2019 | State of the States

Education SUPERHIGHWAY

The classroom connectivity gap is closed

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STATE OF THE STATES

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A letter from Founder and CEO Evan Marwell

School districts have taken advantage of a 90% decrease in the cost of Internet access to make the promise of digital learning available to 46.3 million students.

The classroom connectivity gap has been closed. Thanks to an unprecedented bi-partisan effort by federal, state, and school district leaders, supported by K-12 advocacy organizations, digital learning is now available in virtually every K-12 classroom across the country.

Powered by the modernization of the E-rate program, matching funds from governors, and the incredible efforts of service providers, tens of thousands of miles of new fiber have been built to connect our schools to 21st century broadband infrastructure. Leveraging this infrastructure, school districts have taken advantage of a 90% decrease in the cost of Internet access to make the promise of digital learning available to 46.3 million students.

And, digital learning is no longer just a promise. Across the country, 87% of teachers say they use digital learning in their classroom several times a week; three quarters of America's schools now have at least one device per student and more than 70% of educators say that high speed Internet connections and Wi-Fi networks are significantly improving teaching and learning.[1] As a result, technology is powering billions of learning sessions in America's classrooms as teachers find new and exciting ways to personalize learning and increase student engagement.[2]

Yet, this is just the beginning. Eighty-five percent of teachers, principals, and district leaders support the increased use of digital learning in their schools.[3] This means that state leaders and school districts will need to continue to upgrade classroom Internet access so that bandwidth is never a bottleneck to learning. The foundation has been laid - 99% of America's schools have high-speed broadband connections. Now, state leaders need to work with service providers to create and make sure that school districts take advantage of opportunities to upgrade their bandwidth so students and teachers can use technology in every classroom, every day.

EducationSuperHighway was established to be a catalyst for this mission. In 2013, only four million students had access to digital learning in their classrooms, over 22,000 schools lacked high-speed fiber optic connections, and 75% of classrooms were without Wi-Fi. By bringing together key stakeholders and leveraging data to drive policy and procurement improvements, we helped drive the change that has resulted in every student having the opportunity to take advantage of the promise of digital learning. It has been the most rewarding work of our professional careers, and we are incredibly grateful to our partners, funders, and the many policymakers who have made this success possible by joining the movement to close the classroom connectivity gap.

Now, it is time for EducationSuperHighway to sunset. In August 2020, we complete our mission, but not before we spend one more year helping as many of the last one percent of schools and students get connected to high-speed broadband. As we close our doors, we do so knowing that we have helped open the digital door to educational opportunities for millions of students. We sunset knowing that a strong E-rate program will enable school districts, service providers, and state leaders to continue upgrading the bandwidth in America's K-12 schools so teachers can use technology to power learning in every classroom, every day.

Thank you to each person who has made the completion of EducationSuperHighway's mission possible. You have done an incredible service for America's students.

With Gratitude,

Evan Marwell
Founder and CEO
EducationSuperHighway

WHERE WE STAND

99%

SCHOOLS ON FIBER

46.3 M

STUDENTS CONNECTED

2.8 M

TEACHERS CONNECTED

IMPACT ON TEACHING AND LEARNING

94%

of schools report digital learning is happening in at least half their classrooms[4]

96%

of school leaders believe that digital learning has a positive impact on instructor effectiveness and student outcomes[5]

National Highlights:

99% of Schools on Fiber and

46.3 Million Students Connected

to Digital Learning

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National Highlights: 99% of Schools on Fiber and 46.3 Million Students Connected to Digital Learning

In 2014, the Federal Communications Commission (FCC) laid out a roadmap for closing the classroom connectivity gap in America's K-12 schools. Thanks to the efforts of school districts, service providers, and state and federal policymakers, the nation has accomplished this objective and laid the foundation for the continuing growth of digital learning in our classrooms.

OUR NATION'S CONNECTIVITY PROMISE

In 2014, the FCC modernized the E-rate program and established three connectivity standards to ensure digital learning was available in all of America's K-12 classrooms:

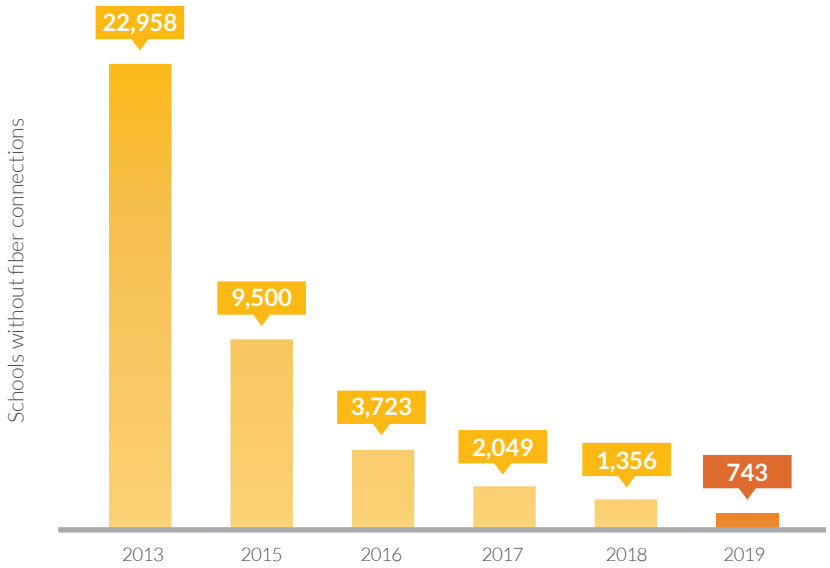
1. A fiber connection to every school, so that school bandwidth can reliably grow to meet the demands of digital learning over time.
2. Wi-Fi in every classroom, to support digital learning programs that require every student to have a device.
3. 100 kbps per student of Internet access, the minimum recommended bandwidth to enable digital learning in the classroom. Starting in 2018, the FCC raised this standard to 1 Mbps per student - the amount of bandwidth needed to support digital learning in every classroom, every day.

99% of America's K-12 public schools have the fiber-optic connections needed to meet future connectivity needs.

Throughout the last five years, new fiber-optic (or alternative scalable infrastructure) connections have been delivered to over 22,000 school buildings. As a result, America's schools now have the broadband infrastructure in place required to meet the FCC's 1 Mbps per student Internet access standard and the growing demand for digital learning in K-12 classrooms.[6]

National Highlights: 99% of Schools on Fiber and 46.3 Million Students Connected to Digital Learning

Chart 1: Over 22,000 schools have been connected to the infrastructure required for digital learning since 2013



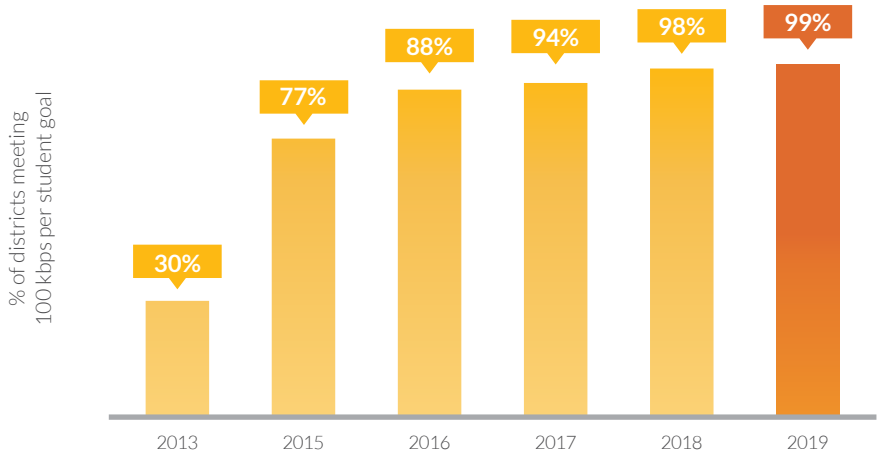
FCC CUTS RED TAPE IN FIBER CONSTRUCTION

In 2018, not a single one of the 350 projects requesting E-rate special construction funding to bring fiber to unconnected schools was approved by the FCC's September 1 deadline for reviewing E-rate applications. Thanks to a concerted effort by the Universal Service Administrative Company (USAC) and the FCC, 2019 has seen meaningful progress - with 183 of this year's special construction projects approved by the September deadline. While there were still 77 projects awaiting decisions on September 1, the FCC and USAC should be commended for cutting the red tape that has slowed students' access to educational opportunities.

46.3 million students and 2.8 million teachers[7] in more than 83,000 schools have the Internet access they need to start using digital learning in their classrooms.

In 2018-19, another 1.6 million students were connected to the Internet access they need to make digital learning available in their classrooms. This leaves just 750,000 students in 98 school districts below the FCC's 100 kbps per student minimum bandwidth goal. Importantly, 99% of these under-connected students are in districts that already have the fiber-o ptic connections needed to meet the 100 kbps goal and 500,000 students can be upgraded to meet this goal without any increase in their district's broadband budget.

Chart 2: 99.2% of school districts can now take advantage of digital learning



National Highlights: 99% of Schools on Fiber and 46.3 Million Students Connected to Digital Learning

Chart 3: 42.3 million more students have access to the broadband they need for digital learning since 2013

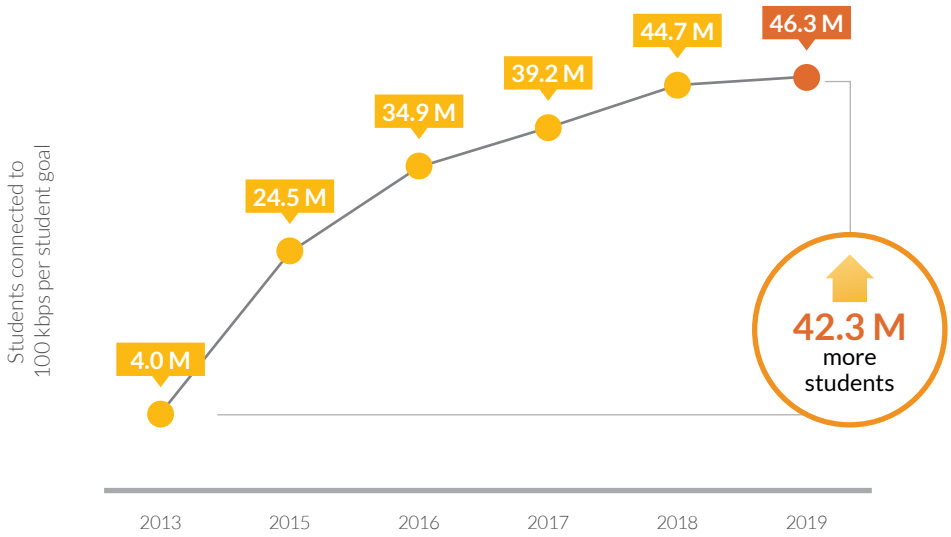
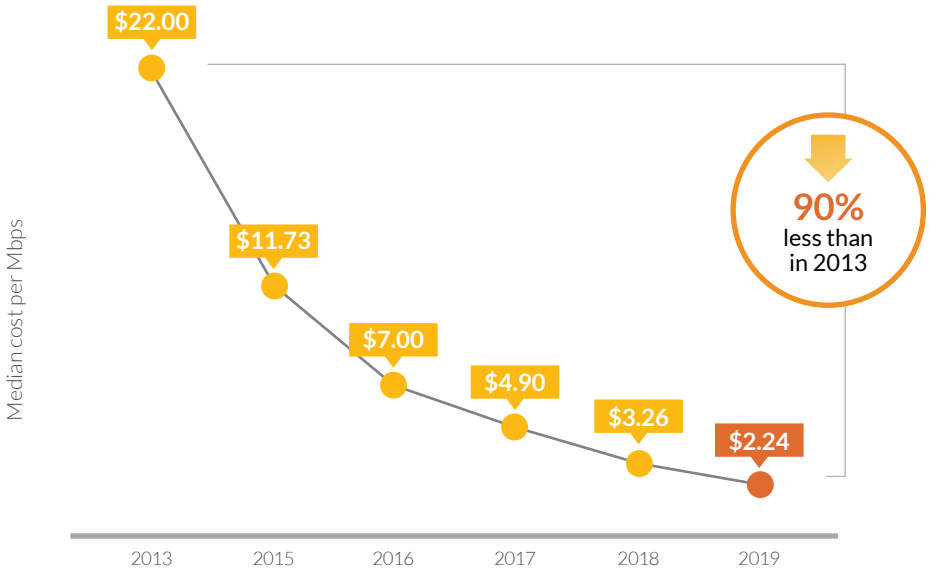


Chart 4: The cost of K-12 Internet access has declined 90% since 2013



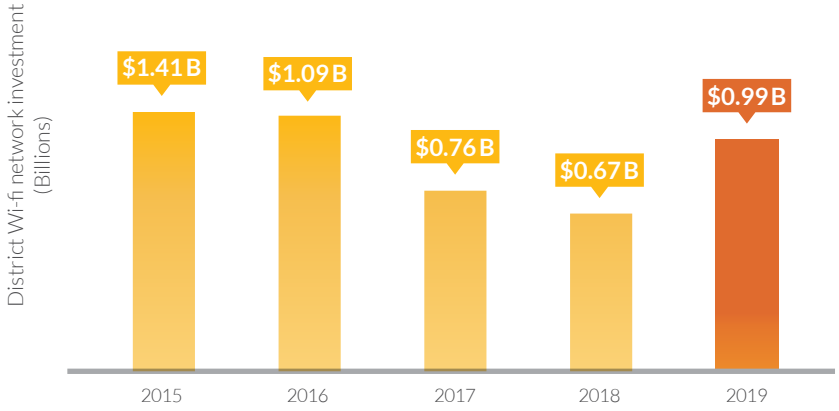
The dramatic progress in connecting students has been the result of service providers continually reducing the cost of broadband for our nation's schools.

The cost of Internet access has continuously decreased since 2013 thanks to price transparency and technological improvements that have enabled service providers to bring school districts significantly more bandwidth at the same monthly cost. This momentum continued in 2019 with service providers trimming 31% off of Internet access costs. In 42 states, this reduction brought the median cost of bandwidth below the critical $3 per Mbps threshold, enabling school districts to purchase the Internet access needed to support the growing demand for digital learning in every classroom, every day.

School districts have dramatically increased their investment in the Wi-Fi infrastructure needed to enable students and teachers to use digital learning in every classroom, every day.

During the last five years, America's K-12 public school districts have invested nearly $5 billion to upgrade their Wi-Fi networks. This means that nearly every classroom has the broadband infrastructure capable of supporting one device per student programs.

Chart 5: E-rate modernization has driven nearly $5 billion of investments in K-12 Wi-Fi networks



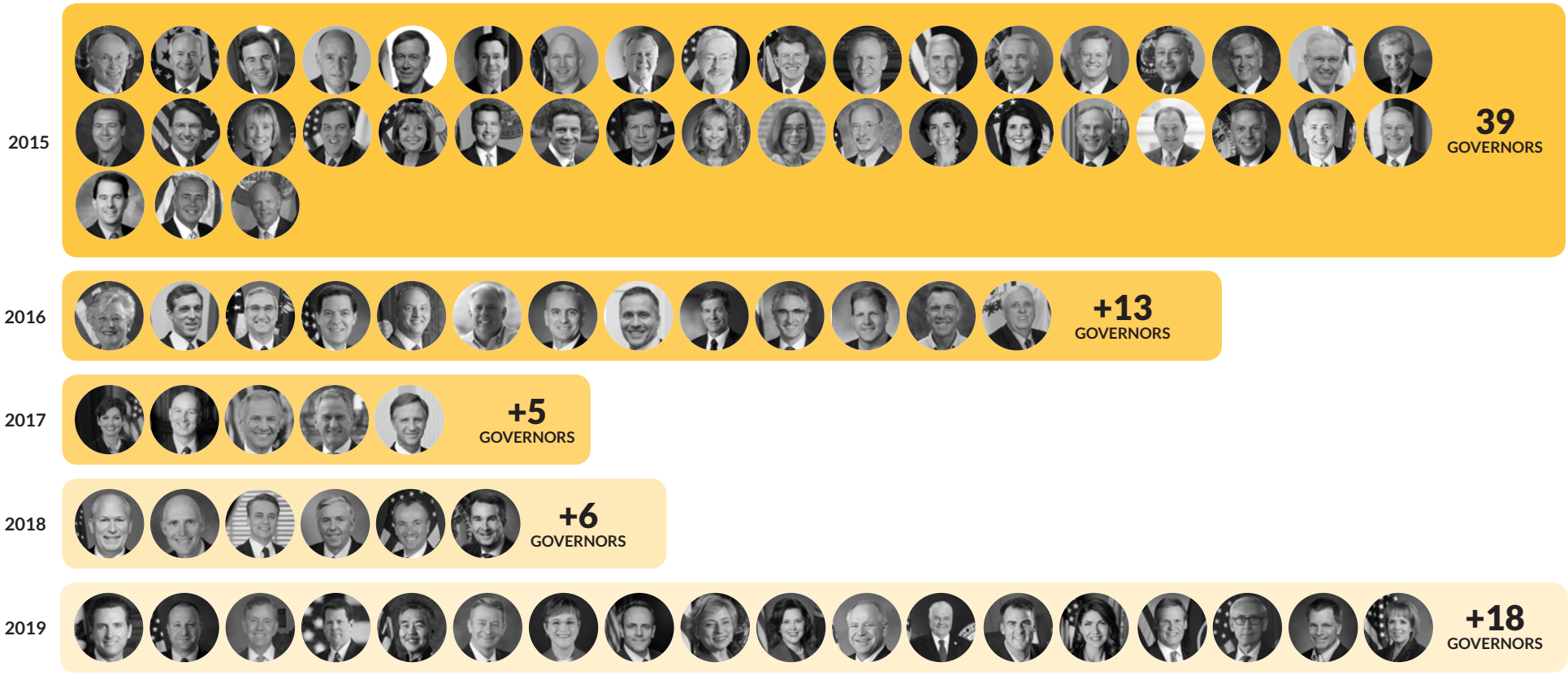
E-RATE MODERNIZATION TRANSFORMS WI-FI IN AMERICA'S K-12 CLASSROOMS

In 2014, only 25% of America's classrooms had access to Wi-Fi,[8] in large part because only 14% of school districts had been able to access E-rate funding to support their investments in wireless connectivity. Recognizing that poor Wi-Fi access dramatically limited the ability of teachers and students to take advantage of the promise of digital learning, the FCC made a critical change in how it funded LAN / Wi-Fi networks as part of E-rate modernization in 2014. By establishing a $150 per student Category 2 funding budget for every school district, the FCC dramatically increased access to Wi-Fi funding, resulting in 90% of school districts investing nearly $5 billion in new wireless networks in their schools. This tremendously successful policy change has delivered Wi-Fi access to the vast majority of America's K-12 classrooms and has overwhelming support from all stake-holders in the E-rate community. The FCC should now build on this success by making its Category 2 per student funding model permanent while adjusting the program to ensure that schools and libraries have sufficient budgets to upgrade their aging internal wiring for the next generation of Wi-Fi networks that will be needed to support digital learning in every classroom, every day.

Governors deliver digital learning to America's classrooms

In 2015, 39 governors across the country decided to make connecting their schools a priority for their administrations. Together, they launched a bi-partisan movement that grew to encompass governors in all 50 states and resulted in digital learning being possible in virtually every K-12 public school classroom in America. In short, the bold leadership of these governors, supported by state legislatures, broadband leaders, and state education departments, closed the classroom connectivity gap.

Chart 6: 79 governors in all 50 states led the movement to close the classroom connectivity gap



Meeting the Demands of Today's Classrooms

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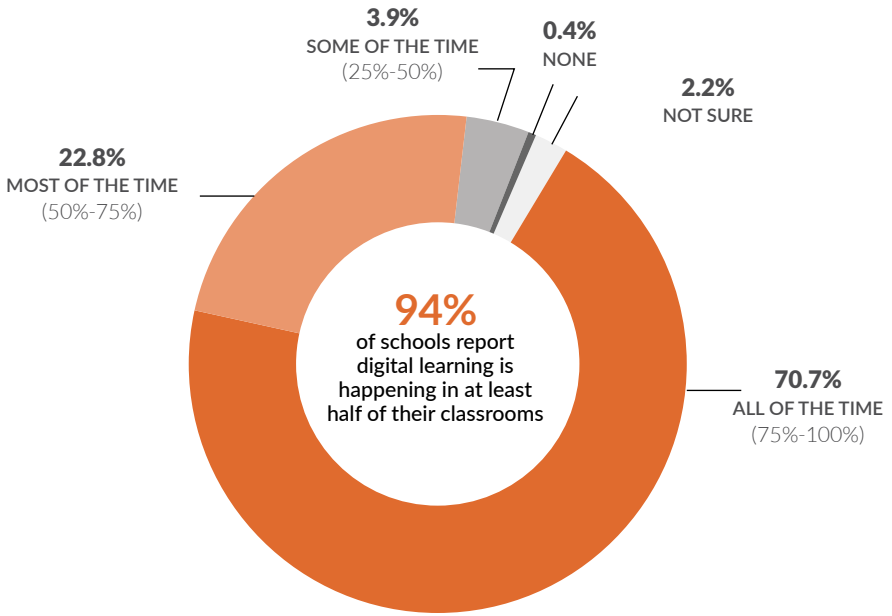
Meeting the Demands of Today's Digital Classrooms

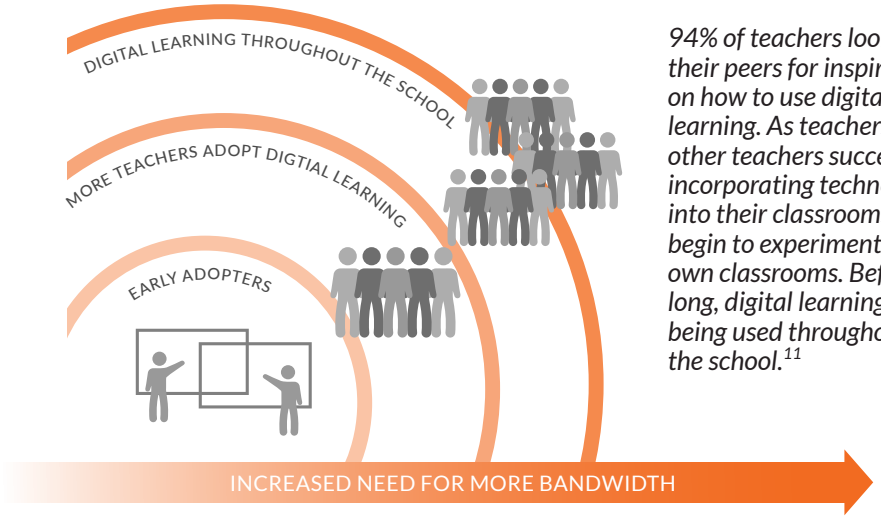
Reaching the FCC's 100 kbps per student goal opens the door to digital learning opportunities. It allows teachers to begin transforming their classrooms - engaging students with digital content, leveraging online applications to teach in new ways, and obtaining rapid feedback on how students are progressing. It also lets students begin to take control of the pace of their learning and make it more relevant with technology-enabled project based learning experiences. With the classroom connectivity gap a thing of the past, these learning opportunities are available in a growing number of classrooms across America. Ninety-four percent of school districts report that digital learning is happening in at least half of their classrooms every week. More than two-thirds say that technology is being used in 75-100% of their classrooms every week.[9]

Chart 7: 94% of school districts are using digital learning in at least half their classrooms every week



However, **this is not the finish line; it's a starting point**. Once digital learning enters a school, bandwidth demand continues to rise. Students and teachers find more ways to enhance the learning experience with technology, and other teachers begin using it in their classrooms. Ultimately, digital learning becomes fully integrated into teaching and learning throughout the school as teachers leverage technology in every classroom, every day

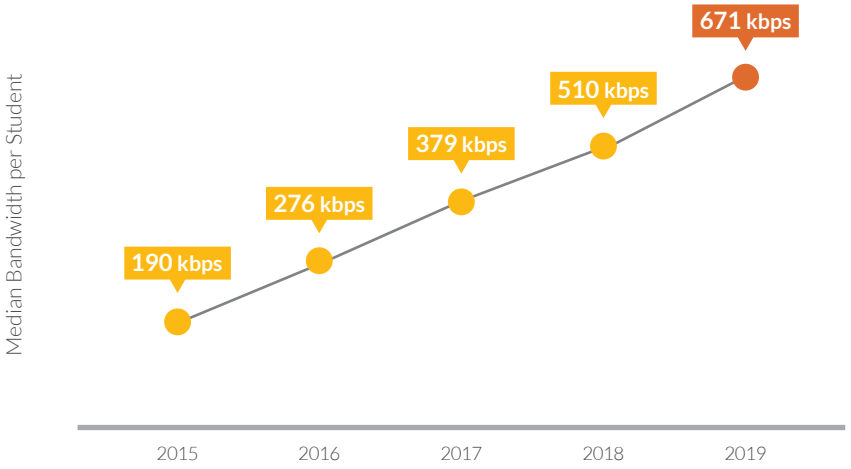
Chart 8: 85% of teachers support the increased use of digital learning in their schools[10]



94% of teachers look to their peers for inspiration on how to use digital learning. As teachers see other teachers successfully incorporating technology into their classrooms, they begin to experiment in their own classrooms. Before long, digital learning is being used throughout the school.[11]

To keep up with the increasing adoption of technology in their classrooms, schools need to continue to grow their bandwidth. A majority of educators have realized this and continue to position their schools for the future. Two-thirds of districts that met the FCC's standard for making digital learning available in their schools have continued to boost their bandwidth with at least one upgrade since meeting that standard and 23% have upgraded more than once. As a result, the median bandwidth per student topped 670 kbps last year, a 32% increase from 2018 and the largest increase in the last four years.

Chart 9: Digital learning adoption is driving schools to continually upgrade their bandwidth



11.6 million students already have digital learning available in every classroom, every day

The availability of fiber infrastructure, improvements in the affordability of Internet access, and growing demand for digital learning in the classroom are driving districts to upgrade to the FCC's 1 Mbps per student standard. Thirty-eight percent of all school districts, including 57% of America's smallest rural school districts and 23% of the nation's 1,000 largest school districts, have already upgraded to this standard. Also, thanks to the leadership of governors and state broadband networks, 12 states already have 50% or more of their school districts at 1 Mbps per student of Internet access, resulting in 11.6 million students having the bandwidth they need to use digital learning in every classroom, every day.

Since 2015, students with access to digital learning in every classroom every day has grown

7x

Chart 10: 38% of school districts can use digital learning in every classroom, every day

As bandwidth grows, so do the possibilities for innovation in K-12 education

The continuing growth in bandwidth in America's classrooms is increasing the ambitions of educators and state leaders about the possibilities in K-12 education. Ninety-six percent of teachers and administrators believe that digital learning has a positive impact on instructor effectiveness and student outcomes, which is resulting in schools investing in digital learning.[12] Today, over 90% of school districts are providing software, digital curriculum and devices specifically to encourage personalized learning and more than two-thirds of schools have dedicated instructional technologists.[13]

In the classroom, teachers are finding innovative ways to blend technology into their lesson plans.[14] Nearly half of teachers say they are incorporating coding as part of their instructional approach and over 50% are using video based content. In schools where digital learning is available in every classroom, every day, the pace of innovation is accelerating. Just as the world saw an explosion of mobile phone apps catering to every aspect of work and life when mobile broadband became fast and ubiquitous, we are now seeing an explosion of innovation across every aspect of education as we approach a world where bandwidth is no longer a barrier to a teacher's imagination.

DISTRICT STORY: KANSAS

FASTER BROADBAND UNLEASHES INNOVATION IN PERRY-LECOMPTON UNIFIED SCHOOL DISTRICT 343

Teachers at Perry-Lecompton remember what it was like before the district upgraded to 1.3 Mbps per student. They can recall when so much time was spent waiting for screens to load. Crashing computers and slow speeds really hindered the learning environment and their ability to bring innovative teaching to the classroom.

Today, bandwidth is no longer a bottleneck at Perry-Lecompton. After the superintendent and district leaders championed a significant investment in faster broadband, ubiquitous Wi-Fi, additional devices, and ongoing professional development, teachers are now able to make the most of digital learning in their classrooms. Student-created apps, virtual field trips, web design classes, digital guest instructors, paperless classrooms, and video production – these are just a few of the ways you'll see students around the district taking advantage of digital learning opportunities.

Now that connectivity is never a problem, students are becoming more tech-savvy and better prepared for the 21st-century working world. They are taking incredible pride and ownership in their work and are learning important ways to problem solve and communicate. The results have been impressive. Students, teachers, parents, and administrators all agree that having access to technology and digital learning has made their schools even better.

At the state level, governors are looking beyond leveraging digital learning to ensure equal access to educational opportunities. They see digital learning as a critical pathway to developing the 21st century skills their citizens will need to succeed in the workforce and as a means of closing persistent employment skills gaps in areas such as computer science. They also agree with the 63% of teachers who believe digital learning tools are the most effective way to connect learning to their students' future jobs and careers.[15] This is prompting them to invest in enhancing the linkage between K-12 education and employment by increasing the availability of digital learning enabled career and technical education experiences in partnership with industry.

DISTRICT STORY: CONNECTICUT

NORWALK PUBLIC SCHOOLS LEVERAGES HIGH-SPEED BROADBAND TO CONNECT STUDENTS WITH 21ST CENTURY CAREERS

Norwalk Public Schools is an economically and racially diverse district with a large number of high-need students and a superintendent with an ambitious goal to close the achievement gap. A key part of their plan to do so was to deliver more equitable and engaging educational opportunities through digital learning interventions, but that required significantly more bandwidth than they had at the time. E-rate modernization allowed the district to deploy fiber throughout the district and scale their bandwidth to meet the FCC's 1 Mbps per student standard. This enabled Norwalk to make digital learning a core part of the curriculum with personalized math programs at the middle schools; blended learning at the high schools, and a comprehensive, digitally enabled career pathway program.

Norwalk has leveraged high-speed broadband to place every student in the district in one of 32 pathway programs that end in capstone experiences in their areas of interest through partnerships with local businesses like Norwalk Hospital, Connecticut Public Television, and the Hartford radio station. Students can earn EMT and other medical certifications, get certified in Adobe Pro, or even run a radio station – all of which increase student engagement and are made possible by their proficiency in technology. They also have the state's first Pathways in Technology Early College High School (P-TECH) program which has increased graduation rates to almost 100% and enabled nearly 20% of students to graduate with their Associate's degree. Together, these broadband enabled career programs are allowing Norwalk graduates to obtain great postsecondary opportunities at local companies with the skills they need to succeed.

A Roadmap for State Leaders

3

3

A Roadmap for State Leaders

As the demand for digital learning from students and teachers grows, state leaders can take action to ensure that broadband is never a bottleneck to the use of technology in every classroom, every day. The good news is that we already have a roadmap for upgrading the 62% of districts that are not meeting the FCC's 1 Mbps per student standard.

Over the last five years, state leaders have leveraged the E-rate program to close the classroom connectivity gap by helping districts upgrade their Internet access. In the majority of states, they accomplished this by using their communications channels to ensure that districts understood the need to meet the 100 kbps goal and then helping districts find better Internet access deals. In the remaining states, state leaders upgraded their state K-12 broadband networks to deliver the required bandwidth to their districts. The same approach can ensure that 99% of America's students have the bandwidth they need to use digital learning in every classroom, every day.

ACTION 1 Maintain a Strong E-rate Program

In 2014, the FCC modernized the E-rate program with the objective of closing the classroom connectivity gap within five years. This catalyzed a change in the broadband available in America's schools, and as a result, over 46 million students have been connected to digital learning and educational opportunity. However, the FCC also recognized that meeting its 100 Kbps per student goal would only make digital learning available in some classrooms. To enable digital learning to truly transform teaching and learning, the FCC established a 1 Mbps per student standard starting in 2018 so bandwidth would never be a bottleneck to digital learning. To ensure that 99% of America's students can use technology in every classroom, every day, governors must make sure that a strong E-rate program continues to provide the resources school districts need to maintain and upgrade their broadband networks.

ACTION 2 Catalyze District Action

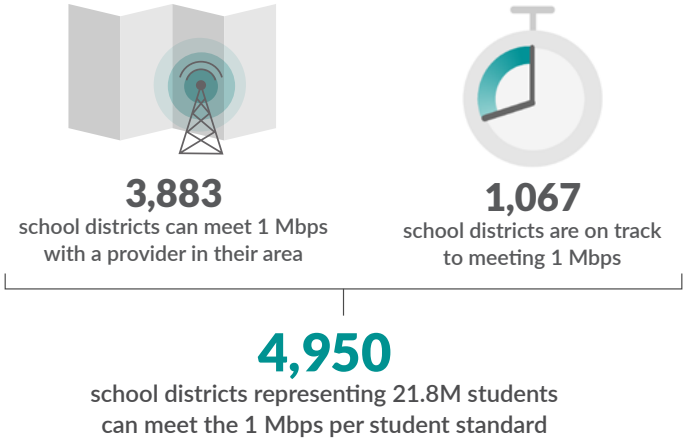
In states where districts procure their own Internet access, the path to 1 Mbps per student is predominantly about helping school districts take advantage of existing deals that give them dramatically more bandwidth for their budgets.

16.3 million students can reach 1 Mbps per student within their school district's current budget

In 3,883 school districts, the 1 Mbps per student standard can be reached using their existing Internet access budgets to access the same pricing that service providers in their area are already giving other districts. 78% of these districts don't even have to switch service providers to take advantage of a deal that will get them to 1 Mbps without spending more money.

An additional 5.5 million students are on track to reach the 1 Mbps per student standard

1,067 school districts can increase their bandwidth to an average of 591 kbps per student by accessing the existing pricing of service providers in their area. By taking advantage of these upgrade opportunities, these districts will position themselves to meet the 1 Mbps per student standard as districts historically double their bandwidth every two to three years.



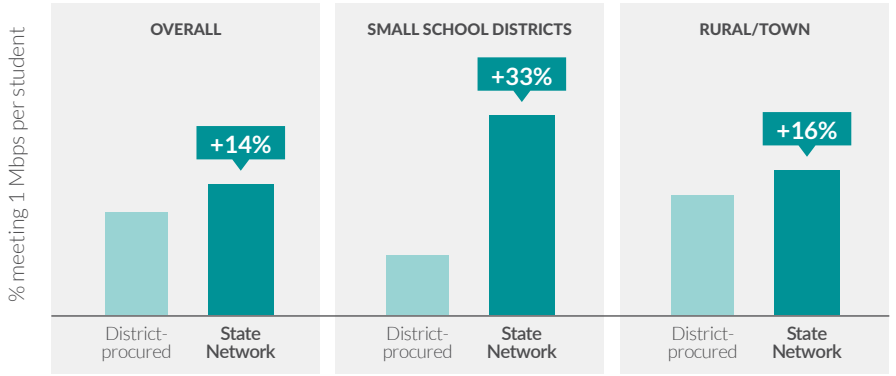
This leaves 1,625 school districts that do not have a service provider in their area that is currently offering affordable enough bandwidth pricing to provide a realistic path to 1 Mbps per student of Internet access. Fortunately, expected declines in bandwidth pricing over the next four years suggests that districts representing approximately one third of the students in this group will be able to afford the bandwidth they need to meet the 1 Mbps per student standard while the remaining districts need to increase their spending per student by just $1.04 per year.[16] In order to make digital learning available in every classroom, every day for these students, state leaders should focus on increasing the number of broadband options available to these districts.

ACTION 3 Upgrade State Networks

There are 17 states whose dominant model for delivering connectivity to K-12 schools is via a statewide broadband network.[17] Some states have dedicated K-12 networks while other states leverage their statewide government broadband networks or research and education networks, whose anchor customers are higher education institutions. In all cases, these states have the opportunity to rapidly upgrade their districts so digital learning can be used in every classroom, every day.

State networks have a number of advantages that have already enabled them to upgrade more of their school districts to the FCC's 1 Mbps per student standard. First, the organizations that run these networks remove a significant amount of the technical burden of procuring and managing broadband services from individual school districts. Second, by procuring for the entire state, they can ensure that smaller and rural districts with fewer broadband options are not left behind their urban and suburban counterparts. Finally, the scale of state networks gives them purchasing power to ensure that schools are receiving the maximum bandwidth for their broadband budget. As a result, state networks have helped 14% more of their districts meet the 1 Mbps per student standard overall while upgrading a third more of their small school districts and 16% more of their rural and small town districts.

Chart 11: State networks are leading the way toward digital learning in every classroom, every day



Seven million students on state networks can be quickly upgraded to the 1 Mbps per student standard

For districts served by state K-12 broadband networks, the capacity of a district's connection to the state network defines the amount of Internet access available to their students. As a result, the path to 1 Mbps per student requires that state

leaders ensure that each district has at least a 1 Mbps per student connection to the state network. In state networks states, there are currently 1,343 districts that need upgraded connections to reach the 1 Mbps per student standard.

The good news is that all but two state networks are already well positioned to deliver the appropriate upgrade to each of their school districts. State networks have already done the hard work of connecting 99.5% of their schools to fiber or another scalable broadband connection. The next step is to upgrade the capacity of these connections to 1 Mbps per student, which almost all state networks have the flexibility to do every year. To make these upgrades happen, states need to focus on reducing the cost of 1 Gbps and 10 Gbps connections from school districts to their state networks. In all but two states, this means simply convincing their service providers to meet the expected national median cost of 1 Gbps and 10 Gbps connections in 2020. This will result in 95% of students in state network states meeting the 1 Mbps per student standard.[18]

STATE ACTION ACCELERATES BROADBAND UPGRADES

Over the last four years, it has become clear that state action can meaningfully accelerate broadband upgrades. States have catalyzed fiber construction by making matching funds available and increased Wi-Fi upgrades by educating school districts on the availability of Category 2 E-rate funding. Perhaps the most widespread impact of state action, however, has been on Internet access upgrades. From 2015-2019, states that undertook governor-led K-12 broadband initiatives increased Internet access in their schools by three times more than states without such initiatives. As states embrace the 1 Mbps per student standard, it is clear that states that take action to support their districts will be among the first to achieve the objective of enabling digital learning in every classroom, every day.

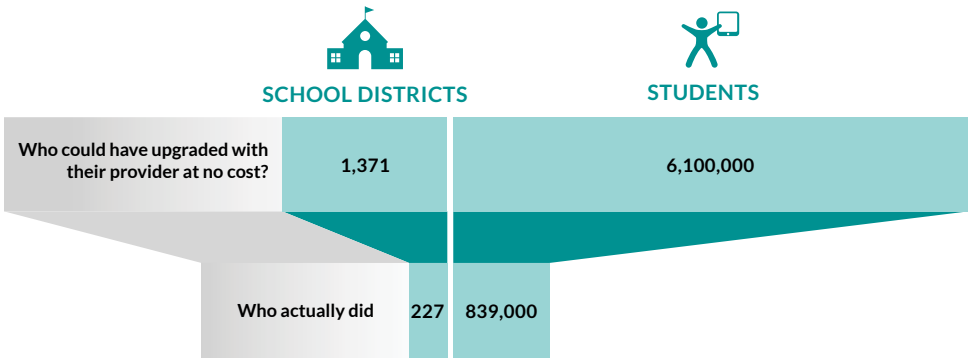
States with broadband initiatives increased Internet access in their schools by **3x** more than states without

State leaders must take action to ensure that districts take advantage of opportunities to upgrade to 1 Mbps per student

State leaders are well positioned to deliver the broadband needed to allow teachers and students to use digital learning in every classroom, every day. However, to do so, they must take action to ensure that districts do not miss no-cost upgrade opportunities and that their state networks are focused on meeting the FCC's 1 Mbps per student standard.

The need for state action was highlighted by the number of missed upgrade opportunities during the last E-rate cycle. At the start of the 2018-19 school year, 1,371 school districts had expiring Internet access contracts with a provider that was offering a deal that could have upgraded them to 1 Mbps per student without spending any more money. Had all of these districts taken advantage of these deals, an additional 6.1 million students would have been able to use technology in their classrooms daily. Unfortunately, only 17% of these districts actually upgraded using these deals and, as a result, just 1.1 million students were upgraded to 1 Mbps.[19]

Chart 12: Five million additional students could have upgraded to the 1 Mbps per student standard in 2019 if districts had taken advantage of no-cost upgrades

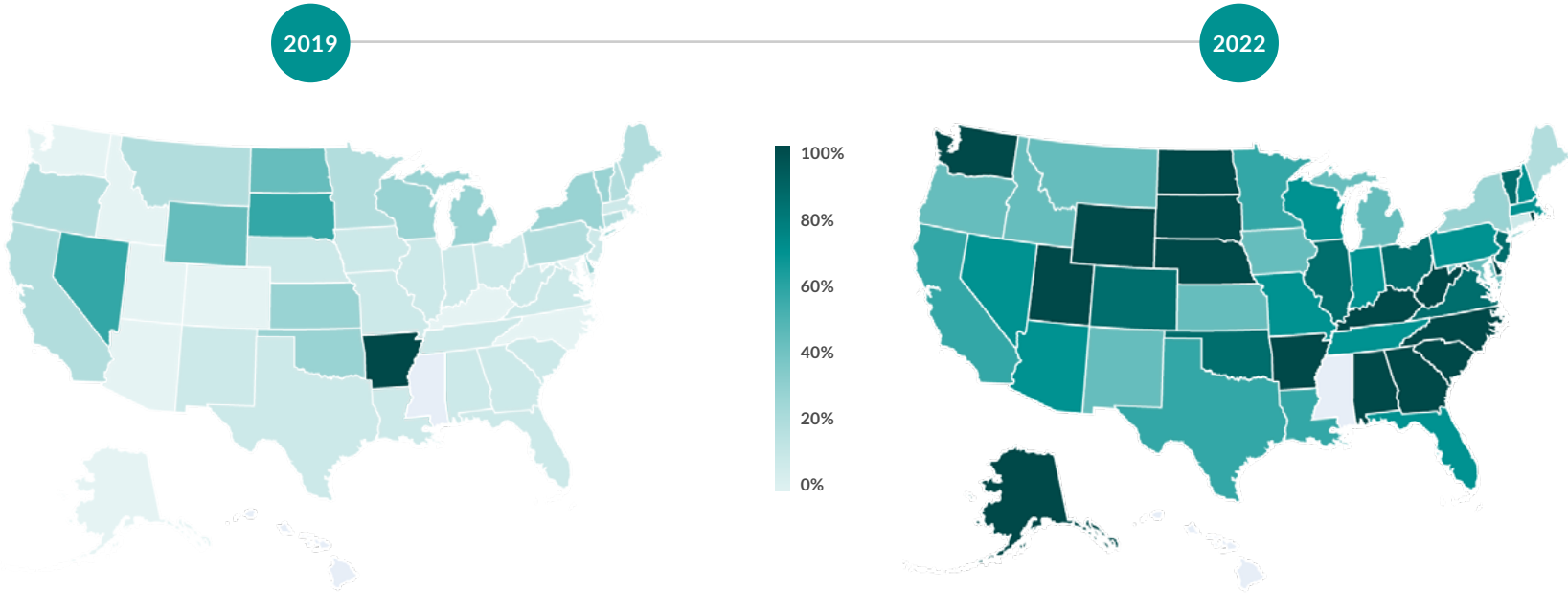


State leaders need to take action to ensure that districts don't miss these upgrade chances in the future. The failure of districts to upgrade limits the educational opportunities available to students in the classroom, and nearly one third of these districts locked themselves into multi-year contracts that will prevent them from upgrading to 1 Mbps per student in the coming years. To accelerate the pace of upgrades, state leaders should identify which districts have a service provider in their area offering a deal that can get them to 1 Mbps per student within their existing broadband budget and use their communications channels to make sure district leaders know about and take advantage of these deals.[20]

Governors can take action to ensure 40.4 million students have the bandwidth they need to use digital learning in every classroom, every day

Governors and other state leaders have an important role to play in ensuring that their schools are able to use digital learning in every classroom, every day. By taking the actions outlined above, states can make the same kind of dramatic progress toward the 1 Mbps per student standard by 2022 as they did during the first three years of driving upgrades to 100 kbps per student. This will upgrade 28.8 million students and position the nation to connect 99% of our schools to the 1 Mbps per student standard - enabling digital learning to unleash innovation in every classroom, every day.

Chart 13: State leadership can make digital learning a reality for an additional 28.8 million students by 2022



About the Report

The State of the States report tracks progress toward the K-12 connectivity goals established by the Federal Communications Commission (FCC). The report, published annually, highlights national and state progress toward achieving connectivity goals and the key requirements for meeting future connectivity needs: access to fiber or equivalent high-speed infrastructure, sufficient Wi-Fi equipment in classrooms to support 1:1 digital learning, and affordable pricing.

States are critical actors in the effort to provide and improve broadband access for K-12 students. School connectivity is often strongest in states where state leadership and state agencies have taken focused action. For that reason, the accompanying website at stateofthestates.educationsuperhighway.org provides insights, broken down by state, to help state leaders see where they stand relative to the FCC connectivity goals, understand potential actions they can take to dramatically improve broadband connectivity in schools, and find out what their state peers are doing.

About the Data

The analysis in this report is based on 2019 application data from the FCC's Schools and Libraries Program ("E-rate").[11] It includes data from 12,336 public school districts, representing more than 46 million students in approximately 83,000 schools across all 50 states and the District of Columbia. Public school district applicants requested $1.9 billion in funding from the E-rate program in 2019. All E-rate applications are subject to review before funds are distributed, which ensures that school districts have accurately reflected their requested services. As a result, this data represents the best national source of current information on school district connectivity; specifically, what broadband services schools are buying and how much they are paying for these services.

For the last four years, EducationSuperHighway's team of 25 analysts, data quality specialists, and developers have been verifying and analyzing the 2015-2019 E-rate data. Over this period, the team has placed particular emphasis on clarifying the broadband services contained in E-rate applications by working closely with school districts, state partners, and E-rate consultants to verify that the data accurately represents the services they receive.

Our data verification and analysis efforts supplied us with a comprehensive understanding of connectivity for each school district included in the sample. We then calculated state-level metrics based on a sample of the total school districts in each state, which on average included 96% of districts. As with any sample-based methodology, there is a small margin of error to consider when interpreting state-level results. Regardless, we believe that this report identifies specific actions states can take to improve connectivity in America's K-12 public schools. For more about our data and metric calculations, please view the full version of the methodology.

A digital version of this report is available at stateofthestates.educationsuperhighway.org. To fully leverage the potential of the open E-rate data, the district-level connectivity and procurement information upon which the analysis of this report is based is available on *Compare & Connect K-12* at www.compareandconnectk12.org, a tool designed to help school districts increase the effectiveness of their network procurement and to help state leaders and service providers identify which school districts need to upgrade their networks.

1 NewSchools/Gallup survey, CoSN survey; Edweek Survey

2 Clever

3 NewSchools/Gallup survey

4 EducationSuperHighway 471 survey

5 Schoology State of Digital Learning in K-12 Education 2018-19

6 Eighty percent of the 743 schools without fiber or other scalable broadband connections are in hard to reach rural and small town locations. An estimated 45% of these schools, covering 70,000 students, will require special construction builds in excess of $500,000. To make sure these students are not permanently left on the wrong side of the K-12 digital divide, it is critical that the FCC makes permanent the temporary suspension of the need to amortize special construction projects that cost more than $500,000.

7 Updated population of teachers per National Center for Education Statistics (NCES) is 2.84 million. Last year, we reported 2.6 million teachers were in districts meeting the 100 kbps per student goal out of a population of 2.7 million teachers.

8 Comments of CoSN, EducationSuperHighway & Funds For Learning

9 EducationSuperHighway 471 survey

10 NewSchools/Gallup survey

11 NewSchools/Gallup survey

12 Schoology State of Digital Learning in K-12 Education 2018-19

13 Center for Digital Education 2018 survey, Schoology State of Digital Learning in K-12 Education 2018-19

14 Schoology State of Digital Learning in K-12 Education 2018-19

15 Gallup/NewSchools survey

16 In Mississippi, which has a state contract but not a state network, districts would need to increase their spending by $0.28 per student to meet the 1 Mbps per student standard assuming that the state continues to lower the cost of its state contract to the same degree as it has in the past.

17 In this report we define state networks states as those where the state network serves 90% or more of the K-12 school districts in the state. These include: AL, AR, CT, DE, GA, KY, ME, NC, ND, NE, RI, SC, SD, UT, WA, WY and WV.

18 To connect the final six percent of students in these states, Connecticut and Maine will likely have to increase their state network budgets by approximately $100,000 per year. These amounts are likely to decrease significantly over the next five years as the cost of 1 Gbps and 10 Gbps connections decline.

19 115 districts, representing 292,000 students in this group upgraded to 1 Mbps per student but spent more to do so.

20 EducationSuperHighway can provide state leaders with this information for districts in their state upon request. We plan to make these lists available on demand in a future version of www.compareandconnectk12.org

About EducationSuperHighway

EducationSuperHighway was founded in 2012 with the mission of upgrading the Internet access in every public school classroom in America. The organization took on this mission because it believes that digital learning has the potential to provide all students with equal access to educational opportunity and that every school requires high-speed broadband to make that opportunity a reality. EducationSuperHighway is funded by national philanthropic organizations including the Chan Zuckerberg Initiative, the Bill and Melinda Gates Foundation, the Salesforce Foundation, and our mission is supported by governors in all 50 states and America's leading CEOs. Having completed its mission, EducationSuperHighway will sunset August 2020.