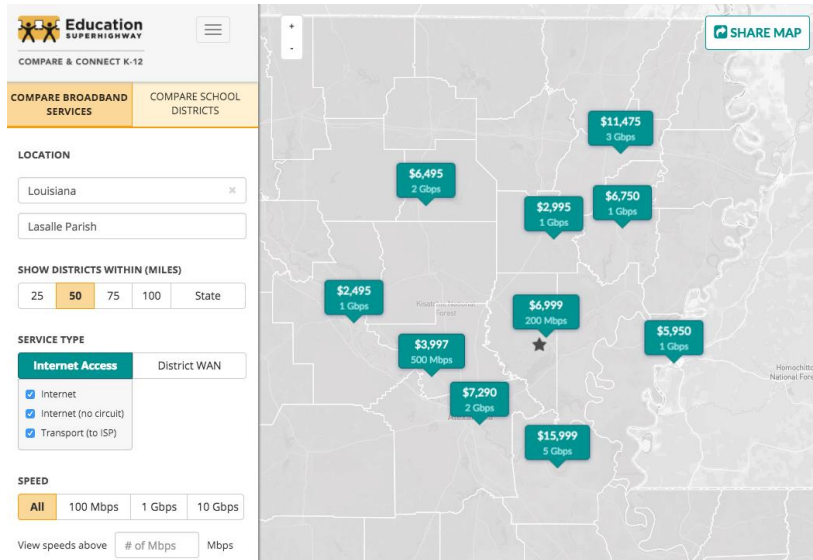


\$2.55 Billion in Wi-Fi Funds Remain

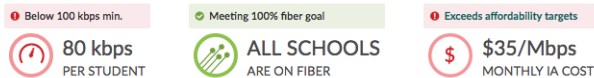


Compare & Connect K-12

www.compareandconnectk12.org



Internet Access ?

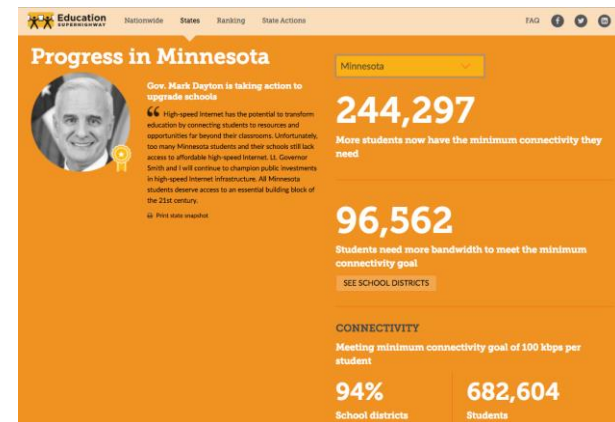
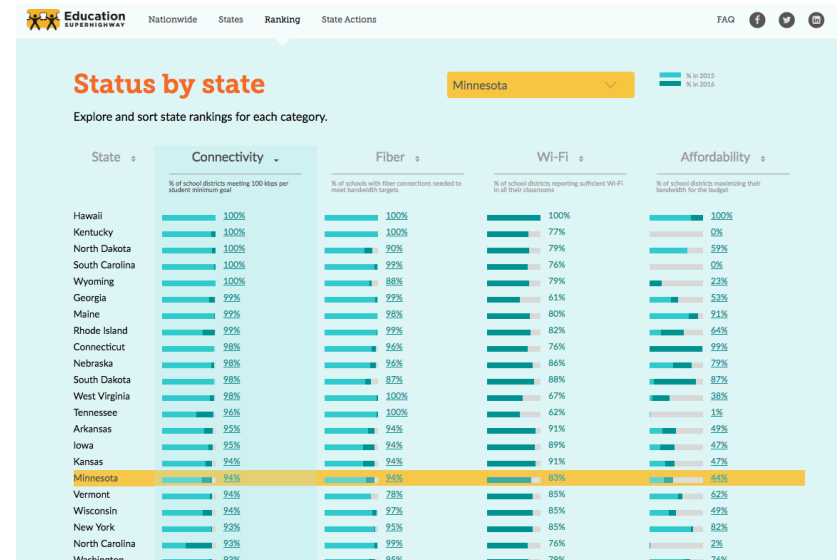


| Service Provider | Connection Type | Connections | Bandwidth | Monthly Recurring Cost/Connection | Non-Recurring Cost | Purpose | Contract End Date |
|------------------|-----------------|-------------|-----------|-----------------------------------|--------------------|----------|-------------------|
| Detel Wireless | Lit Fiber | 1 | 200 Mbps | \$6,999 | \$0 | Internet | 6/30/2019 |

Total Bandwidth: 200 Mbps
Total Monthly Cost: \$6,999
How is this calculated?

State of the States Annual Report

stateofthestates.educationsuperhighway.org





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