



**pennsylvania**  
DEPARTMENT OF EDUCATION

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## Testimony

# Communications and Technology, and Consumer Protection and Professional Licensure

## Committees

E-Fund Program

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Department of Education

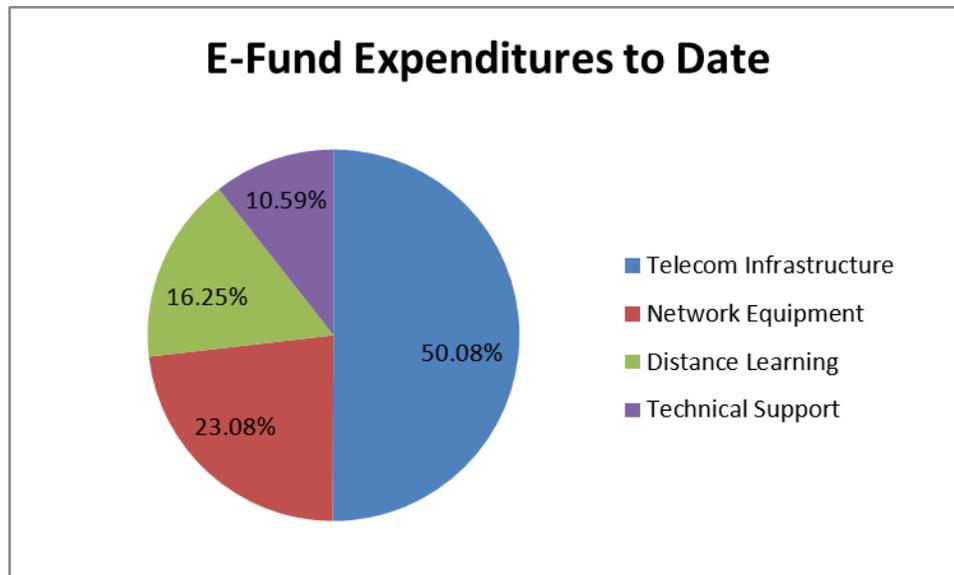
November 15, 2011

Good morning, I am Amy Morton, executive deputy secretary for the Pennsylvania Department of Education. I would like to thank the committee chairs Senators Folmer and Farnese, Senators Tomlinson and Boscola, and members of the Communications and Technology, and Consumer Protection and Professional Licensure committees for this opportunity to provide an overview of the Education Technology (E-Fund) Program.

Established by Act 183 of 2004, the six-year Education Technology Program (herein referred to as the E-Fund) was financed by non-rural telecommunications companies through increased revenues due to network modernization.

Administered by the Pennsylvania Department of Education from 2005 through 2011, the E-Fund provided close to \$10 million in private sector support annually (\$60 million in total) through competitively awarded grants to eligible local education agencies (LEAs) in the Commonwealth for the following purposes:

- The purchase or lease of telecommunications services, infrastructure, or facilities to establish and support broadband networks between, among and within school entities (50 percent of E-Fund expenditures);
- The purchase or lease of premises telecommunications network equipment and end-user equipment to enable the effective use of broadband networks between, among and within school entities (23 percent );
- Distance learning initiatives that use the aforementioned broadband networks (16 percent); and
- Related technical support services (11 percent).



Prioritization was given to applicants seeking funds for:

- Discounted broadband services or infrastructure, facilities or equipment from local exchange telecommunications companies that contributed to E-Fund;
- Regional networks that served, or were filed on behalf of, multiple school districts and school entities; or

- Broadband in school entities without services or with bandwidths less than 1.544 megabits per second (Mbps).

Recipients were required to provide 100 percent matching funds and ensure that they had adequate resources to sustain their projects beyond initial implementation. As this was a competitive process, not all projects were funded at the amounts requested and many were funded at reduced levels.

### **Benefits to Schools**

At present, the Department of Education is conducting an evaluation of the E-Fund's impact on Pennsylvania's schools. Although we have yet to analyze all the data due to ongoing program implementation, we do have preliminary results from 725 LEAs, which I will present today. We expect the final report to be completed in early 2012.

By our measures, the E-Fund has met its goals of allowing schools to have more high-speed Internet connectivity and providing more educational opportunities for students as a result of having this technology available. Another outcome of this connectivity was providing more broadband access to the communities surrounding these schools, which I will let the Department of Community and Economic Development describe in more detail. Four-hundred sixty-one of 500 school districts (92 percent) received E-Funds at some point during the past six years. One-hundred twelve non-public schools benefited, as did 65 career and technical centers (CTCs), all 29 intermediate units (IUs) and four alternative or charter schools. The E-Fund was a voluntary program that was well received by many school entities as these participation figures demonstrate.

### Capacity

To date, slightly more than 50 percent of E-Funds expended have been for upgraded broadband infrastructure in schools. Schools purchased services from private telecommunications companies after conducting competitive bid processes in accordance with program rules. Mostly, the E-Fund subsidies paid for nonrecurring costs associated with new broadband deployment. Schools had to budget to pay their own recurring costs, which has helped encourage sustainable levels of service after the E-Fund expires.

Improving broadband capacity in schools was a top priority of Act 183 and is best defined as "bandwidth" and measured in megabits per second. This is the ability to move information from one point to another and back again.

From 2005 to 2011, E-Fund recipients achieved growth in average available bandwidth to their main school locations from 56 Megabits per second to 317 Megabits per second, an increase of 452 percent. Nonpublic schools had some of the biggest gains, from 2.8 Megabits per second before the E-Fund to 109 Megabits per second after, a 3,747 percent increase. Average Internet bandwidth for E-Fund recipients grew from seven Megabits per second to 25 Megabits per second, a 242 percent increase.

Higher bandwidth allows greater information exchange, which provides more resources to schools for teaching and learning. By supplementing E-Funds with money for digital content, professional development and network equipment, schools were able to deliver this bandwidth to the classrooms and into the hands of our students.

### Equity

Another priority of the E-Fund was to close the digital divide among Pennsylvania's schools. At the time of Act 183's passage, many schools in Pennsylvania simply did not have access to leading edge broadband technologies at an affordable price. Before they received E-Funds, 18 percent of future grant recipients were using cable modems or DSL connections for broadband service. Another 43 percent purchased T1 circuits for Internet, an option that was reliable but relatively slow and often very expensive.

After receiving E-Funds, 86 percent of grant recipients reported having fiber to the school. Another seven percent used high-speed wireless. Only six percent of E-Fund recipients still use cable modems and less than one percent use T1s or DSL. Today, 99 percent of all school districts that received E-Funds either have high speed fiber (92 percent) or high-speed wireless (8 percent). Act 183 has closed the digital divide and made high-speed broadband accessible to every school that wants it.

### Cost Effectiveness

Schools that used E-Funds to buy upgraded broadband service often did so without significant increases in price. On average, broadband service bills for E-Fund-subsidized schools increased from \$1,720 per month before E-Fund to \$1,968 after. That is a 14 percent increase over six years or a 2.3 percent average annual rise, less than the rate of inflation for the same period. E-Fund schools experienced an average increase in service of 452 percent for that 14 percent increase in price.

Schools that did not take advantage of the E-Fund experienced average price increases of 57 percent over the same period, from \$1,837 to \$2,887 per month. However, they only experienced a 22 percent increase in total bandwidth. In other words, schools that used E-Funds got more for less than those that did not.

The average monthly difference in price between E-Fund schools and non-participating schools is \$919. That value times 675 E-Fund schools for a typical 60 month service contract equals \$37 million in savings.

These savings are partly because of direct subsidies, but are magnified due to consortia procurement practices. The most frequently utilized purchasing model is the regional Wide Area Network (WAN), which today exists in every county of Pennsylvania. These voluntary consortia, usually organized by intermediate units, allow schools to receive volume discounts on telecommunications services purchased together with other schools.

Regional WANs also encourage the joint development of educational technology priorities among connected schools. Before the E-Fund, 183 LEAs were connected via high-speed broadband to other schools; now, 647 LEAs are part of a regional WAN. Regional WANs have become popular and effective vehicles for distributing digital applications, delivering online courses and conducting videoconferencing. The E-Fund has financed and supported these content-related activities with \$14.7 million in expenditures.

### Collaboration

The WANs have created a culture of cooperation among participating schools, culminating in the creation of PAIUnet, the Commonwealth's first statewide network for K-12 education. With the support of the E-Fund and the leadership of Pennsylvania's intermediate units, PAIUnet currently connects 2,640 school buildings together through their regional WANs.

PAIUnet was designed to foster communication and collaboration by providing statewide access to online tools and administrative applications, as well as educational programs, resources and accredited professional development.

For example, informational podcasts and an online professional learning forum help the Commonwealth's educational community stay connected. A robust catalog of standards-aligned online courses and resources augment traditional learning by providing curriculum that would not otherwise be available locally, such as AP Calculus and Mandarin Chinese, as well as virtual experiences like interactive field trips through a nuclear power facility. In addition to an extensive video library, including the new Veteran's National Education Program, PAIUnet provides access to popular streaming events.

In fact, this virtual environment has become an increasingly popular and efficient arena for communication. Last month, two educators were able to webcast lessons to their Pennsylvania classes while conducting research in Barrow, Alaska. Not only did this allow the classroom instruction to continue uninterrupted, but it also allowed the students to continue a local research project with the continued oversight of their classroom teacher.

Earlier this month, the department conducted a virtual town hall meeting to address teacher effectiveness measures. More than 1,400 educators, administrators and media participated to discuss the piloted teacher evaluation tool and its impact on student achievement. Similar events hosted by PAIUnet this year were estimated to have saved schools \$500,000 in travel costs alone.

As a statewide consortium, PAIUnet can also aggregate regional purchasing to drive pricing even lower. For example iSafe, an Internet safety and cyber-bullying awareness curriculum and parent toolbox and Defined STEM, a cross-curricular web-based program that provides real-world context to 21<sup>st</sup> century learning skills in science, technology, engineering, and math, are offered free or at significantly reduced cost to all Commonwealth schools participating in the statewide network. The Defined STEM program has been very successful in reaching classrooms by now being available to individual school buildings in school districts, nonpublic school buildings, charter and cyber charter schools, and career and technology centers.

### *Additional Benefits*

Although my testimony has focused on Pennsylvania's K-12 schools, the recipients of Act 183 E-Funds, I should also mention the additional benefits that have accrued to telecommunications companies and broadband consumers across Pennsylvania due to this program.

According to our preliminary figures, the monthly spending by schools on advanced telecommunications services has increased by 21 percent since 2005. More than \$24 million in E-Funds have been paid to telecommunications companies so far, mostly to build new infrastructure and facilities. Since all schools participate in the federal E-Rate program, this state investment has leveraged an additional \$24 million in matching funds for Pennsylvania.

As E-Fund investments were made to serve the schools, they also benefited the communities around them. For example, when Verizon earned the business of the schools in the Northeastern Pennsylvania regional Wide Area Network, the company deployed ethernet switches to their central offices. Those switches originally were deployed to serve the schools, but today they also are used to serve other broadband consumers, like colleges, municipalities, hospitals and businesses.

## **Next Steps**

Based upon the results to date, we already can conclude that the E-Fund met the goals established in the enabling legislation. It has increased the capacity of Pennsylvania schools to use network technologies to help students learn, closed the equity gap and narrowed the digital divide. It has also encouraged a culture of collaboration, driven down costs and incentivized the deployment of affordable, high-speed broadband services to underserved areas for all consumers, not just schools.

The foundation that this program has laid allows for a seamless transition for interested schools to the newest areas of educational technology, such as online courses, digital textbooks and hybrid learning. These are just a few of the emerging innovations that could be accelerated and deployed to improve student achievement.

I appreciate your time and attention to this initiative and welcome any questions that you have on the program.