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June 16, 2014

**MEMORANDUM**

**TO:** Legislative Education Study Committee

**FR:** Travis Dulany

**RE: STAFF REPORT: BROADBAND INITIATIVE: IDENTIFYING CONNECTIVITY**

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**Introduction**

The topic of broadband Internet connectivity in public schools has been an area of interest for the Legislative Education Study Committee (LESC) over a number of interims, particularly since the committee was made aware of computer-based assessments replacing the pencil-and-paper version of New Mexico's Standards-based Assessment (see "**Background**," below).

As a result, during the 2014 regular legislative session, LESL-endorsed legislation was enacted<sup>1</sup> to allow the Public School Capital Outlay Council (PSCOC) to expend up to \$10.0 million annually from FY 14 through FY 19 for an education technology infrastructure deficiency correction initiative (SB 159aaa, *Education Technology Infrastructure Funding*).

Among its provisions, the legislation:

- amended the *Public School Capital Outlay Act* to define "education technology infrastructure" as "the physical hardware used to interconnect education technology

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<sup>1</sup> Laws 2014, Chapter 28

equipment for school districts and school buildings necessary to support broadband connectivity as determined by the [PSCOC]”;

- establish an education technology infrastructure deficiency corrections initiative; and
- provide for allocations through the initiative in FY 14 through FY 19 under certain conditions.

In order to keep the committee apprised of the technical requirements of the new standards-based assessment and the implementation of SB 159aaa, this staff report provides information on the following:

- PARCC technology requirements;
- the Broadband Deficiency Correction Program; and
- background.

## PARCC TECHNOLOGY REQUIREMENTS

Although technology is also used for curriculum delivery and administrative functions in public schools, the use of technology for assessment purposes has received increasing attention in recent years. As a member of the Partnership for Assessment of Readiness for College and Careers (PARCC) testing consortium, New Mexico is scheduled to replace the math and English/language arts sections of the New Mexico Standards-based Assessment with the PARCC exam in school year 2014-2015.

The testing consortium (PARCC) periodically publishes technical guidelines to help states and districts prepare for the deployment of the assessment, with the latest version published in May 2014.<sup>2</sup> Among those technical guidelines, PARCC specifies three levels of external connection to the Internet:

1. Minimum Bandwidth -With Caching (5 Kilobytes per second (Kbps)/student): this allows schools to use “proctor caching,” whereby a school or district downloads the test to a local network and distributes the test locally (rather than utilizing a live Internet connection to a network outside the school or district);
2. Minimum Bandwidth-Without Caching (50 Kbps/student); and
3. Recommended Bandwidth for Assessment + Instruction (100 Kbps/student or faster).

According to the Public Education Department (PED), there are 33 New Mexico schools that do not meet the minimum speed requirements for the Minimum Bandwidth – With Caching recommendation of 5 Kbps/student. A list of all results from the SpeedTest tool (see “**Background**,” below), which was a survey of Internet speeds in New Mexico public schools conducted in 2013, is available on the PED website.<sup>3</sup>

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<sup>2</sup> <http://parconline.org/technology>

<sup>3</sup> <http://webapp2.ped.state.nm.us/SchoolData/TechFootPrint.aspx>

## BROADBAND DEFICIENCIES CORRECTION PROGRAM

As a result of SB 159aaa, the Broadband Deficiencies Correction Program (BDCP) was authorized in May 2014, with a related work group meeting on May 2, 2014. The membership of the work group comprises representatives from:

- LESC staff;
- Legislative Finance Committee staff;
- PED;
- the Department of Information Technology (DoIT);
- the Public School Facilities Authority (PSFA);
- the Department of Finance and Administration; and
- the Public School Capital Outlay Oversight Taskforce.

During the May 2 meeting, the PSFA director informed the work group that the PSCOC approved two motions regarding the BDCP, specifically that the program may participate in:

1. corrections that will provide per student/staff broadband access speed of no less than 100 Kilobytes Kbps and no more than 1,000 Kbps except local area network distribution speeds that may be higher; and
2. the acquisition and installation of physical hardware and associated software for corrections that include network infrastructure related equipment both on and off school sites, such as servers, switches, wire, fiber, transmitters, receivers, and similar equipment; this excludes any and all ongoing support services, end-user devices, hardware, and software.

A smaller, more technical subset of the work group has met three additional times, on May 9, May 22, and June 11, to discuss technical matters. Among the items addressed by this group so far, the following topics have received significant attention:

- **Measurement:** as noted by PSFA staff, the first step in the BDCP initiative is to measure. This will involve a number of methods, including a Simple Network Management Protocol bandwidth monitor (described as a “sniffer tool”) and additional broadband speed tests. These additional tools are intended to provide more detailed data than the SpeedTest that was deployed in 2013. More specifically, these tools will help to understand:
  - the degree to which the schools involved in the tests are receiving network capacity they have been promised;
  - the degree to which the Internet access of a user at the school is being constrained by maximum speeds of the connections; and
  - how bandwidth demands and connection performance vary by time of day and day of the week.
- **Contractors versus volunteers:** while the tools discussed above allow information technology (IT) staff to diagnose some broadband deficiency issues remotely, the work group has also discussed the need for trained IT professionals to visit schools that have significant connection issues. In discussing this need, the work group has weighed

whether to (1) utilize IT professionals whose districts are willing to volunteer the staff time, or (2) hire contractors for the on-site work. Some work group participants have commented that the use of volunteers allows for the professional development of school district IT staff, while others noted that hiring contractors for this work allows for specific deliverables and expectations. The most recent discussions on this matter resulted in support for utilizing a mixture of both volunteers and contractors.

- **Coordination of efforts and resources:** in discussing methods to measure and address broadband deficiency in public schools, several of the work group members have brought forward resources that can help the group accomplish its goals, such as existing pricing agreements, which allow the group to hire contractors and purchase products more easily; existing hardware that can be utilized for certain schools, such as State Data Microwave towers that could provide Internet access to some schools; and state personnel with expertise located throughout the state. Additional funding sources have also been discussed, including \$5.0 million from unexpended proceeds of taxable supplemental severance tax bonds allocated to PED “for educational technology infrastructure at public schools that have a minimum network speed of less than 5 Kbps/student to ensure that these schools are able to administer computer-based assessments by the 2014-2015 school year.”<sup>4</sup> Another potential source of funding discussed by the group is the Federal Communications Commission’s (FCC) Connected America Fund, an effort that is again gaining momentum after a US Court of Appeals for the Tenth Circuit ruled in the FCC’s favor last month (see **Attachment**).

## **BACKGROUND**

### ***2012 Testimony***

During the 2012 interim, LESC staff testimony provided background on two computer-based assessments being deployed in 2014: assessments associated with the Common Core State Standards (CCSS) and the new General Educational Development (GED) test. Regarding the first, staff testified that PED will utilize a test developed by PARCC, which is scheduled to replace the New Mexico Standards-based Assessment in school year 2014-2015. Regarding the second, when the GED test is scheduled to undergo its fifth revision in 2014, it will be available only in a computer-based format.

The Chief Information Officer and Director of Business Systems, Albuquerque Public Schools (APS), testified that the PARCC assessment is based on newer technology than the school districts were using in 2012. While the specifications were being rolled out in phases, the first phase already showed that more than half of the APS computers did not meet the PARCC minimum technical standards. This testimony also noted that APS intended to roll out an information technology improvement plan in two phases, the second of which was pending additional PARCC specifications. APS testimony furthermore discussed the role of technology in the public school setting, likening it to a three-legged stool – one leg being assessments, the second leg being content and curriculum delivery for multimedia learning, and the third leg represents administrative functions. As a result, the APS official concluded that, while

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<sup>4</sup> See CS/HB 55 (Laws 2014, Chapter 66).

technology is important for assessment purposes, schools need adequate hardware and broadband infrastructure to support other components in the learning environment.

Testimony by CenturyLink provided an overview of the company and its plan to invest \$60.0 million in New Mexico over the next several years, in addition to the \$400 million that the company invested in the last five years. This testimony also noted that the company had added fiber Internet connections to 100,000 customers in the last year; that it has ensured that high-speed Internet is available to at least 75 percent of households in rural New Mexico; and that CenturyLink planned to deploy high-speed Internet to areas without service via the Connect America Fund.

The Senior Program Manager, GED Testing Service, testified that the new computer-based test will require test-takers to have some familiarity with technology. As rationale for this requirement, the testimony noted that current job postings and applications are mostly online and that technological advances will account for many of the career opportunities to be created in the next decade. In addition, this testimony continued, computer-based tests have the benefits of convenience, enhanced test security, a flexible testing experience, and instant score reports. Additional testimony revealed that, although a live Internet connection is not required for the GED test at the time of testing, a connection will be required in order for the test to be scored.

Testimony by the Chief Information Officer, PSFA, described the work of the Information Technology Advisory Group (ITAG), which had recently focused on three particular areas:

- technology plans and their relationship to facilities master plans;
- technology adequacy standards; and
- broadband needs that are required to support the educational program delivery.

This testimony also addressed the information technology challenges that public schools face, among them:

- the ability to meet technology requirements for the CCSS;
- the lack of a clear understanding of all technology requirements and needs; and
- the absence of standards or guidelines to define adequate broadband service to support education programs and facilities.

A representative of the E-Rate Division of the International Computer Corporation testified that the E-Rate program is a tax on each phone and Internet connection, the revenue of which is provided for schools and libraries to fund Internet and phone connections through a reimbursement process. Through this program, libraries and schools in New Mexico collected \$36.0 million in 2012 and \$31.0 million in 2011.

Finally, the Chief Information Officer, Information Technology Division, PED, testified that the department has been working with ITAG and had recently completed a technology survey of school districts.

## *2013 Testimony*

During the August 2013 meeting, LESC staff and representatives of several participating entities presented information on broadband connectivity needs in preparation for the PARCC exam. LESC staff provided an overview of:

- the state's PARCC readiness based on published minimum technology requirements;
- prior testimony; and
- comprehensive technology plans for public schools, including recent legislative efforts.

DoIT identified the goals of its Broadband Program for New Mexico:

- provide broadband data analysis and maps;
- develop and launch a Web map through which a user can enter an address to see available broadband service providers and technologies;
- make available a speed-testing utility to validate network performance;
- compile and serve a database of community anchor institutions to support broadband adoption; and
- develop and provide training videos and toolkits.

DoIT testimony also described the components of a \$4.8 million grant from the National Telecommunications & Information Administration that the department received in January 2010. The department then reviewed the recommendations from the statewide Broadband Summit, held in Albuquerque in early August of 2013, among them:

- increasing access to digital learning resources;
- coordinating broadband resources;
- legislating open access; and
- providing educational technology training.

PSFA staff reviewed ITAG's role in developing broadband availability, noting elements that must be addressed in developing technology policies and adequacy standards, while emphasizing that high speed broadband access is as vital to offsite school infrastructure as water, electricity, and roads.

PED explained its role in supporting technology readiness, primarily in the gathering of data through two projects – the TechReadiness and SpeedTest tools – that measure the readiness of schools for the PARCC test. Schools were required to participate in these two projects in order to apply for an allocation from a \$5.2 million legislative appropriation to PED earmarked for technology in schools in FY 14.

Testimony by the New Mexico Exchange Carrier Group (NMECG) noted that broadband capabilities are available in most public school districts, half of which are served by NMECG companies. Although 95 percent of school districts currently have Internet fiber availability, right-of-way access and construction costs are still significant challenges.

Finally, Education Networks of America (ENA) testified about the contractor's managed service approach, which includes constant network monitoring and customer technical assistance, E-Rate assistance, managed data circuit delivery, and required equipment and maintenance.

In December 2013, LESC staff provided an overview of *Broadband Assessment and Recommendations: Education, Healthcare, and Economic Development*, a report published by DoIT in November. The report notes that, with the exception of APS and Las Cruces Public Schools, most school districts are operating with the amount of bandwidth they believe they can afford. It further indicates that often this amount is enough to handle current needs, but insufficient to handle the demands of the PARCC exam or the emerging digital learning environment. The report further states that the unmet broadband needs are primarily in rural schools, and the needs remain unmet due to the cost to provide service.



BUSINESS DAY

# Court Approves F.C.C. Plan to Subsidize Rural Broadband Service

By EDWARD WYATT MAY 23, 2014

WASHINGTON — A federal appeals court on Friday upheld the Federal Communications Commission’s effort to convert its \$4.5 billion program that pays for telephone service in rural parts of the country into one that subsidizes high-speed Internet service in high-cost areas.

The program, known as Connect America, is the largest portion of the \$8 billion Universal Service Fund, which pays for a variety of efforts to provide telecommunications links to schools, low-income families and others.

In October 2011, the F.C.C. approved an overhaul of the fund. Soon after its approval, however, the effort was challenged in court by dozens of phone companies. Many were small carriers that provided service in rural areas and that stood to lose annual subsidies because of the changes.

The United States Court of Appeals for the Tenth Circuit, in Denver, rejected the phone companies’ arguments because their claims were “either unpersuasive or barred from judicial review.”

One of the carriers’ main objections concerned the F.C.C.’s simultaneous overhaul of its intercarrier compensation system, in which one carrier pays another carrier to originate and move calls. Many calls that involve different carriers on each end, and therefore require compensation, are made in low-population areas. Rural carriers have feared that they could lose money from the changes.

F.C.C. officials expressed satisfaction at the decision. “Congress has directed the commission to ensure that all Americans receive the benefit of 21st-century communications,” Kim Hart, an F.C.C. spokeswoman, said in a statement. “With

**today's across-the-board affirmance of our landmark 2011 reforms, the commission has tools in hand to accomplish that critical goal.”**

**Mignon Clyburn, the longest-serving current commissioner at the agency, called voting for the overhaul of the fund “one of my proudest moments at the F.C.C.”**

**“The reforms are changing the lives of millions of Americans who will receive broadband for the first time,” she said.**

**In April, the F.C.C. approved a second phase of overhaul for the plan that would expand the money available for rural broadband.**

**Consumers pay into the fund through fees tacked onto their monthly home telephone and cellular telephone bills. The fee has been criticized by members of Congress as the assessment has increased, to about 16.5 percent currently from 7 percent in 2001, and as investigators have uncovered fraud in other parts of the program, including the \$2 billion Lifeline program, which provides telephone connections for low-income families.**

A version of this article appears in print on May 24, 2014, on page B2 of the New York edition with the headline: Appeals Court Rules for F.C.C. on Broadband Fund.