E-Rate BYOD Session:
Understanding the New Rules

Sheryl R. Abshire, Ph.D.
Chief Technology Officer, Calcasieu Parish Public Schools, Louisiana
sheryl.abshire@cpsb.org - @sherylabshire

Jon Bernstein
CEO, Bernstein Strategy Group
jberstein@bernsteinstrategies.com - @BernsteinJon

Lisa Hone
Associate Bureau Chief, Wireline Competition Bureau, FCC
lisa.hone@fcc.gov - @FCC

Andrew Moore
CIO, Boulder Valley School District, Colorado
andrew.moore@bvsd.org - @BVSD_CIO
E-Rate Background

Jon Bernstein
CEO, Bernstein Strategy Group
E-Rate Background

• Telecommunications Act of 1996
• Bipartisan on Hill and at FCC
• Snowe, Rockefeller, Exon, Kerrey
• Joint-State Board and FCC unanimously approved initial rules
E-Rate

• Rural Focused
• Key Services:
  – Voice
  – Internet
  – Internal Connections
• Funding Priority: Voice and Internet first
• Funding Cap: Initially $1.67B, raised to $2.25 in year 2, annual inflationary cap adjustments in 2010
• Success Measurement: public school classrooms connected, not speed of connections
Successes

• Nearly all classrooms and libraries connected, regardless of socioeconomic status or geographic location

• Demand so high that FCC allowed use of E-Rate connectivity before and after school

• Anecdotes: Alaska, inner city, PD
Challenges

• **Political:** Gore tax, legal challenge as to whether it was a tax or a fee (5\textsuperscript{th} Circuit)

• **Inappropriate content/bullying:** Children’s Internet Protection Act and successor that required schools to educate students on appropriate behavior online

• **WFA:** Capitol Hill investigations, hearings — Puerto Rico, Chicago, San Francisco

• **Inadequate Funding:** demand eclipsed cap right away, growing need for Internet access left no money for internal connections
E-Rate Modernization

Lisa Hone
Associate Bureau Chief, Wireline Competition Bureau, FCC
June 2016
2014 E-Rate Modernization Orders

• Re-oriented E-Rate to Focus on Broadband Connectivity
• Adopted Goals for the Program
  – Support for High Speed Connectivity to Meet the Needs of Schools and Libraries
  – Cost Effective Purchasing
  – Simplify the Application Process and other E-rate processes
• Adopted Budgets for WiFi Funding to Ensure Full funding of all Eligible Requests over 5 years
• Raised the Annual E-Rate Cap to $3.9 billion
• Adopted New Fiber Rules to Help Overcome Barriers to High Speed Connections
• Made Purchasing and Pricing Transparent
### 2015 Primary Effect of E-Rate Modernization on Connectivity

**Funding for Wi-Fi**

<table>
<thead>
<tr>
<th>Before Modernization</th>
<th>Since Modernization</th>
</tr>
</thead>
<tbody>
<tr>
<td>No funding available for connectivity within schools and libraries in FYs 2013 or 2014</td>
<td>$1.3 billion committed for connectivity within schools and libraries in FY 2015</td>
</tr>
</tbody>
</table>

Funding Year 2015
Total Funding Commitment - $3.2 billion

$1.9 Billion in Category 1 Support
Connectivity to Schools and Libraries

<table>
<thead>
<tr>
<th>Service</th>
<th>Funding Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Speed Broadband</td>
<td>$1.156 BN</td>
</tr>
<tr>
<td>Voice Services</td>
<td>$456 MM</td>
</tr>
<tr>
<td>Other Internet and Transport</td>
<td>$299 MM</td>
</tr>
<tr>
<td>Total</td>
<td>$1.9 BN</td>
</tr>
</tbody>
</table>

High Speed Broadband has a speed of 100 Mbps or higher
**Funding Year 2015**  
**Total Funding Commitment - $3.2 billion**

$1.3 Billion in Category 2 Support Connectivity within Schools and Libraries

<table>
<thead>
<tr>
<th>Service</th>
<th>Funding Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Connections</td>
<td>$1.245 BN</td>
</tr>
<tr>
<td>Basic Maintenance</td>
<td>$32 MM</td>
</tr>
<tr>
<td>Managed Internal Broadband Services</td>
<td>$25 MM</td>
</tr>
<tr>
<td>Total</td>
<td>$1.3 BN</td>
</tr>
</tbody>
</table>
2016 Focus on Fiber

• Equalized the Treatment of Lit and Dark Fiber
  – Applicants seeking bids for dark fiber services must seek bids for comparable lit services
  – Must select the most cost effective option factoring in the total cost over a reasonable period of time

• Provided Support for Self- Provisioned Networks
  – Applicants seeking bids for self-provisioned services must also seek bids for comparable lit services.
  – Must select the most cost-effective option factoring in the total cost over a reasonable period of time
  – Applicants seeking bids for self provisioned networks must file an RFP with their FCC Form 470

• Applicants may pay their non-discount share of special construction charges in installment payments of up to 4 years (at the vendor’s choice)

• E-rate will match state or tribal funding for special construction of up to 10% of the cost of construction to eligible schools and libraries
  – USAC has identified the following states with state matching programs: California; Massachusetts; Maine; New York, North Carolina, New Mexico
E-Rate Eligible Fiber Options Recap

Leased Lit Fiber
- Owned by provider
- Provisioned by provider with charges for service

Leased Dark Fiber
- Owned by provider
- IRU or Leased

Self-Provisioned
- Owned by applicant
- Operations and maintenance responsibility of applicant

Special Construction
What is special construction?

**Special construction** refers to the upfront, non-recurring costs associated with the installation of new fiber.

Applicants may seek funding for special construction charges in connection with all of the fiber options supported by E-Rate, subject to program rules.

Special construction charges eligible for Category One support consist of three components:

1. construction of network facilities;
2. design and engineering; and
3. project management.

*Note:* The term “special construction” does not include network equipment necessary to light fiber. Charges for network equipment are eligible for Category One support, but not as special construction.
### Funding Year 2016
#### Demand Estimate – First Window

**Estimate of Demand (Post Discount)**
**First Filing Period (2/3/16 - 5/26/16)**

<table>
<thead>
<tr>
<th></th>
<th>Category 1</th>
<th></th>
<th>Category 2</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Voice</strong></td>
<td><strong>Data Transmission and Internet Access</strong></td>
<td><strong>Total</strong></td>
<td><strong>Internal Connections</strong></td>
<td><strong>BMIC</strong></td>
</tr>
<tr>
<td><strong>Schools</strong></td>
<td>$34</td>
<td>$250</td>
<td>$284</td>
<td>$39</td>
<td>$7</td>
</tr>
<tr>
<td><strong>School District</strong></td>
<td>$262</td>
<td>$1,347</td>
<td>$1,609</td>
<td>$996</td>
<td>$38</td>
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<tr>
<td><strong>Consortium</strong></td>
<td>$6</td>
<td>$92</td>
<td>$98</td>
<td>$7</td>
<td>$1</td>
</tr>
<tr>
<td><strong>Libraries</strong></td>
<td>$5</td>
<td>$54</td>
<td>$59</td>
<td>$8</td>
<td>$1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$307</td>
<td>$1,743</td>
<td>$2,050</td>
<td>$1,050</td>
<td>$47</td>
</tr>
</tbody>
</table>

*Estimate as of Thursday, May 26, 2016*
Funding Year 2016
Demand Estimate – First and Second Window

<table>
<thead>
<tr>
<th>Category</th>
<th>FY2016 at Close of First Window</th>
<th>%</th>
<th>Estimated Second Window</th>
<th>Estimate of Total FY2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>$2,050</td>
<td>64.6%</td>
<td>$ 280</td>
<td>$2,330</td>
</tr>
<tr>
<td>Category 2</td>
<td>$1,125</td>
<td>35.4%</td>
<td>$ 154</td>
<td>$1,279</td>
</tr>
<tr>
<td>Total</td>
<td>$3,175</td>
<td>100%</td>
<td>$ 434</td>
<td>$3,609</td>
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</table>
## FY 2016 Applications Filed

### Status as of June 8, 2016:

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Subtype</th>
<th>Total FRNs</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark Fiber</td>
<td>Maintenance and Operations</td>
<td>255</td>
<td>$16,753,618</td>
</tr>
<tr>
<td>Dark Fiber</td>
<td>Network Equipment</td>
<td>94</td>
<td>$7,114,874</td>
</tr>
<tr>
<td>Dark Fiber</td>
<td>Network Equipment and M&amp;O</td>
<td>42</td>
<td>$950,440</td>
</tr>
<tr>
<td>Special Construction</td>
<td>Maintenance and Operations</td>
<td>91</td>
<td>$2,646,153</td>
</tr>
<tr>
<td>Special Construction</td>
<td>Network Equipment</td>
<td>143</td>
<td>$17,017,824</td>
</tr>
<tr>
<td>Special Construction</td>
<td>Network Equipment and M&amp;O</td>
<td>10</td>
<td>$77,389</td>
</tr>
<tr>
<td>Special Construction</td>
<td>Special Construction</td>
<td>127</td>
<td>$42,467,470</td>
</tr>
<tr>
<td>TOTALS (all FRNs):</td>
<td></td>
<td></td>
<td>$130,205,957</td>
</tr>
<tr>
<td>Special Construction FRN</td>
<td></td>
<td></td>
<td>$85,645,659</td>
</tr>
</tbody>
</table>

*Federal Communications Commission*
So You Wanna Build a Network?

Sheryl Abshire, CTO
Calcasieu Parish Public Schools
**Bandwidth Growth in K12**

Digital learning and growth in connected devices is driving significant bandwidth growth.

**Bandwidth Needed over the next 20 Years**

Bandwidth needs will continue to grow: initially at 50% YoY, but then at a steady rate for many years to come.
A Strategic Journey - Planning, Planning and More Planning for CPSB

• Shared vision
• Start with the end in mind
• Engage anyone and everyone who knows anything about schools and fiber
• Ask for resource sites, then call them!
• 18 months is not that long, really and.......then, forever, really is forever
• Seriously assess internal resources and expertise
• Share your plan with present provider(s)
• MUST be cost effective – REAL ROI and REAL TCO
• At the end of the day.....YOU will held responsible and accountable

• NOT for the faint of heart

www.cpsb.org
Resources

Education Superhighway
http://fibertoolkit.educationsuperhighway.org/toolkit

Schools need fiber connectivity.

We created this toolkit to help you get connected.

Contact us for help at no cost.

Explore Fiber Options for Your Schools
Resources

Education Superhighway
http://fibertoolkit.educationsuperhighway.org/toolkit
Resources

SETDA

http://www.setda.org/priorities/equity-of-access/e-rate-modernization/

**Equity of Access**

**E-rate Modernization Resources**

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. The goal is to help state and local leaders achieve high-speed connectivity in their jurisdictions and to support the national goal of connecting every classroom and library in America to high-speed Internet by 2020.
Resources

SETDA

http://www.setda.org/priorities/equity-of-access/e-rate-modernization/

- E-Rate Modernization Overview for Policy Makers
- E-Rate Modernization Overview for District Leaders
Maximizing K-12 Fiber Connectivity Through E-Rate: An Overview

Advances in technology make it possible for students to experience personalized learning anytime and anywhere. But this can only take place if our school systems have well-designed networks that support the increased demands of student devices and 24/7/365 access and that remain current in the face of rapidly evolving technologies.

In our first phase, with the generous support of Qualcomm, the SEND Initiative developed guidelines for network design and a checklist for district network planning. Currently, SEND II is building on that work in collaboration with leading technology partners: Brocade, Cisco, ENA, Filewave, Fortinet, Juniper Networks, Presidio, SAFARI Montage, and Sunesys. SEND II is developing next-level resources for building network architectures that can handle and evolve with new demands.

Download Send Checklist Only

http://www.cosn.org/SEND

FEATURED RESOURCE (revised 4/17/16):
Maximizing K-12 Fiber Connectivity Through E-Rate: An Overview

Maximizing K-12 Fiber Connectivity Through E-Rate: An Overview was co-authored by Keith Krueger, CEO of CoSN; Ryan Thompson, student at Harvard Law School; and David Talbot, fellow at Harvard University’s Berkman Center.

The toolkit comprises three parts: provides an overview of the E-rate program and the types of fiber eligible through the program; describes important considerations for schools to assess their options; issues a call to action for school districts following recent enhancements to E-rate.
ISTE: E-Rate Helps Students Access Digital Learning

http://www.iste.org/advocacy/public-policy/e-rate

E-Rate helps students access digital learning

The E-Rate program has been helping U.S. schools and libraries connect to the internet since 1997. The largest federal education technology program, E-Rate was authorized under the Telecommunications Act of 1996 and is overseen by the Federal Communications Commission (FCC).

Over the years, the E-Rate program has played a major role in increasing public school classroom internet connections, from 14 percent in 1998 to more than 95 percent today. E-Rate has also helped low-income, minority and rural students gain nearly the same access to the internet that their peers around the country have.

Over the past several years, the need for high-speed broadband has increased because of the bandwidth required for today’s digital applications and services. To ensure that school systems keep pace with bandwidth needs, ISTE and U.S. educators called on the FCC in 2013-14 to modernize E-Rate.

Throughout the process, educators submitted comments to the FCC, signed ISTE petitions, shared school broadband stories and tweeted the FCC about the need to increase funding.

In 2014, the FCC approved a massive $1.5 billion annual increase for the E-Rate program to help schools pay for broadband connectivity and network.
Be Gracious – Say Thank You

BE YOUR OWN ADVOCATE!
Contact the FCC

• FCC Chairman Tom Wheeler: Tom.Wheeler@fcc.gov - @TomWheelerFCC
• FCC Commissioner Mignon Clyburn: Mignon.Clyburn@fcc.gov - @MClyburnFCC
• FCC Commissioner Jessica Rosenworcel: Jessica.Rosenworcel@fcc.gov - @JRosenworcel
• FCC Commissioner - Ajit Pai - Ajit.Pai@fcc.gov - @AjitPaiFCC
• FCC Commissioner – Michael O’Rielly - mike.orielly@fcc.gov - @mikeofcc
Considerations for a Fiber Network

Andrew Moore, CIO
Boulder Valley School District

http://www.bvsd.org
What Do We Have?

• ~100 Miles of Fiber Connecting 55 Facilities
• 9 Government Agencies/Communities
  – Boulder, Louisville, Erie, Lafayette, Broomfield, Superior, Nederland, Longmont, Boulder County
• Fully Redundant on two “Rings”
• Installed through 2 Contractors 7 Years Ago
• $8M funded by a Bond (not eRate)
• Build Approach
  – Hired a design company to architect the solution
  – Separately bid the build for each “ring”
How Do WE Run the Network?

• 1.5 Network Engineers
• 1.0 Security Engineer
• Partnerships
  – Zayo for Locates/Break/Fix
  – Extreme Networks for Configurations
  – Palo Alto for Configurations
Lessons Learned

• The network is extremely stable and staffing is less than anticipated
• Partnership model works for depth of skills
• Hiring of a fiber design expert was invaluable
• Redundancy through two rings and two internet connections has ensured nearly 100% uptime
• Fiber in the ground is an asset which provides revenue to the school district (eRate funded builds could restrict generating revenue)
E-Rate BYOD Session: Understanding the New Rules

Contact Information

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