Progress on K-12 connectivity

Colorado | LEADER

102,516
MORE STUDENTS CONNECTED IN 2016
now have the minimum connectivity they need

396,888
STUDENTS NEED MORE BANDWIDTH
to meet the minimum connectivity goal

CONNECTIVITY
89% of school districts representing 384,835 students meet the minimum connectivity goal of 100 kbps per student.
This is up from 74% in 2015.

UPGRADES
54 school districts upgraded their Internet access in 2016 leading to 268,497 students getting more bandwidth.

FIBER
96% of schools in Colorado have the fiber connections needed to keep up with growing bandwidth demand from students and teachers.

WI-FI
78% of school districts report sufficient Wi-Fi in all their classrooms.
$58M of E-rate funding remains to support Wi-Fi network upgrades in Colorado.

AFFORDABILITY
66% of school districts are maximizing the bandwidth they are getting for their budgets.*
This is up from 53% in 2015.

Source: USAC Form 471 2016/2017 E-rate applications, n=151 of 178 school districts, n=1,238 of 1,635 schools, n=589,006 of 781,723 students

*The budget refers to the total cost of all Internet access services and does not always represent what the school district actually pays. E-rate typically provides a 20-90% reimbursement and some states also subsidize the cost of broadband for school districts.

Actions to upgrade schools in 2016

- Launched the Kids Link Colorado Initiative to improve broadband access for all schools.

Opportunities for further action

- Upgrade school district networks 396,888 students do not have the minimum connectivity to use technology in the classroom.
- Make broadband more affordable 34% of school districts could get more bandwidth for their budgets.*
- Establish a state matching fund 60 of your 1,635 schools do not have fiber connections.

Gov. Hickenlooper is taking actions to upgrade schools in Colorado

A 21st century Colorado must include a Colorado that is committed to getting high-speed connectivity to all of our K-12 schools, which will ensure growth in our economy and educational opportunities for all students across the state.
About the Metrics

**K-12 Broadband State of the States Report**

The State of the States report is based on data from the publicly-available K-12 school district E-rate filings collected by the Federal Communications Commission and administered by the Universal Service Administrative Company. EducationSuperHighway verified and analyzed completed 2016 E-rate applications and conducted extensive nationwide outreach to verify school districts’ network infrastructure. The data represents K-12 public schools only and does not include private schools, independent charter schools, or libraries.

**CONNECTIVITY**
This metric shows the percent of school districts meeting the FCC minimum connectivity goal of 100 kbps per student. The number of students with the minimum connectivity is an extrapolation of the percent of students in the sample that are meeting goals to the entire population of students in the state. Student populations are based on 2013-14 NCES data.

**UPGRADES**
This metric shows the number of students in school districts that upgraded their Internet access bandwidth from 2015 to 2016. Only districts with verified data in both 2015 and 2016 are included in the upgrade metric. As a result, this metric may slightly underestimate the total number of school districts and students that upgraded. We define “upgrades” as an increase in bandwidth from 2015 to 2016 of at least 11% or at least 50 Mbps.

**FIBER**
This metric reports on the availability of scalable infrastructure. The FCC goal is for every school to have a broadband connection capable of scaling to 10 Gbps and today only fiber optic connections are capable of meeting that goal. For schools where the connection type was unknown, we applied assumptions based on extensive research. Some states may see decreases in their fiber metric from 2015 due to a reclassification of cable and fixed wireless connections from scalable to unscaleable.

**WI-FI**
The FCC provided every school district with a $150 per student total “Category 2” budget from 2015-2019 to upgrade Wi-Fi and other internal connections in classrooms. Our metrics profile the state of Wi-Fi connectivity in schools as reported by E-rate applicants and the extent to which districts have taken advantage of their Category 2 budgets.

- **Wi-Fi sufficiency:** The percentage of sufficient school districts is determined by dividing the total number of school districts that reported “Completely” or “Mostly” sufficient (as opposed to “Sometimes” or “Never”) by the total number of districts that reported on the sufficiency of their Wi-Fi.
- **E-rate funds available:** We calculated the total Category 2 budget remaining for 2017-19 after subtracting funds requested in 2015 and 2016. We applied school district discount rates when available, otherwise we applied the aggregate state discount rate of school districts requesting Category 2 services.

**AFFORDABILITY**
Affordability of broadband is a roadblock that prevents school districts from meeting the FCC minimum connectivity goal, therefore we calculated the percent of school districts that could be getting more Internet access bandwidth for the amount they are currently spending.

- **Maximizing the bandwidth:** We compared the amount of bandwidth districts currently receive to the amount they could purchase if they used their current Internet access budget to buy circuits at 2015 benchmark prices (benchmarks were selected because at least 30% of school districts nationally are currently purchasing circuits at those prices). A school district’s Internet access budget is the total cost of all Internet access services, including ISP costs and the cost of transport between the school district and the ISP. Shared costs for backbone circuits and ISP-only services were distributed based on the number of students enrolled in the school district.

<table>
<thead>
<tr>
<th>Internet Access Circuit Size</th>
<th>Price Benchmark ($/Mbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Gbps</td>
<td>$0.75</td>
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<tr>
<td>1 Gbps</td>
<td>$3.00</td>
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<tr>
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<td>$5.50</td>
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<tr>
<td>200 Mbps</td>
<td>$9.00</td>
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<tr>
<td>100 Mbps</td>
<td>$12.00</td>
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<tr>
<td>50 Mbps</td>
<td>$14.00</td>
</tr>
</tbody>
</table>

Note: This metric was re-calculated for 2015 using this methodology, and therefore is different from what was reported in the 2015 State of the States.