A Solution-Finding Report

Title*: Broadband networks to connect every school building in a state*
Date: September 26, 2013

This Solution-finding Report provides information requested by the Central Comprehensive Center for resources related to "information or best practices from other states that are planning, in the process of deployment, or have completed building a broadband network to connect every school building." The request was "interested primarily in states that have adopted or implemented Common Core State Standards regarding online interactive assessment testing and professional development. Specific areas of interest include appropriation or expenditures at the state, local/county, or district level; direct private investment; establishment of any non-profit, government agency, or cooperative to construct network; and how the network is operating today in terms of maintenance, recurring fees, expenses, and management."

While there were many resources for the topic in general, there was little information available concerning the request's more narrow interests. The National Conference of State Legislatures' list of current/active broadband task forces, commissions, or authorities in each of the 50 states (see below) might provide contact information for a deeper exploration of those specific topics.

Solution-finding Reports are intended to provide a quick response to the request for information; they are not intended to be a definitive literature survey or synthesis of the topic.

Bailey, J., Schneider, C., & Vander Ark, T. (2012). *Funding the shift to digital learning: Three strategies for funding sustainable high-access environments*. Tallahassee, FL: Foundation for Excellence in Education.

http://digitallearningnow.com/wp-content/uploads/2012/08/DLN-Smart-Series-Paper-1-Final.pdf

The Digital Learning Now! Smart Series is a collection of interactive papers designed provide specific guidance for policymakers and educational leaders regarding adoption of Common Core State Standards and the shift to personal digital learning – "implementing strategies at the intersection of digital learning and the Common Core State Standards." This is the first paper in the series, which asks leaders and policymakers to consider three strategies for investing in student access: state and district-provided funding, subsidized parent pay, and a mixed model, which includes bring your device (BYOD) policies.

Bailey, J., Carter, S. C., Schneider, C., & Vander Ark, T. (2012). *Data Backpacks: Portable Records & learning profiles*. Tallahassee, FL: Foundation for Excellence in Education.

http://digitallearningnow.com/wp-content/uploads/2012/10/DLN-Smart-Series-Databack-Final1.pdf

This is the second paper in the Digital Learning Now! Smart Series. It asks leaders and policymakers to consider two primary solutions to ensure that every student has a bright start: Data Backpack and Learner Profile. Data Backpack requires an expanded set of student information to travel with a student so that teachers can personalize learning starting day one; creates an expanded and common electronic student record; and follows students through every transition, course-to-course, classroom-to-classroom, school-to-school. The Backpack moves beyond traditional demographic and achievement information to include a standards-based gradebook and portfolio of personal bests. The Learner Profile adds to the Data Backpack a comprehensive student profile that will drive recommendations to boost learning and persistence; provides clues to unlock learner needs, preferences, and potential; and ensures a method for privacy management. The Profile includes expanded achievement data, a motivational profile, narrative descriptions of student assets and challenges, student goal statements, and college/career readiness indicators that will draw from both teacher-entered and computer-generated entries to build a cumulative profile for each student.

Bailey, J., Schneider, C., & Vander Ark, T. (2012). *Getting ready for online assessments*. Tallahassee, FL: Foundation for Excellence in Education.

http://www.digitallearningnow.com/wp-content/uploads/2013/01/Getting-Ready-for-Online-Asst.-Updated-Jan-2013.pdf

This is the third paper in the Digital Learning Now! Smart Series. It states that, at the beginning of the 2014–2015 school year, states and districts that have adopted the CCSS will begin the challenging process of administering new assessments. These new K–12 assessments – led by states working with the Partnership for Assessment of Readiness for College and Career (PARCC) and the Smarter Balanced Assessment Consortium (Smarter Balanced) – are designed to provide a common assessment in English and math, but preparing for them will require an unprecedented collaborative effort to ensure that schools have the necessary technological infrastructure to administer the assessments. PARCC and Smarter Balanced recently released minimum technology requirements to guide states and districts in assessing and closing the gaps between current technology capabilities and those required for students to participate in the new assessment programs. This report begins by framing the shift to online assessments within the larger framework of the transition to personalized learning, and concludes with recommendations to states, districts, and the state testing consortia.

Bathon, J. (2013). For districts, online testing has legal liabilities. *T.H.E. Journal*, July 2013 digital edition.

http://online.qmags.com/TJL0713/default.aspx?sessionID=D06C511FBEEBBCE9E0A8ED202&cid=2409794&eid=18297&pg=17&mode=1#pg17&mode1

According to this July 2013 article, "From bandwidth issues to playing nice with assistive technologies, there's a lot that can go wrong in the world of high-stakes online testing. Our new legal columnist shares why it's not just states and testing companies with a lot on the line."

CTC Technology & Energy. (2013). *Building the broadband future: The communications needs of Kansas schools, libraries, and hospitals*. Kensington, MD: Author.

http://www.ksde.org/LinkClick.aspx?fileticket=PYrZJbTCb5Q%3D&tabid=2745&mid=6353

This report analyzes the broadband needs of Kansas schools, libraries, and hospitals, pursuant to the direction of Kansas House Bill 2390. It offers survey data and analysis to assess the current needs of schools, libraries, and hospitals across Kansas and to identify ways in which the state may be able to support improvements in those services to better meet the needs of its community anchor institutions in the education, health care, and library sectors.

Davidson, C. M., & Santorelli, M. J. (2010). *The impact of broadband on education*. Washington, DC: U.S. Chamber of Commerce.

http://www.broadbandexpanded.com/policymakerfiles/education/BroadbandandEducation.pdf

This study, commissioned by the concerns the U.S. Chamber of Commerce, focuses on the ability of broadband to affect fundamental change in education, the many positive impacts that this technology is currently having in a variety of educational settings, the barriers to further adoption and utilization, and recommendations for policymakers as they develop forward-looking educational policies.

Davis, M. R. (2012). Are you tech ready for the Common Core? *Education Week, 6*(1), 21–23.

http://www.edweek.org/dd/articles/2012/10/17/01readiness.h06.html

According to this article, school districts are raising concerns about their ability to be technologically ready to give Common Core State Standards (CCSS) assessments to students online by the 2014–2015 deadline. "Administrators say they remain uncertain about the types of devices to buy, the bandwidth they need, and the funding available for technology improvements." An initial round of data collection launched to determine technology gaps for schools preparing for the CCSS online assessments has so far had limited participation from districts and many states. And state and national education groups are detecting a rising level of anxiety among school and district leaders regarding the technology they feel is necessary to implement online testing by the deadline.

Davis, M. R. (2013). Getting tech ready for Common Core testing. *Education Week*, March 7, 2013 webinar.

http://www.edweek.org/media/2013-3-7techreadycommoncore.pdf

This is the pdf of a PowerPoint presentation of an *Education Week* webinar, with the full webinar available at www.edweek.org/go/webinar

Demski, J. (2013). Preparing teachers for the new standards. *T.H.E. Journal*, July 2013 digital edition.

http://online.qmags.com/TJL0713/default.aspx?cid=2361963&eid=18297&pg=12&mode=1#pg12&mode1

According to this July 2013 article, "Educators uncertain about implementing the Common Core State Standards and assessments can learn from two districts that are ahead of the game."

Federal Communications Commission. (2010). *National Broadband Plan – Connecting America: Chapter 11: Education*. Washington, DC: Author.

http://www.broadband.gov/plan/11-education/

This webpage concerns the National Broadband Plan's recommendations for education, including a section on modernizing the educational broadband infrastructure.

Fletcher, G. H. (2013). How tech directors must really prepare for Common Core. *T.H.E. Journal*, July 2013 digital edition.

http://thejournal.com/articles/2013/08/07/how-tech-directors-must-really-prepare.aspx

According to this July 2013 article, "School districts and states are (finally) paying attention to their life-critical mission: what it will take to be technology ready to administer the Common Core assessments being developed by the Partnership for Assessment of Readiness for College and Careers and Smarter Balanced Assessment Consortium, which will be delivered online in the 2014–15 school year. I fear, however, that tech directors right now are focused only on the 'bugs' in the trees that typically supply their lifeblood--especially the devices and networks needed to get ready for the new assessments—and may not be looking at other vital aspects of implementing the new standards and their evaluation."

Fox, C., Waters, J., Fletcher, G., & Levin, D. (2012). *The broadband imperative: Recommendations to address K–12 education infrastructure needs*. Washington, DC: State Educational Technology Directors Association (SETDA).

http://www.setda.org/c/document_library/get_file?folderId=353&name=DLFE-1515.pdf

In this report, the State Educational Technology Directors Association (SETDA) offers four recommendations for policymakers and school leaders committed to charting a course for the future of K–12 education enabled by broadband.

Harrington, J. D. (2013). *Counting the cost: Estimating what it will take to get ConnectED.*

http://www.fundsforlearning.com/blog/2013/06/counting-the-cost-estimating-what-it-will-take-to-get-connected

This article breaks down the estimated cost of implementing ConnectED. This article comes from Funds For Learning, a professional firm specializing in the federal E-rate funding program. Their stated mission is to provide high-quality consulting and support services for the needs of E-rate program participants, helping them prepare and submit paperwork; interact with program administrators on their behalf; and understand, effectively utilize, and maintain compliance with E-rate rules and regulations.

Hermeling, A. D. (2013). *Network infrastructure requirements for Common Core Assessments – Will your district pass the test? District Administration, 49*(3), 65–69.

http://www.districtadministration.com/article/network-infrastructure-requirements-common-core-assessments

According to this article, "The Partnership for the Assessment of College and Career Readiness (PARCC) and the Smarter Balanced Assessment Consortium (SMARTER Balanced) are developing the next generation of assessment tools in line with Common Core. And both consortia are developing online assessments that will replace traditional paper tests. As Bailey Mitchell, chief technology and information officer at the Forsyth County (Ga.) Schools, states, 'the new online assessments are going to require a lot of computer hardware and connectivity to enable the provision of Common Core.'"

Kansas Department of Commerce. (2013). *Kansas statewide broadband initiative*. Topeka, KS: Author.

http://www.kansascommerce.com/index.aspx?NID=360

According to this website, "High speed internet is an enabler for a prosperous community. While Kansas ranks seventh in residential internet usage, challenges in coverage, speed and internet adoption still exist. In order to understand and to help address these challenges, the Kansas Department of Commerce is partnering with Kansas communities, government officials, the private sector and the National Telecommunications and Information Administration to analyze the changing nature of our broadband footprint and to encourage Kansans to use the internet to help grow our economy. This website is the connection point for information and discussions about broadband in the state of Kansas."

Kober, N., & Rentner, D. S. (2012). *Year Two of implementing the Common Core State Standards: States' progress and challenges*. Washington, DC: Center on Education Policy.

http://www.cep-dc.org/displayDocument.cfm?DocumentID=391

This webpage provide a link to the full report *Year Two of implementing the Common Core State Standards: States' progress and challenges*, and states, "This report, based on a fall 2011 survey of 35 Common Core State Standards-adopting states (including the District of Columbia), examines states' progress in transitioning the new standards. Most of the states in the survey do not expect to fully implement the standards until 2014–15 or later. In addition, a majority of the responding states caution that having adequate resources is a major challenge to full implementation of the CCSS."

Maryland Department of Information Technology. (2010). *One Maryland Broadband Plan Executive Summary*. Baltimore, MD: Author.

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCkQFjAA&url=http%3A%2F%2Fwww.howardcountymd.gov%2FWorkArea%2Flinkit.aspx%3FLinkIdentifier%3Did%26ItemID%3D6442455208&ei=kMIwUsunAqnl4AOHvYGQAg&usg=AFQjCNFy8trtpjS_hu7Gm8BI0yQTmVYehA&bvm=bv.52109249,d.dmg

This is the executive summary for a grant proposal, later awarded, for the building of the One Maryland Broadband Network (OMBN). See separate entry below for website.

Maryland Department of Information Technology. (2013). *One Maryland Broadband Network website*. Baltimore, MD: Author.

http://doit.maryland.gov/OMBN/Pages/ombnHome.aspx

This is the website of the One Maryland Broadband Network, a nearly completed fiber optic broadband network bringing 1,294 new miles of high-count middle-mile fiber optics to every Maryland county. This comprehensive community infrastructure will directly connect and serve 1,006 community anchors and other points of interest including 458 schools (K–12), 262 public safety facilities, 189 government facilities, 44 libraries, 21 community colleges, and other anchor and community support organizations. In April 2013 the project enter its final project quarter. Of the planned 1,340 route miles, 100% of the miles have been awarded, engineered, and permitted by various permitting agencies. For the planned aerial route, 307 miles of the planned 318 miles (97%) have been installed with fiber optics. Of the total 1,022 planned underground miles, 971 miles (95%) of fiber optics have been installed.

National Conference of State Legislatures. (2012). *State broadband task forces, commissions or authorities and other broadband resources*. Washington, DC: Author.

http://www.ncsl.org/issues-research/telecom/state-broadband-task-forces-commissions.aspx

According to this website, "All 50 states have created either a task force, commission, or broadband project. Some states have created programs to identify underserved and unserved areas through online public mapping websites, while others have established task forces or commissions to provide input on the development of a statewide broadband framework and promote public-private sector participation. At least 14 states have enacted these initiatives and authorities through legislation." It then lists all the current/active broadband task forces, commissions, or authorities.

New Mexico Department of Information Technology. (2013). *Education*. Santa Fe, NM: Author.

http://www.doit.state.nm.us/broadband/education.shtml

This website describes the New Mexico Department of Information Technology's issues and objectives in the area of education, including the work of the New Mexico Broadband Working Group. The group's Education sector has identified seven major goals for the strategic plan: ensure quality and reliability of current bandwidth for education; support underserved students and provide equal opportunity for all students; support digital learning; expand distance education; provide broadband for virtual-classroom, online learning; develop infrastructure so that students can take tests online, long-term; and support collaboration among education teams.

Partnership for the Assessment of Readiness for College and Careers (PARCC). *Assessment administration guidance*. Washington, DC: Author.

http://www.parcconline.org/assessment-administration-guidance

This webpage is designed to provide the most up-to-date guidance for schools and districts about the administration of the PARCC assessments. It includes a link to the *PARCC Assessment Administration Capacity Planning Tool*. This tool, an Excel Spreadsheet (.xlsx format), is designed to assist district and school leaders in identifying gaps in assessment administration capacity and exploring possible scenarios for addressing those gaps. Printable PDF versions are provided for review purposes, but calculations need to be performed in the Excel Spreadsheet version.

Partnership for the Assessment of Readiness for College and Careers (PARCC). *PARCC assessment administration capacity planning tool user's guide*. Washington, DC: Author.

http://www.parcconline.org/sites/parcc/files/UserGuideforAssessmentAdministrationCapacity%20PlanningTool_FINAL.pdf

This document provides guidance on using the abovementioned *PARCC Assessment Administration Capacity Planning Tool*. The document states, "While this planning tool focuses on minimum needs for test administration in school year 2014-2015, PARCC encourages schools and districts to consider their computer device needs for assessment as only one factor in an overall strategy for educational technology that supports high-quality student instruction, teacher professional development, and school community communications, as well as next generation assessment."

Partnership for the Assessment of Readiness for College and Careers (PARCC). *Technology guidelines for PARCC assessments – Version 2.1 – February 2013 update*. Washington, DC: Author.

http://www.parcconline.org/sites/parcc/files/PARCCTechnologyGuidelines2dot1_Feb2013Update.pdf

These are PARCC"S technology guidelines to inform schools and districts as they make technology decisions to best meet the instructional needs of their students. The information in this document is intended to answer questions about whether existing computer inventories and new instructional hardware that schools may purchase as they implement the Common Core States Standards will also meet PARCC's 2014–2015 minimum requirements for computer-based assessment administration. This document updates, and therefore supersedes, the Version 2.0 document previously released in December 2012.

Quillen, I. (2012). Bandwidth demands rise as schools move to Common Core. *Education Week*, *6*(1), 19–20.

http://www.edweek.org/dd/articles/2012/10/17/01bandwidth.h06.html

This article claims that – while experts, advocates, and government agencies appear to be placing more than enough attention on schools' growing demand for better Internet connectivity, and the State Educational Technology Directors Association has signaled that schools' demand for connectivity was something that would increase exponentially rather than linearly – "with the Common Core State Standards initiative pushing schools in 46 states and the District of Columbia to administer 'next generation' assessments almost exclusively online—with an accompanying commitment to more digital resources—it's possible schools' demand for bandwidth could exceed even those projections."

Reimer, C. (2011). *100 districts join forces in WNY to improve education technology*. Latham, NY: New York State School Boards Association.

http://www.nyssba.org/news/2011/05/20/on-board-online-may-23-2011/100-districts-join-forces-in-wny-to-improve-education-technology/

This article states that 100 school districts in western New York have worked together for nearly seven years to take advantage of 21st Century teaching technology. "Thanks to a regional broadband network and a federally funded Enhancing Education Through Technology (EETT) grant, students in western New York are collaborating on wikis, videoconferencing with guest speakers and taking courses streamed from 'the cloud.' The network, a behemoth that uses a 'leave no district behind' approach, was created by the Western New York Regional Information Center (WNYRIC), which serves four BOCES regions between Buffalo and Rochester."

Schaffhauser, D. (2013). Getting your school tech ready for Common Core Assessments. *T.H.E. Journal*, July 2013 digital edition.

http://thejournal.com/articles/2013/07/10/getting-your-school-tech-ready-for-common-core-assessments_0.aspx

According to this July 2013 article, "Schools have about 15 months to prepare for the online assessments that reflect the learning goals of the Common Core State Standards. Some districts already know what the transition will be like. Here's what they've learned about preparing." At this site, you can register for free to read the entirety of the July 2013 issue, which is a "Special Issue on Common Core" and includes such articles as: "Is your school tech ready for Common Core?" "Preparing teachers for the new standards," "For districts, online testing has legal liabilities," and "Tech Directors' Role in the Common Core."

School Superintendents Association (AASA), National Association of Elementary School Principals (NAESP), National Association of Secondary School Principals (NASSP), & National School Boards Association (NSBA). (2013). *School leadership groups urge "adequate time" to implement Common Core Standards*. Washington, DC: Author.

http://www.nsba.org/Newsroom/Press-Releases/2013/Joint-Statement-on-Common-Core-State-Standards-May-2013.pdf

In a joint statement, the School Superintendents Association (AASA), the National Association of Elementary School Principals (NAESP), the National Association of Secondary School Principals (NASSP), & the National School Boards Association (NSBA) claimed that states and school districts need adequate time, professional development, and the technical infrastructure to properly transition to the Common Core State Standards (CCSS) and the assessment requirements. The associations claim, "The momentum toward online assessments and the pressure to meet another arbitrary target (implementation in the 2014–2015 school year) should not get ahead of the very real obstacles states and districts face in aligning the curriculum with the new standards and implementing the tests."

Slack, M. (2013). *What is ConnectED?* Washington, DC: The White House.

http://www.whitehouse.gov/blog/2013/06/06/what-connected

This White House blog post explains what ConnectED is – an initiative, announced on June 6, 2013, designed to connect 99% of America's students to the Internet through high-speed broadband and high-speed wireless within 5 years – and how it will work.

Smarter Balanced Assessment Consortium. (2013). *The Smarter Balanced technology strategy framework and system requirements specifications*. Princeton, NJ: Author.

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2011/12/Technology-Strategy-Framework_2-6-13.pdf

This report presents a framework for collective technology planning among the Smarter Balanced Assessment Consortium member states. The plan emphasizes the critical need for technology to support student learning with the Smarter Balanced Assessment System minimum requirements as context and milestones. The minimum requirements are based on expert judgments regarding instructional technology, district interviews, input and feedback from various national experts, specific guidance and direction from the Smarter Balanced executive team and the Technology Approach Work Group, and an independent review of data collected from the Smarter Balanced Technology Readiness Tool.

Smarter Balanced Assessment Consortium. (2013). *Smarter Balanced bandwidth checker*. Princeton, NJ: Author.

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/11/Bandwidth-Check-Instructions.pdf

These are the instructions for the Smarter Balance bandwidth checker, hosted at https://air.tds.airast.org/student/Pages/LoginShell.aspx?section=sectionDiagnostics&c=SBAC_PT since December 2012. Users are able to go to the bandwidth checker, choose a test (mathematics or English language arts), and then enter the number of students who will be testing at one time. After the user clicks [Run Network Diagnostics Tests], the bandwidth checker provides users with information on whether the requested number of students should be able to test, given the current load on the school's system.

Vermont FiberConnect. (2013). *Sovernet to build fiber-optic network in Vermont*. Bellows Falls, VT: Author.

http://www.vermontfiberconnect.com/

This website states, "Vermont FiberConnect is a public-private partnership and project between the Vermont Telecommunications Authority (VTA) and Sovernet Communications. The project will receive a $33.4 million grant from the National Telecommunications and Information Administration's (NTIA) Broadband Technology Opportunities Program. This award represents significant support and partnership from the following: State of Vermont Office of the CIO, Department of Education and supervisory unions, Vermont State Colleges, Vermont Law School, Department of Public Safety, Department of Libraries, and the New England Telehealth Consortium. Additionally, the Bill & Melinda Gates Foundation will contribute a grant award of $400,000 to this project to build public library connections, as well as $150,000 to support on-going broadband service in libraries."

Vermont Telephone Company. (2011). *Vermont Broadband Enhanced Learning Link.* Springfield, VT: Author.

http://www.vermontel.com/vermont-broadband-enhanced-learning-link

This website states, "The Vermont Broadband Enhanced Learning Link (VT BELL) network is a Gigabit Ethernet to 10 Gigabit Ethernet fiber network designed to provide service to community anchor institutions in Vermont, New Hampshire, and New York. VT BELL offers a mixture of a GigE wide area network, Internet I & II, and off-site data storage to K–12 schools, medical centers, institutions of higher education, public safety entities and other critical facilities, including last mile providers." In an article entitled "What high-speed broadband access means for Vermont schools" (http://transformvermont.wordpress.com/2010/10/13/what-high-speed-broadband-access-means-for-vermont-schools/), "Vermont has two opportunities for expanding our broadband capacities. These opportunities, from the Vermont Fiber Connect project and the Vermont Broadband Enhanced Learning Link, represent viable opportunities for schools to work towards realizing robust broadband access in the future. The Vermont Department of Education is working diligently to move schools towards connectivity on these and future projects across the state."

The White House. (2013). *ConnectED: President Obama's plan for connecting all schools to the Digital Age.* Washington, DC: The White House.

http://www.whitehouse.gov/sites/default/files/docs/connected_fact_sheet.pdf

This report explains ConnectED, and details its three main areas of focus: connecting 99% of America's students to the Digital Age through next-generation broadband and high-speed wireless in their schools and libraries within 5 years; investing in improving the skills of teachers to help them keep pace with changing technological and professional demands; and building on private-sector innovation, allowing teachers and students to take full advantage of feature-rich educational devices that are increasingly price-competitive with basic textbooks, and high-quality educational software (including applications) providing content aligned with college- and career-ready standards being adopted and implemented by states across the country.