State K-12 Broadband Leadership: Driving Connectivity and Access

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common sense kids action™

Founded in 2001, the **State Educational Technology Directors Association (SETDA)** is the principal nonprofit membership association representing US state and territorial educational technology leaders. Our mission is to build and increase the capacity of state and national leaders to improve education through technology policy and practice. For more information, please visit: setda.org.

Common Sense Kids Action works with policy makers, business leaders, and other advocates to ensure that every child has the opportunity to succeed in the 21st century. Our mission is to make kids and education our nation's top priority by building a membership base and driving policies that promote access for all kids to high quality digital learning experiences; protect kids' online privacy; expand access to affordable, high quality early education; and reduce child poverty. https://commonsensemedia.org/kids-action

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ABOUT THIS REPORT

With support from the Common Sense Kids Action, this report was launched under the leadership of Christine Fox, SETDA's Deputy Director with guidance from SETDA's State Action Committee, and Broadband Working Group to provide an overview of state policies, practices and intentions related to broadband and Wi-Fi implementation. Through a state broadband survey and independent data collection, SETDA gathered information for all 50 states, the District of Columbia, Guam, and the Commonwealth of Northern Mariana Islands (CNMI) regarding state policies regarding broadband implementation, for a total of 53 respondents.

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EXECUTIVE SUMMARY

In this 2016 report, *State K-12 Broadband Leadership: Driving Connectivity and Access,* SETDA builds upon the research and recommendations from prior publications with a focus on the role of state leadership in supporting districts and schools to increase high-speed connectivity and access for students and educators. SETDA firmly believes that high-speed broadband access for every student is essential to creating and delivering the deeper learning experiences intended to prepare today's students for college and careers, and to compete in a global economy. State leaders continue to play an essential role in supporting robust K-12 infrastructure through state broadband policies, statewide broadband networks and state funding for broadband. As the education community continues to invest in digital learning opportunities, SETDA encourages educators, policymakers, and the private sector to be strategic in their support of high-speed broadband and Wi-Fi access for all students. In this publication, state leaders and policymakers can learn about a variety of state policies, best practices, and innovative models supporting high-speed broadband and Wi-Fi access for all students. It also highlights the powerful impact of state leadership in driving important policy decisions and influencing policy makers at the national and state level to support broadband networks, bandwidth capacity, community access points, and home access for low-income families. Specifically, this publication reports on:

- **K-12 Broadband and Wi-Fi Connectivity:** Internet access is no longer an afterthought in education; instead high-speed broadband and Wi-Fi are now as vital a component of K-12 school infrastructure as facilities or utilities.
- **State Leadership for Infrastructure:** State leaders can promote increased connectivity for digital learning by providing guidance to schools and districts regarding best practices related to high-speed broadband adoption. The report highlights innovative examples of state broadband leadership for broadband implementation in action.
- **State Broadband Implementation Highlights:** Based upon the 2015 Broadband survey of states and territories and independent research, SETDA highlights current state policies and best practices, statewide networks, state funding options and purchasing consortia opportunities.
- **State Advocacy for Federal Support of Broadband:** SETDA continues to play a pivotal role in advocating for policies and funding at the federal level to support high-speed broadband networks, bandwidth capacity, community access points, and home access for low-income families.

SETDA Members Instrumental in E-Rate Modernization

SETDA and its members were instrumental in the E-rate modernization process – participating in focus groups, meeting with FCC staff members, and submitting comments during the multiple Notice of Proposed Rulemaking processes. Our members advocated for increased funding, streamlining the application process and additional flexibility for spending – most of which are included in E-rate modernization.

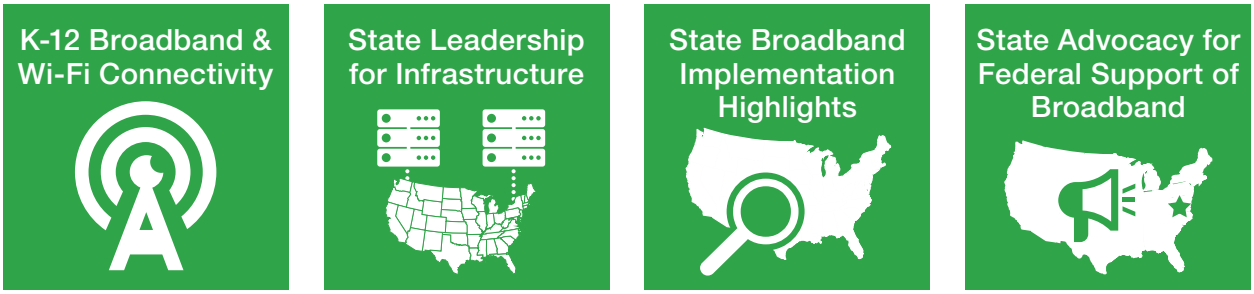
> *"Providing deeper learning experiences for students requires transforming teaching and learning to include universal high-speed broadband access to digital instructional materials to best meet the ever changing individual and personal needs of students in the digital age."*
>
> –Carla Wade, Digital Learning Specialist
> Oregon Department of Education and SETDA Board Chair

INTRODUCTION

SETDA has long advocated for the importance of connectivity and high-speed broadband in K-12 education to support digital learning environments to prepare today's students for college and career and to compete in a global economy. In 2008, SETDA released the report, *Class of 2020 Action Plan for Education, High-Speed Broadband Access for All Kids: Breaking through the Barriers* and in May 2012, the groundbreaking report, *The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs*. Educators and policy makers around the country continue to reference these reports and recommendations. In 2014, the Federal Communications Commission (FCC) adopted SETDA's recommendations from the *Broadband Imperative* for high-speed broadband access of at least 100 Mbps per 1,000 students/staff for external internet connection to the Internet Service Provider and at least 1 Gbps per 1,000 students for internal wide area network (WAN) connections from the district to each school and among schools.

This current publication, *State K-12 Broadband Leadership: Driving Connectivity and Access* highlights the essential role that state leaders play in supporting districts and schools in driving high-speed broadband and Wi-Fi access in schools for all students to advance digital learning. In this publication, state leaders and policymakers can learn about a variety of state policies, best practices, and innovative models supporting high-speed broadband and Wi-Fi access for all students. It also highlights the powerful impact of state leadership in driving important policy decisions and influencing policy makers at the national and state level to support broadband networks, bandwidth capacity, community access points, and home access for low-income families.

This publication is organized around the following major topics:



> *The most immediate and expensive barrier to implementing technology in education is inadequate infrastructure, including high-speed internet connectivity and suitable internet-enabled devices.*
>
> –LEAD Commission

1. K-12 BROADBAND AND WI-FI CONNECTIVITY

In the past decade, the digital environment has changed dramatically, with the advent of smartphones, on-demand streaming and social media. These same tools that have transformed and enriched our personal, civic and professional lives are dramatically improving learning experiences intended to prepare today's students for college and careers. Internet access is no longer an afterthought in education; instead high-speed broadband and Wi-Fi are now a vital component of K-12 school infrastructure. As evidenced in the Every Student Succeeds Act (ESSA), there is an increased emphasis on digital learning.[1] The Student Support and Academic Enrichment Grants (SSAEG) block grant program in ESSA specifically addresses technology for academic achievement and growth with the authorization of $1.65 billion.[2] However, only 15% of the 60% of funds allowed for activities to support the effective use of technology can be used for building technology capacity and infrastructure. The recently updated 2016 National Education Technology Plan addresses K-12 infrastructure and identifies the essential components necessary to support learning: ubiquitous connectivity; powerful learning devices; high-quality digital learning content; and Responsible Use Policies (RUPs).[3] As shown in **Figure 1,** ubiquitous connectivity includes high-speed connectivity to schools; high-speed Wi-Fi throughout schools; and home Internet access.

Figure 1

Even though there have been significant improvements in broadband deployment, the FCC's 2016 Broadband Progress Report states the digital divide persists as "broadband is not being deployed to all citizens in a reasonable and timely fashion." The report reveals that connectivity for schools has improved since the FCC modernized its E-rate program; however, 41 percent of schools have not yet met the FCC's short-term goal that delivers at least 100 Mbps per 1,000 users, and few schools have met the long-term goal of 1 Gbps/1,000 users for connectivity capable of supporting digital learning applications. Out of school access remains an obstacle to overcome as 10 percent of Americans nationwide lack access to speeds of at least 25 Mbps for downloads/3 Mbps for uploads and nearly 40 percent of citizens in rural areas and tribal lands lack access to adequate broadband.[4]

> *"I believe the future belongs to the connected. That's because a broadband connection is more than a technology—it's a platform for opportunity. No matter who you are or where you live in this country, you need access to modern communications to have a fair shot at 21st century success. That's a fact."*
>
> – Jessica Rosenworcel, FCC Commissioner

2. STATE LEADERSHIP FOR INFRASTRUCTURE

In 2015, SETDA's *Navigating the Digital Shift: Mapping the Acquisition of Digital Instructional Materials* report revealed that there have been major shifts in state policy to support digital learning, as more states are requiring the implementation of digital instructional materials over the next five years. Legislators are now recognizing the benefits of digital learning and the new demand for instructional materials that are available to 21st century learners anywhere, anytime. "State leaders play an essential role in supporting districts to provide high-speed access for all students and teachers," said Jeff Mao, Senior Director, Learning Solutions Program, Common Sense Education. States continue to demonstrate leadership and support for adequate infrastructure through the enactment of state broadband policies, statewide broadband networks and consortiums and state funding for broadband.

This section highlights several state's innovative promotion of robust infrastructure and connectivity for students:

- **Alabama Leverages State Funds for E-rate Match:** E-Rate has always been a primary focus of the Alabama Joint IT Purchasing (ALJP) program. The Governor, state legislature and other state education technology stakeholders are working to pass a bill that would leverage E-rate discounts by providing funding that prioritizes matching funds for E-rate, Wi-Fi and wireless local area networks. In 2016, the Governor's budget includes funding to cover the state match for the FCC 's special construction matching program. In order to provide for broadband connectivity within schools, the Governor's budget also includes funding to cover much of the required remaining match for Category 2 - WLAN equipment and services for all schools across the state.
- **New Jersey Statewide Purchasing Consortia Shows Significant Cost Savings:** Launched in 2014, The Broadband Component of Digital Readiness for Learning and Assessment Project (DRLAP) created regional purchasing consortia for telecommunications services to help schools collaborate in order to bring down the cost of high speed broadband services; offer basic Internet service (up to 100 Mbps) and high speed (over 100 Mbps); and establish a statewide Wide Area Network (WAN) through regional consortia for Internet services as well as for other services. The first year resulted in $89 million in savings for participating schools while increasing bandwidth by 150%. New Jersey continues to provide support for the initiative, which is now in its second year. See the full report.
- **New Mexico's Governor's Broadband for Education Initiative:** This program has applied lessons learned from North Carolina and Alabama to aggregate buying power for Category 2 (Wi-Fi and networking equipment). The statewide master contract, which can be accessed by all school districts and libraries E-Rate applications in the state, has already resulted in greater discounts than previous statewide contracts. Alabama has offered it's "Mini-Quote" system to New Mexico, which functions like "e-bay in reverse" as vendors compete with transparency on price in response to district requests against this contract. It is estimated that this approach will save schools $3M in this E-Rate cycle. In addition, the New Mexico Public Education Department, Department of Information Technology and Public Schools Facilities Authority are coordinating with other non-profits to leverage the new funding opportunities presented by E-Rate Modernization.

- **Oregon Looks to the Future to Provide Robust Access to All Schools:** Oregon is in the early stages of coordinating across state agencies to provide robust high-speed broadband access to all schools. Oregon is working with Education Superhighway to collect data to determine where each district stands in terms of access to high-speed broadband, level of service and cost. The Oregon Broadband Advisory Council is using this data along with information around networks that serve fire and safety, tele-health, and emergency management services for a conversation about building a network or system that meets the needs of all state agencies and the local communities. In 2015, the Oregon Department of Administrative Services coordinated a Request for Information (RFI) to identify options for broadband services to support 1,200 state agency office locations across Oregon and included a secondary option for vendors to demonstrate how they might also support over 2,000 schools across the state with high speed Internet and broadband services. http://www.orinfrastructure.org/Infrastructure-Programs/Telecommunications/OBAC/

> *"This effort is returning truly compelling results. These are substantial savings of tax dollars that can be directed into the classroom. In addition, schools are able to leverage greater bandwidth speeds, which helps improve instruction and give New Jersey children a competitive edge with technology."*
>
> – David C. Hespe, New Jersey Education Commissioner

3. STATE BROADBAND IMPLEMENTATION HIGHLIGHTS

This section presents the findings from independent research and the 2015 broadband survey of states and territories to identify current state policies and funding practices to support high-speed broadband and Wi-Fi access in districts and schools. This section also highlights a variety of state policies, best practices, and models promoting robust high-speed broadband access for all students, and is organized as follows:

- State policies
- Statewide networks
- State funding
- Regional consortia and purchasing cooperatives

KEY HIGHLIGHTS

- **Nearly 60% of states** have broadband policies, opening the door for expanding broadband access for all students. Policies may include recommendations for system architecture standards, bandwidth, and/or security standards.
- **More than one-half of states** reported that they have centrally-coordinated statewide broadband networks for education. Centrally-coordinated state education networks can provide significant benefits to districts, including cost savings and local choice. These networks can also save significant time, personnel resources, and costs as each school or district would otherwise have to separately conduct its own competitive procurement process.
- **Nearly two-thirds of states** reported that they provide direct state funding for broadband. State funding can help close the gap and provide affordable broadband options for districts and schools. State funding may include direct state aid, state grants, bonds, state universal funds, special governor initiatives, or other sources.
- **Twelve states** reported that they are considering coordinating statewide consortia for the new Wi-Fi funding through E-rate and seven states have already executed on this strategy.
- **Seven states** (Alabama, California, Massachusetts, Michigan, Nevada, New Mexico, and New York) indicated that they are applying to use direct state funding for the E-rate Special Construction matching grants and an additional eleven states reported that they are considering direct state funding for E-rate Special Construction matching grants.

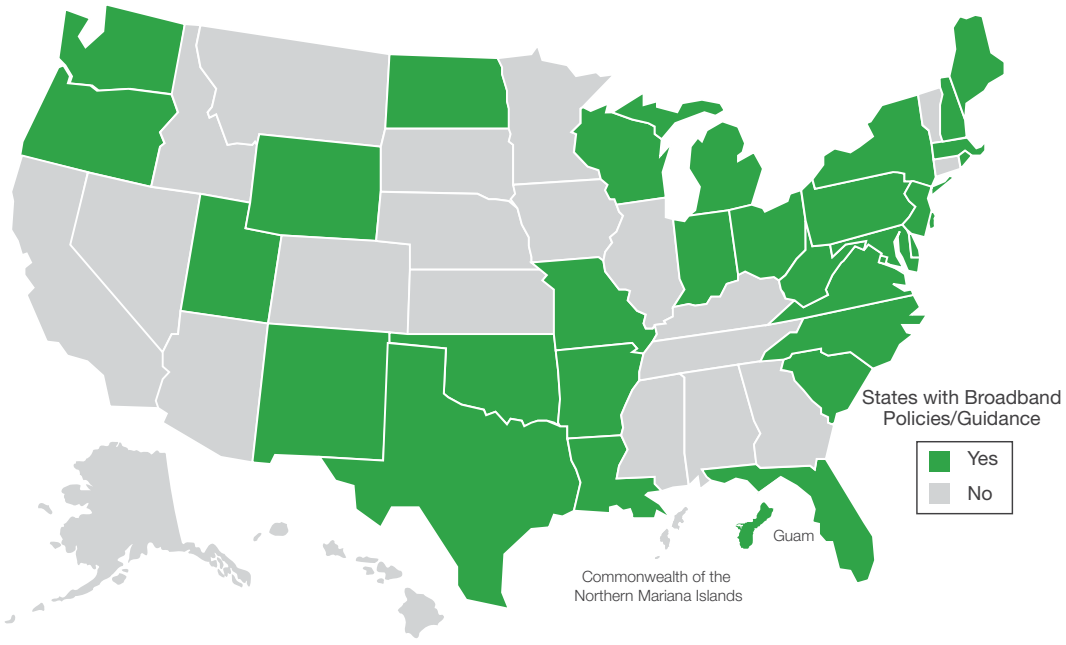
State Policies

State policies in support of broadband and Wi-Fi access provide guidance to districts and schools to help ensure long-range infrastructure planning to support robust broadband access in schools. As of 2015, thirty states report that they have policies, guidelines and/or recommendations for broadband connectivity, with eight states citing formal policies. Examples of select state policies include:

- **Delaware:** In 2000, the Delaware Department of Technology and Information developed policies for broadband and high-speed connectivity. Standards are set with regard to system architecture networking (wiring and cabling and wireless), enterprise policies, and standards for privacy and security.

- **Louisiana:** The state produces a yearly report of broadband guidelines and recommendations for schools in support of educational and assessment programs. District technology footprint snapshots report on devices, Internet bandwidth, and network readiness.
- **Maine:** Maine has formal policies for high speed/broadband connectivity. The Maine legislature authorizes the Maine Public Utilities Commission to charge a universal services fee on certain telecommunications services, and to collect those funds to support "advanced" telecommunications services to schools and libraries for all qualified schools and libraries. In addition, The ConnectME Authority is funded in a similar way and provides grants to providers and communities to improve infrastructure in order to provide service to unserved and underserved areas. High quality Internet connectivity for schools and libraries prompted the creation of the Maine Telecommunications Education Access Fund (MTEAF) and Networkmaine.
- **Pennsylvania:** Pennsylvania statute requires universal deployment of broadband by all Incumbent Local Exchange Carriers (ILECs). As a result, every Pennsylvanian should have access to broadband services, even in the most rural areas. The law also requires universal broadband deployment in or adjacent to public rights-of-way abutting all public schools, including the administration offices supporting public schools, industrial parks and health care facilities. Further, the law creates funding streams and programs to advance deployment, prioritize build out to areas with the most demand, and foster adoption and utilization of broadband.

Figure 2 STATE POLICIES/GUIDELINES



Statewide Broadband Networks

Statewide broadband networks can provide significant benefits to districts including cost savings and increased bandwidth. In addition, state networks support consistent levels of safety and security to comply with federal and state requirements.[5] State networks can also save districts significant time and personnel resources, since the district would not have to conduct a competitive procurement process for broadband services. In some states, statewide networks are not available. In this situation, statewide purchasing consortia and regional consortia become important alternatives to districts seeking benefits that are similar to those provided by statewide networks, especially in relation to cost savings and increased bandwidth. These options, however, do not always have the ability to provide technical expertise or shared fiber options. Alternatively, some smaller districts choose to build their own networks to maintain local control, especially if they can obtain affordable pricing options. The following chart presents some of the considerations states and districts should reflect upon when implementing or upgrading high-speed broadband network services.

TABLE 1: CONSIDERATIONS WHEN IMPLEMENTING OR UPGRADING NETWORKS

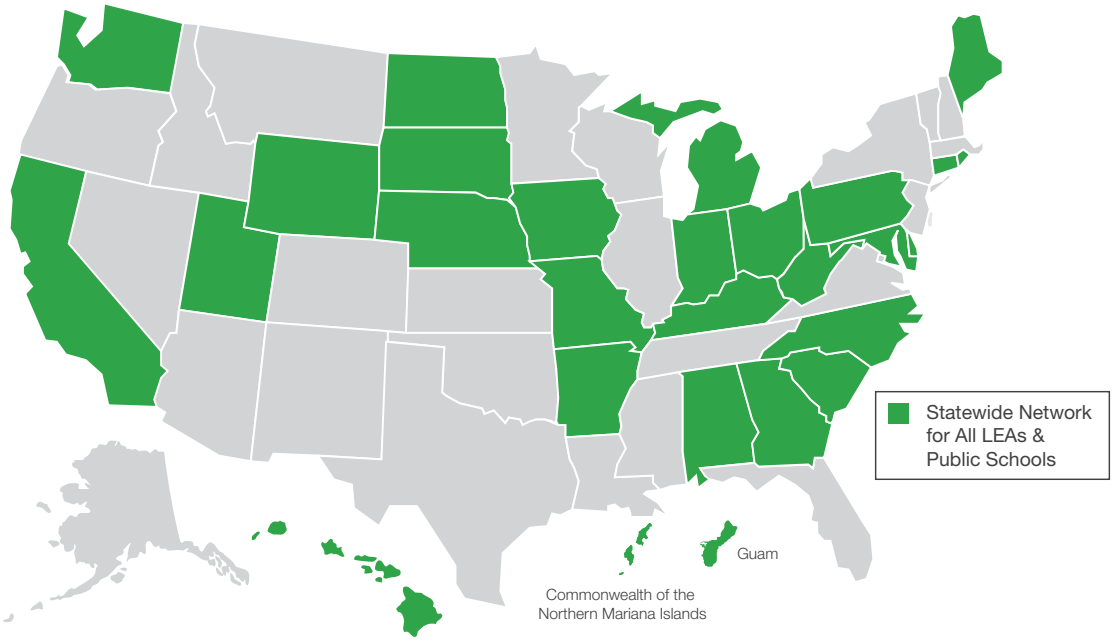
Considerations	Statewide Networks	Statewide Purchasing Consortia	Regional Consortia	District Network
Cost Savings/Pricing	✓	✓	✓	✓
Economies of Scale	✓	✓	✓	
Increased Bandwidth	✓	✓	✓	
Shared Fiber Optic	✓			
Integration of WAN and Internet				✓
Technical Support	✓	✓	✓	
Technical Expertise	✓			
Security	✓			
Shared Technical Services*	✓			
Education Services Collaboration**		✓	✓	
Local Control				✓

**Shared technical services include network management, CIPA filtering, Internet 2,Wi-Fi, student information systems, financial management, disaster recovery and virtual learning.*
***Educational support services include professional development, curriculum development, virtual field trips and community outreach*

In 2015, twenty-eight states reported that they have a high-speed state broadband network that connects all, or almost all, of the districts and public schools with most of those states reporting that E-rate was one of the primary sources of funding for the statewide networks. Thirteen states reported additional sources of funding in addition to E-rate. Highlighted below are state network examples.

Figure 3

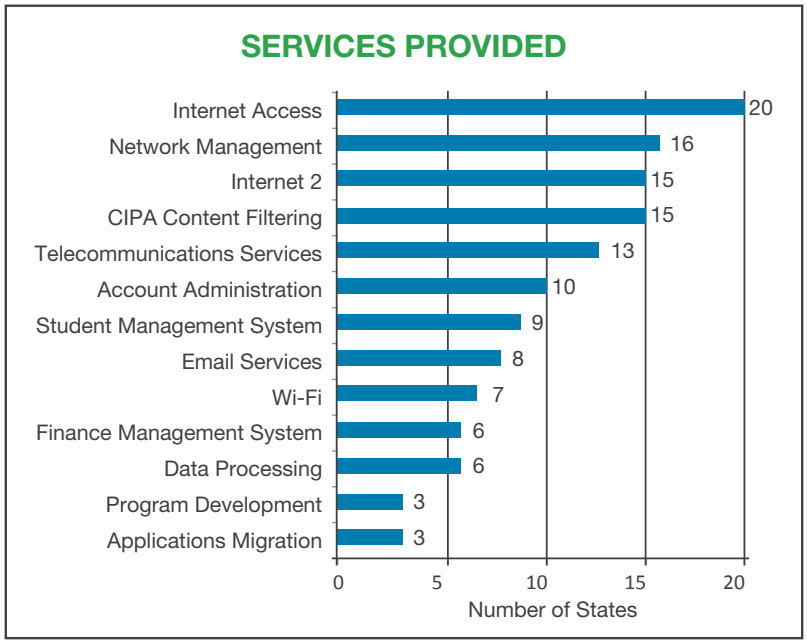
STATEWIDE NETWORK



Services Provided by Centrally-Coordinated Statewide Broadband Networks

The following chart displays the services provided by statewide broadband networks. Twenty states reported that their network provides Internet access and 16 states reported that their network provides network management and Internet.[6] Fifteen states with statewide broadband networks reported that they provide CIPA content filtering and Internet 2 services.

Table 2



State Funding

SETDA's Broadband research results show that 55% of states provide direct state funding for broadband connectivity.[7] State funding can help close the gap and provide affordable broadband options for districts and schools. For example, in Washington, the state provides $16 million per biennium to support the K-20 Network and ensures that district rates are not impacted by geography or other factors. State funding may include direct state aid, state grants, bonds, special governor initiatives, or other methods. Funds may be distributed to districts by per pupil dollar amount, district formula, or other means. The following examples represent some of the recent initiatives in state funding for broadband and Wi-Fi connectivity:

- **Idaho:** Idaho has a statewide managed Wi-Fi program in which districts can choose to participate in the state funded Wi-Fi network.
- **Oklahoma:** The Oklahoma Universal Service Fund, under the Oklahoma Corporation Commission, pays the non-discounted portion of Internet and WAN connections up to the limit set by formula and limited to the "lowest cost reasonable bid."
- **Rhode Island:** A $20 million state technology bond provided funds for the Wireless Classroom Initiative to put wireless access in all classrooms.
- **Virginia:** Virginia's current state funding request is to support the implementation of several initiatives over the next three years:
  - Statewide Broadband Procurement Support Program
  - State Wi-Fi Equipment/Service Contract (adds to existing state broadband contract)
  - Division Wi-Fi Upgrade Match Fund
  - Centralized Staffing Support
  - Division Intranet/Collaboration Platform

  These initiatives tackle the three most pressing infrastructure challenges for school divisions: deploying Wi-Fi capable of supporting 1:1 learning in every classroom, bringing fiber to the few remaining schools that broadband providers can't economically connect and ensuring schools can afford the broadband they need to meet the 2018 FCC goals.
- **Wyoming:** State funding supports broadband connectivity for all school districts and is provided as a per pupil dollar amount. The current major sources of funding for high-speed/broadband connectivity for LEAs are state funding through the school finance resources block grant and the E-rate program. Through procurement innovation, new contracting vehicles were developed by Wyoming enhancing the way the state engages ISPs and other vendors. A result of this innovation, there has been a 96 percent increase in capacity. In 2011, only two school districts had Ethernet capability; now all twenty-three counties and forty-eight school districts have Ethernet.

SETDA's research results indicate that seven states (Alabama, California, Massachusetts, Michigan, Nevada, New Mexico, and New York) plan to use direct state funding to support the E-rate Special Construction matching grants. The E-rate special construction grants allow eligible applicants with up to 10 percent additional discount for special construction charges, matching state funding for the project on a dollar-to-dollar basis. For example, a district with a 40% discount can receive up to an additional 10% of E-rate funds if the state provides an additional 10% of

the cost of the special construction project.[8] An additional eleven states reported that they are considering direct state funding for E-rate Special Construction matching grants. The examples below are pending FCC approval.

- **Colorado:** The state is planning to use funding provided through the Department of Local Affairs, if it qualifies, as the state match for E-rate special construction grants.
- **Illinois:** If approved the Illinois Century Network is planning to build fiber broadband infrastructure to a number of schools and libraries close to the ICN network, taking advantage of the new special construction rules introduced for E-rate funding year 2016.
- **Nevada:** The state is planning to utilize WAN Infrastructure grants as the direct state funding match for the E-rate Special Construction grants. The funding is allocated through competitive grants to school districts and allocated through the Nevada Commission on Educational Technology.
- **New York:** The Smart Schools Bond Act (SSBA) authorized the issuance of $2 billion of general obligation bonds to finance educational technology and infrastructure to improve teaching and learning throughout the state. Districts can utilize the SSBA allocations as state funds to apply for in the E-rate Special Construction Matching Grant.

Regional Consortia and Purchasing Cooperatives

Regional consortia and purchasing cooperatives are another way states can support districts and schools in reaching affordable broadband access goals. Eight states report that they have regional consortia or purchasing cooperatives for broadband: Maine, Massachusetts, New Hampshire, New Mexico, New York, North Dakota, Texas, and Wisconsin.

- **Guam:** The Division of Finance, Student, Administrative and Information Systems is currently drafting a bid that will expand the Wi-Fi infrastructure at secondary schools. It is the intent that local funding be used for Guam's share of the cost and E-rate discount funding for the discounted share of the cost.
- **North Carolina:** The North Carolina Department of Public Instruction in partnership with The Friday Institute developed the state's Wireless Infrastructure plan which urged the state to take advantage of new E-rate funds through a state consortium. The plan described the FCC $150-per-student allocation as "sufficient" for the project and predicted that the new Category Two funding option could provide North Carolina with a 75%-78% discount. In 2015, the state provided Wi-Fi to over 375,000 students at an average cost of only $116 per student (pre-discount).

MASTER CONTRACT FOR WI-FI PROCUREMENT

Fifteen states – Alabama, Arkansas, Florida, Kansas, Kentucky, Maine, Massachusetts, New Jersey, New Mexico, North Carolina, Pennsylvania, Oklahoma, Rhode Island, Virginia, and West Virginia – reported that they have a master contract for Wi-Fi equipment that supports school and district purchasing options.

- **Texas:** The Texas Education Telecommunications Network (TETN) connects all 20 regional Education Service Centers (ESC) and the Texas Education Agency with a comprehensive, integrated state technology system for voice, video and data. TETN connects the 20 ESC networks and their 800 plus school districts with video capability. The traditional network is

being replaced with high-speed broadband connections among the ESCs, and new services are being added beyond video conferencing. School districts that are members of their ESC regional network will have access to the statewide education intranet and the new services including digital applications, tools, and digital resources.

- **Wisconsin:** In 2010, Wisconsin created the Municipal Unified Fiber Network in Dane County to provide high bandwidth connections at low cost. The network provides data communications, Internet, and network management. Chippewa Valley Internetworking Consortium (CINC) is a regional Community Area Network (CAN) formed in 1999 that is committed to "Broadband Serving the Public Interest." CINC coordinates regional communication infrastructure projects with city, county and state government, educational institutions, libraries, hospitals, health care, nonprofits, and technology providers to facilitate network creation that is innovative, competitive, and sustainable. The network provides data communications, Internet, and telecommunication services.

Additionally, twelve states/territories reported that they are considering statewide consortia for the new E-rate funding for Wi-Fi.[9] The new E-rate funding for Wi-Fi is part of the modernized E-rate program that set a target of at least $1 billion per year to assist in funding Category Two requests including, but not limited to, Wi-Fi equipment and/or services during fiscal years 2015 and 2016. Additionally, the FCC expects the availability of at least $1 billion per year during fiscal years 2017, 2018 and 2019 in Category Two funds to cover the services necessary to create and maintain "internal connections," or Wi-Fi networks, within schools and libraries.

4. STATE ADVOCACY FOR FEDERAL SUPPORT OF BROADBAND

SETDA state leaders continue to have a significant impact and play a pivotal role in advocating for policies and funding at the federal level to support digital learning including broadband networks, bandwidth capacity, community access points, and home access for low-income families. SETDA members contributed to the E-rate modernization process, advocated for digital learning in the authorization of the Every Student Succeeds Act (ESSA) and provided feedback to the recently updated 2016 National Education Technology Plan.

E-rate Modernization

SETDA members were instrumental in the 2014 E-rate modernization process – participating in focus groups, meeting with FCC staff members, and submitting public comments for the Notice of Proposed Rulemakings. SETDA members also advocated for increased funding, for streamlining the application process and additional flexibility for spending – most of which are included in the E-rate modernization. The FCC adopted the SETDA recommendations for high-speed broadband access at least 100 Mbps per 1,000 students/staff for external internet connection to the Internet Service Provider and at least 1 Gbps per 1,000 students for internal wide area network (WAN) connections from the district to each school and among schools. The FCC also implemented programmatic changes to increase the efficiency and effectiveness of the program, ensuring E-rate funds are spent smartly and improving program administration. The modernized E-rate program also focuses on closing the Wi-Fi gap and includes $5 billion over five years for W-Fi equipment and/or services, dramatically increasing funding for school broadband.[10] SETDA and Common Sense Kids Action developed several resources to support state and local policymakers and digital leaders as they navigate the modernized E-rate program.

Every Student Succeeds Act (ESSA)

SETDA members have long advocated for the inclusion of digital learning in the authorization of education funding. SETDA members and staff meet with leaders on Capitol Hill on a regular basis to discuss the positive impacts of digital learning environments to prepare students for college and career. SETDA members responded to Requests for Information (RFI) during the legislative process and regularly showcased best practices in digital learning. In 2015, President Obama signed the Every Student Succeeds Act (ESSA), and for the first time, the federal government defined digital and blended learning.[11] ESSA also specifically addresses technology for academic achievement and growth through the Student Support and Academic Enrichment Grants (SSAEG) block grant program.[12]The law stipulates that districts may use up to 60% of SSAEG funds for activities to support the effective use of technology; however, only 15% can be used for building technology capacity and infrastructure.

National Education Technology Plan

SETDA members participated in the initial focus groups for updating the National Education Technology Plan (NETP) based on meetings organized by SETDA and the U.S. Department of Education (ED). SETDA members provided input on all aspects of the plan including K-12 infrastructure needs. SETDA created an online community where members and ED leaders exchanged ideas and made recommendations for the updated plan. In 2016, ED released the updated National Education Technology Plan, which identifies ubiquitous connectivity as one of the essential infrastructure components necessary to support learning.[13]

FEDERAL RESOURCES IN SUPPORT OF INCREASED BROADBAND IMPLEMENTATION

- **BroadbandUSA:** In 2015, the National Telecommunications and Information Administration (NTIA) launched BroadbandUSA to provide communities with technical advice on how to expand broadband access and adoption. As part of this new initiative, NTIA developed the Guide to Federal Broadband Funding, a comprehensive manual of federal broadband funding opportunities and information about state and local funding sources for broadband. The National Broadband Map is an interactive searchable tool to find broadband connectivity across the nation and the Connecting America's Communities map shows broadband infrastructure projects funded by the Broadband Technology Opportunities Program (BTOP).
- **ConnectALL:** In 2016, President Obama launched an initiative to help Americans get online and have the tools to take full advantage of the internet. This program submitted recommendations to the Federal Communications Commission (FCC) encouraging the reform a $1.5 billion per year phone subsidy program to turn it into a 21st Century national broadband subsidy to help low-income Americans get online. Alongside this FCC filing, the Administration is releasing a new study on the economic importance of broadband.
- **ConnectHome:** In 2015, to support increased broadband access at home, the White House launched the ConnectHome Initiative, a pilot initiative to help accelerate broadband adoption by children and families living in HUD-assisted housing. Collaboration between local governments, Internet service providers, nonprofit organizations and other stakeholders offers broadband access, devices, technical training and digital literacy programs for residents in assisted housing units. Twenty-seven cities and one tribal nation are participating in the pilot program.
- **Lifeline Program:** The FCC's Lifeline program provides millions of families with discounted monthly telephone service. On March 31, 2016, the FCC voted to modernize the program to include broadband access. For the first time, Lifeline will support stand-alone broadband service as well as bundled voice and data service packages to help provide low-income Americans with access. In addition, a variety of organizations are working to increase home broadband access, including Internet Essentials, EveryoneOn, and several ConnectED corporate participants.

5. SUMMARY

SETDA firmly believes that high-speed broadband and access for every student is essential to creating and delivering the deeper learning experiences intended to prepare today's students for college and career and competing in a global economy. SETDA and its state member leaders play a pivotal role in driving high-speed broadband access to all students in their states. This publication shows the:

1. Importance of state leadership to districts and schools and the communities they serve;
2. Variety of state models and paths to achieve high-speed broadband and access for all;
3. Impact of state leadership in driving important policy decisions and influencing policy makers to fund technology initiatives and improvements; and
4. Ability of state leaders to affect change and keep their states on the forefront of the digital transition in education

REVISED BROADBAND TARGETS & OUT OF SCHOOL ACCESS RESOURCE COMING SOON

Later this spring, as a complement to this publication, SETDA will release a report providing specific updated recommendations for minimum broadband capacity targets based on the 2012 Broadband Imperative report and the network design necessary to achieve these targets. Additionally, SETDA will examine issues around out of school access, providing recommendations and examples to address the "homework gap" through increased home access and community partnerships.

APPENDIX A: RESOURCES

Broadband Progress Report 2016 (FCC)
The 2016 Broadband report reveals that there are significant improvements in broadband deployment, but the digital divide persists. Connectivity for schools has improved since the FCC modernized the E-rate program; however, 41 percent of schools still have not yet met the FCC's short-term goals of 100 Mbps/1000 students for connectivity capable of supporting digital learning.

Broadband Technology Opportunity Program (BTOP)
Administered by the Department of Commerce's National Telecommunications and Information Administration (NTIA), the Broadband Technology Opportunities Program (BTOP) was a game-changing program for many states that had been lacking broadband connectivity. It provided $4.7 billion in grant funds to support the deployment of broadband infrastructure in unserved and underserved areas, to enhance broadband capacity at public computer centers, and to encourage "sustainable adoption of broadband service."

BroadbandUSA
Earlier this year, NTIA launched BroadbandUSA to provide communities with technical and strategic advice on how to expand broadband access and adoption. As part of this new initiative, NTIA developed the Guide to Federal Broadband Funding, a comprehensive manual of federal broadband funding opportunities and information about state and local funding sources for broadband. The guide details a wide range of opportunities. While the guide is not meant to provide an exhaustive list of all federal funding opportunities, it can serve as a starting point for communities to explore potential federal financing options.

ConnectED
In June 2013, President Obama unveiled the ConnectED initiative to "enrich K-12 education for every student in America." In February 2014, the President announced more than $750 million in commitments from seven private sector companies to deliver cutting-edge technologies to the classroom. Some of the offerings as part of that program include support for access to broadband and Wi-Fi access.

> AT&T: As part of the White House ConnectED Initiative, AT&T is providing 50,000 students and teachers in Title 1 schools with $100 million of free mobile broadband access, mobile device management, network filtering and teacher professional development for three years for each selected school.
>
> Sprint Corporation: Through Sprint's in-kind support of ConnectED, up to 50,000 K-12 students across the U.S. will be able to take advantage of their school's digital learning curriculum and resources outside the classroom.

ConnectHome
In 2015, to support increased broadband access at home, the White House launched the ConnectHome Initiative, a pilot initiative to help accelerate broadband adoption by children and families living in HUD-assisted housing. Collaboration between local governments, Internet service providers, nonprofit organizations and other stakeholders offers broadband access, devices, technical training and digital literacy programs for residents in assisted housing units. Twenty-seven cities and one tribal nation are participating in the pilot program.

Digital Opportunity Center
Leading efforts to close the digital divide for digital equity, to alleviate poverty, and to address other vital social challenges.

Distance Learning and Telemedicine Loan and Grant Program (DLT)
DLT provides funding to meet the educational and health care needs of rural America. Through loans, grants and loan/grant combinations, advanced telecommunications technologies provide enhanced learning and health care opportunities for rural residents. Eligible purchases include: Interactive video equipment, audio and video equipment, terminal equipment, data terminal equipment, inside wiring, computer hardware and software, computer network components, acquisition of instructional programming that is a capital asset, acquisition of technical assistance and instruction for using eligible equipment.

E-Rate Modernization Resources (SETDA and Common Sense Kids)
SETDA and Common Sense Kids Action developed several resources to support state and local policymakers and digital leaders as they navigate the modernized E-rate program. Key highlights of the modernized program include:

- Lit services special construction
- Dark fiber options
- Self-provisioning
- State match
- Category Two Wi-Fi

Every Student Succeeds Act
The ESSA reauthorizes the 50-year-old Elementary and Secondary Education Act (ESEA), the nation's national education law and longstanding commitment to equal opportunity for all students. The new law builds on key areas of progress in recent years, made possible by the efforts of educators, communities, parents, and students across the country.

Every Student Succeeds Act: A Progress Report on Elementary and Secondary Education, Executive Office of the President, December 2015
This report summarizes the progress the country's schools have made since 2008, including: adopting higher academic standards in nearly every state; increasing high school graduation rate to 81 percent; investing billions of dollars in high-quality early education; training 100,000 excellent STEM teachers; and expanding access to high speed Internet to 20 million more students.

Broadband and Wi-Fi Guide to Implementing Digital Learning (SETDA):
With the influx of new technology and increased connectivity, focused strategic planning is more important than ever to ensure digital learning opportunities for all students and educators. Most school districts have made investments in technology equipment, bandwidth and networking, training teachers and supporting both the technology and those using it.

Lifeline Program
The FCC's Lifeline program provides millions of families with discounted monthly telephone service. On March 31, 2016, the FCC voted to modernize the program to include broadband access. For the first time, Lifeline will support stand-alone broadband service as well as bundled voice and data service packages to help provide low-income Americans with access.

National Broadband Map

The National Broadband Map (NBM) enables users to view broadband availability through a searchable website. The National Telecommunications and Information Administration (NTIA), in collaboration with the Federal Communications Commission (FCC), and in partnership with 50 states, five territories and the District of Columbia created the NBM.

National Education Technology Plan

The 2016 NETP plan articulates a vision of equity, active use, and collaborative leadership to make everywhere, all-the-time learning possible.

Navigation the Shift: Mapping the Acquisition of Digital Instructional Materials (SETDA)

This research paper provides an analysis of state policy trends related to digital instructional materials, essential conditions for implementation, an update on the states' progress towards SETDA's Out of Print recommendations and highlights several next steps for consideration as leaders move to advance the learning experiences in the digital age.

Schools, Health & Libraries Coalition

The Schools, Health & Libraries (SHLB) coalition supports affordable, high-capacity broadband connections for anchor institutions and their surrounding communities. SHLB also supports federal initiatives to support broadband and works with the FCC to promote capital investment in the E-rate reform.

Stories of EdTech Innovation

These stories of innovation can connect districts, schools, and educators trying similar things so that they can learn from each other's experiences.

Technology in Education: An Overview

This article presents an overview of the trends, opportunities, and concerns associated with classroom technology. Topics include:

- What Is Personalized Learning?
- What Is 1-to-1 Computing?
- What Is Blended Learning?
- What Is the Status of Tech Infrastructure and the E-Rate?
- How Is Online Testing Evolving?
- How Are Digital Materials Used in Classrooms?
- What Are Open Educational Resources?
- How Are Virtual Education and Distance Learning Doing?

The Next Generation Network Connectivity Handbook, July 2015 (Gig.U)

The Next Generation Network Connectivity Handbook is primarily focused on community-led broadband, usually through a public-private partnership. For example, a city negotiates with a private entity to design, deploy, maintain, and/or operate a broadband network.

APPENDIX B: STATE BROADBAND NETWORKS

Alabama: The Alabama Research and Education Network (AREN) provides Internet access and other network services to all public K-12 schools, public four-year colleges and universities, Alabama's community colleges, public libraries, and some state agencies. Legislative appropriations from the Alabama Education Trust Fund and federal E-rate Program funding provide a base level of service (currently up to 400M of Internet access for public schools, for example) at no cost to all public K12 schools, state community colleges and public colleges and universities.

Arkansas: The Arkansas Public School Computer Network (APSCN) was established in September 1992 for the purpose of implementing a statewide computer system linking all Arkansas public school systems. The network design provides a physical connection from every school district or school building to the state backbone where it is connected to the public Internet and the State Data Center.

California: In 2004 the K-12 High Speed Network (K12HSN) was established to provide the K-12 community with network connectivity, Internet services, teaching and learning application coordination, and videoconferencing coordination and support. K12HSN enables educators, students and staff across the state to have access to reliable high speed network that has the capacity to deliver high quality online resources to support teaching and learning and promote academic achievement. About 85% of California districts connect to K12HSN, the remaining 15% contracts for services independently.

Commonwealth of the Northern Mariana Islands: The CNMI Public School System's main focus is to provide students, teachers, and support staff with a reliable, robust, and integrated network to allow collaboration to improve student academic achievement through the use of technology in elementary and secondary schools. CNMI PSS also supports the rigorous evaluation of programs, particularly regarding the electronic assessment programs on student academic achievement and to ensure timely information on the results of such evaluations is widely accessible through electronic means.

Connecticut: Established in 2000, the Connecticut Education Network (CEN) delivers reliable, high-speed Internet access, data transport and value added services to its members throughout Connecticut at equitable rates.

Delaware: The Delaware Education Network (DEN) was established to consolidate resources, reduce costs and support, and to provide an equitable foundation for technology across all public schools in Delaware.

Georgia: Georgia's Department of Education operates the K-12 network that provides 100 Mbps of Internet bandwidth to each of its 2,300 public schools. The state has also invested over $70 million in competitive grants to districts to implement WAN, LAN and wireless access.

Guam: The GDOE network was created to connect Guam Department of Education Schools to the internet to enhance teaching and learning in the classroom. Connected all schools in the district to the internet to provide voice, data, email and resources for teachers and administrators.

Hawaii: Hawaii has a two ringed fiber optic network on Oahu and a 2 Gigabit star network to the islands of Kauai, Molokai, Lanai, Maui and Hawaii.

Iowa: The Iowa Communications Network (ICN) is committed to providing strong broadband solutions for the education, government, and healthcare sectors of Iowa. ICN provides high-speed flexible broadband Internet, data, video conferencing, and voice (phone) services to authorized users, under Code of Iowa, which includes: K-12 schools, higher education, hospitals and clinics, state and federal government, National Guard armories, and libraries.

Indiana: The Indiana K-12 network is a Department of Education led effort and provides a dedicated, education centric network serving Indiana's school corporations. In addition to E-rate funds, annual state connectivity grant funds are distributed to subsidize local school district funds. The K-12 network provides scalable, fiber-based connectivity to Indiana's schools as well as access to the Internet, Internet2 and a variety of other voice, data, video and shared services. Over the last decade, this state led effort has provided a 4,000% increase in total Internet access to Indiana's schools while simultaneously reducing the overall price per Mbps over 90%, and has enabled Indiana to lead the nation with its digital transformation and 1:1 initiatives.

Kentucky: The Kentucky Education Network (KEN) is an education centric network that provides fiber-based connectivity to every K-12 school district via a Private Cloud for access to the Internet, Internet2, Wi-Fi and several statewide Shared Services. Some of the other statewide Shared Services offered to all K-12 school districts include voice, data, video, electronic mail, and educational resources for students, teachers and administrators within a highly secure environment. KEN provides statewide anti-virus and DDoS protection as well. The KEN Private Cloud also seamlessly connects to other statewide networks including public library, public healthcare, workforce development resource centers, all public universities and community colleges, and some Kentucky private colleges and universities. The $18.5 million network is funded through the state grant program, E-rate, and direct state aid. The Kentucky Department of Education manages the high-speed network in coordination with Commonwealth Office of Technology and serves 719,297 students.

Maine: In 2009, Networkmaine was created by a memorandum of understanding between the University of Maine System, the Maine State Department of Education, the Maine State Library, and the Maine State Government Office of Information Technology. The primary focus of Networkmaine is the design and operation of MaineREN and services developed to support education, research, public service, government, and economic development.

Maryland: networkMaryland is the statewide high-speed network for public sector use. The network was created from an initiative to utilize shared fiber optic cable assets throughout the state to provide affordable, high-speed bandwidth to all areas of the state and to provide cost savings to the citizens. networkMaryland provides Internet and WAN connectivity for all public entities in the state to improve economy of scale by coordinating joint network build-outs and consolidation of services. The network is not intended to compete with commercial access to advanced network technology, but rather to foster fundamental efficiencies in government and education for the public good.

Michigan: Merit Network is a non-profit, member-owned organization governed by Michigan's public universities. Merit provides affordable network and IT services to education, government, and health care institutions, and other non-profit organizations.

Missouri: The Missouri Research and Education Network (MOREnet) provides Internet connectivity, access to Internet2, technical services, resources and support, as well as technical training to Missouri's public sector entities, including K-12 schools, colleges and universities, public libraries, health care, government and other affiliated organizations. The MOREnet consortium consists of more than 700 members across Missouri.

Nebraska: Network Nebraska is a statewide, multipurpose, high capacity, scalable telecommunications network serving state agencies, local government and education entities. Education entities include public school districts, private schools, Educational Service Units, community colleges, state colleges, the University of Nebraska, and nonprofit private colleges. Network Nebraska is completely voluntary for educational entities and is self-funded.

North Carolina: The North Carolina Research and Education Network (NCREN) connects all 115 K-12 public school districts throughout the state.

North Dakota: STAGEnet provides enterprise infrastructure through partnerships with all levels of government and education. STAGEnet seeks out partnerships with the service provider community in an effort to help deliver equal access throughout North Dakota.

Ohio: The Ohio K-12 Network is a joint effort between the Ohio Educational Computer Network (OECN) and the Ohio Department of Education (ODE). The Ohio K-12 Network was created in 1999-2000 to provide funding to assist Ohio school districts in connecting to the statewide, K-12 educational technology network. The Ohio K-12 Network offers services to all public school districts in the state, linking classrooms to each other and the Internet, while providing access to voice, data, video, electronic mail and other educational resources for students, teachers and administrators.

Pennsylvania: PAIUnet is a statewide, high-speed educational network that enables educators and students throughout Pennsylvania to create, communicate, collaborate and share valuable resources to enhance student learning. PAIUnet is an independent entity governed by the PAIUnet Council.

Rhode Island: OSHEAN, Rhode Island's state network provides affordable service for all schools and libraries in Rhode Island.

South Carolina: The South Carolina Information Network (SCINET) high-speed network provides access for all districts and public schools.

South Dakota: South Dakota provides high-speed broadband connectivity to districts directly and pays for this service directly.

Utah: The Utah Education Telehealth Network (UETN) is a statewide consortium serving public education, higher education, applied technology, libraries, government, and other public entities in three main categories: networking services, application services, and support services. UETN is managed by the state broadband network and the primary funding sources are E-rate and direct

state funding. UETN currently serves approximately 700,000 educators and students. 97% of LEAs use the network and 97% use it for Internet. Utah reports that the network is used for: account administration, CIPA content filtering, Internet access and access to administrative software servers, Internet 2, Network management, student management system, and telecommunication services

Washington: The K-20 Educational Network is a high-speed, high-capacity network that connects colleges, universities, K-12 school districts and libraries across the state. K-12 schools and educational organizations rely on the K-20 network to run hundreds of data-based applications that support school administration, distance learning and operations.

West Virginia: WVK12 services all PK-12 school districts include connecting all districts to the Internet and providing access to voice, data, video electronic mail and educational resources for students, teachers and administrators as well as the WV student information system. These services help achieve objectives identified by WVDE and the State Board of Education.

Wyoming: The increased capacity of the Wyoming Unified Network (WUN) enabled the state to improve its digital service offerings. The WUN provides measurable improved efficiency in the delivery of state agency programs while allowing each agency to meet their individual missions.

ENDNOTES

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