

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In The Matter of)	
)	
Modernizing the E-rate)	WC Docket No. 13-184
Program for Schools and Libraries)	

REPLY COMMENTS OF EDUCATIONSUPERHIGHWAY

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EducationSuperHighway respectfully submits these reply comments in response to the Further Notice of Proposed Rulemaking (FNPRM) in the above referenced proceeding.

INTRODUCTION AND SUMMARY

In his remarks at the LEAD Commission Ed Tech Summit on September 29, 2014, Chairman Wheeler stated “we must still address the challenge of improving the broadband infrastructure *to* the building for many schools and libraries, particularly in rural America.”¹ EducationSuperHighway strongly agrees with this assessment and in our initial comments to the FNRPM we laid out a vision for the actions the Commission must take to ensure that every school and library has access to the connectivity it needs at a price it can afford.

Achieving this goal starts with ensuring that every school and library has access to the physical infrastructure it needs. As we described in our initial comments, for 98% of schools and all libraries to meet the Commission’s connectivity targets, this will most likely require a fiber optic connection. In most urban and suburban areas, this

¹ Remarks of FCC Chairman Tom Wheeler, Second Ed Tech Summit: Empowering Educators to Enhance Student Learning in the Digital Era, September 29, 2014.

infrastructure can be obtained from commercial service providers, although not necessarily at a price that is within the budgets of schools and libraries or the E-rate program. In rural areas, access to fiber is a much more significant problem, with the FCC's data suggesting that 40% of schools lack access to fiber networks.² Thus, in order to ensure that every school and library has access to the connectivity it needs, the Commission must take steps to close the rural fiber gap.

Unfortunately, access to fiber is necessary, but not sufficient for ensuring that schools and libraries have the connectivity they need. As the Commission has noted, only a third of those with access to fiber are taking advantage of the connectivity available to them, principally because the cost of broadband is too expensive.³ Thus, in order to ensure that every school and library has the connectivity required to meet the Commission's goals, the E-rate program must close the affordability gap.

The dual objectives of closing the rural fiber gap and the affordability gap will require the Commission to build on its efforts to maximize the impact of every E-rate dollar, consider broadband costs over a multi-year period and ensure that the program has sufficient resources to enable applicants to meet the program's connectivity goals. As Chairman Wheeler stated in his recent remarks, the Commission has "a statutory responsibility to assure that the E-RATE is the lowest possible rate"⁴ and that the program must have sufficient resources "to meet the urban and rural needs equally and simultaneously."⁵

² Ibid p.2

³ See also the Wireline Competition Bureau Public Notice comments of CenturyLink at 6; Comments of Comcast Corp. at 8; Comments of Frontier Communications Corp. at 3, 6; Comments of Verizon at 5-6; Comments of E-Rate Provider Services, LLC at 1.

⁴ See Remarks of FCC Chairman Tom Wheeler p.4 (September 29, 2014)

⁵ Ibid p.3

There are some commenters that believe the Commission should delay action on these issues until it collects more data on which schools and libraries have access to fiber and evaluates the impact of the recent changes to the program on affordability.⁶ EducationSuperHighway strenuously disagrees with this point of view. The record clearly demonstrates that a significant number of schools and libraries currently lack access to fiber networks; that many schools suffer from high prices for broadband due to a lack of competitive options; and that the current funding levels are not sufficient to close the rural fiber and affordability gaps while also meeting the Commission's \$1 billion per year funding target for Category 2. When 63% of America's schools, representing nearly 40 million students,⁷ do not have the broadband they need to take advantage of the promise of digital learning, the Commission cannot afford to delay taking the actions required to address these issues.

EducationSuperHighway also cautions the Commission against reconsidering its phase out of funding for non-broadband services. The Commission was correct in its decision to focus the E-rate program on broadband and any reversal or exceptions to this decision will significantly delay the ability of schools and libraries to meet the E-rate's connectivity and internal connections goals. Thus, the Commission should decline to reconsider the phase out of voice services in any form, including VOIP services or bundled voice and data services.

⁶ See WC Docket 13-184 Comments of Verizon at 7 (April 7, 2014) and 3-6 (September 15, 2014); comments of United States Telecom Association at 4-6 (April 7, 2014) and 1-3 (September 15, 2014); comments of CenturyLink at 13 (April 7, 2014) and 5 (September 15, 2014); and comments of NTCA at 1-6 (September 15, 2014)

⁷ See EducationSuperHighway, *Connecting America's Students: Opportunities for Action* (April 2014), available at http://www.educationsuperhighway.org/uploads/1/0/9/4/10946543/esh_k12_e-rate_spending_report_april_2014.pdf ("Connecting America's Students").

In the July 23, 2014 E-rate Modernization Order (the “E-rate 2.0 Order”)⁸ the Commission took historic action to meaningfully close the LAN/Wi-Fi gap in America’s schools and libraries. It also took fiscally responsible steps to maximize the impact of the E-rate by focusing the program on broadband and increasing cost effectiveness through pricing transparency and consortia purchasing. In order to ensure equality of opportunity for America’s students, teachers and library patrons, the Commission must now act to close the rural fiber and affordability gaps and ensure the program has sufficient resources to meet the needs of all schools and libraries.

I. THE COMMISSION MUST TAKE ACTION TO CLOSE THE RURAL FIBER GAP AND ENSURE ALL SCHOOLS AND LIBRARIES HAVE ACCESS TO AFFORDABLE FIBER

As discussed in EducationSuperHighway’s initial comments, 98% of schools and all libraries will likely require a fiber optic connection in order to meet the connectivity goals established by the Commission in the E-rate 2.0 Order.⁹ Yet today, according to the Commission’s own data, 35% of schools and 85% of libraries currently do not have access to fiber.¹⁰ In rural areas, the FCC estimates that 40% of schools lack access to fiber networks and high costs prevent two-thirds of those with access from taking advantage of the connectivity that fiber networks are uniquely positioned to provide. As a result, despite the critical role that broadband can play in providing equal access to educational opportunity for rural students, 75% of the public schools in rural America are

⁸ Modernizing the E-rate Program for Schools and Libraries, FCC 14-99, WC Docket No. 13-184, Report and Order and Further Notice of Proposed Rulemaking, Order Released July 23, 2014. This Order is hereinafter referred to as “E-rate 2.0 Order.”

⁹ See e.g. Comments of EducationSuperHighway, WC Docket 13-184 at 4-6 (September 15, 2014)

¹⁰ See Wireline Competition Bureau & Office of Strategic Planning & Policy Staff Report, WC Docket 13-184, August 12, 2014 at 11-12

unable to achieve the connectivity goals the Commission has set.¹¹

Nor is it likely that commercial providers will soon bring affordable fiber to those who do not have it. After over a decade of investment in fiber networks, most rural schools and libraries without fiber are in areas that cannot provide commercial providers with a sufficient return on their investment. Thus, to close the rural fiber gap, the Commission must adopt policies that encourage commercial service providers to build affordable fiber networks in rural areas and allow schools and libraries to self-provision their own fiber networks when commercial providers are unable or unwilling to meet their needs.

Such policies must address two distinct problems. First, the Commission must subsidize fiber networks that bring high-speed Internet access to rural communities that cannot provide sufficient connectivity to meet the needs of their schools and libraries. Such investments should be made in a way that helps close the digital divide for the entire community, including residential, commercial and community anchor institution customers. To accomplish this, EducationSuperHighway supports the recommendations of commenters who suggest that the Commission leverage both the E-rate and Connect America Fund (CAF).¹²

In particular, EducationSuperHighway recommends that the Commission:

1. Mandate that community anchor institutions are included in the service obligations of CAF recipients.

¹¹ Remarks of FCC Chairman Tom Wheeler, Second Ed Tech Summit: Empowering Educators to Enhance Student Learning in the Digital Era, September 29, 2014.

¹² See WC Docket 13-184 Comments of United States Telecom Association at 7 (April 7, 2014); comments of NTCA at 5 (September 15, 2014); and comments of SHLB at 8 (September 15, 2014)

2. Require that CAF recipients meet the connectivity targets for Internet access and Wide Area Network connections set out in its E-rate 2.0 Order.¹³
3. Consistent with this requirement, require all CAF recipients to provide all schools with greater than 50 students and all libraries with fiber optic broadband connections unless it can be demonstrated that an alternative technology can more cost effectively meet the connectivity targets set out in the Commission's E-Rate 2.0 Order.
4. Require CAF recipients to provide the required connectivity at prices that reflect those available to schools and libraries in urban areas and reflecting the fact that the capital costs of these connections are being subsidized by the CAF.¹⁴
5. Open the CAF program to competitive bidding at the outset to enable rural electric co-ops and other entities to access the funds available for rural broadband deployment. This will leverage competition to maximize the impact of each CAF dollar on closing the rural fiber gap.

The Commission must also provide rural schools and libraries with additional options for obtaining the last-mile fiber connections needed to deliver broadband to the school building. Here, the Commission's challenge is to alter the economics of fiber investments for both service providers and schools by altering its existing rules. Specifically, the Commission must address three areas of E-rate program rules that create a significant barrier to cost-effective capital investments.

¹³ See Modernizing the E-rate Program for Schools and Libraries, FCC 14-99, WC Docket No. 13-184, Report and Order and Further Notice of Proposed Rulemaking, Order Released July 23, 2014 at ¶¶ 26-44

¹⁴ Based on EducationSuperHighway's analysis in *Connecting America's Students: Opportunities for Action*, these prices are currently approximately \$775/month for a 100 Mbps WAN connection, \$1,000/month for a 1 Gbps WAN connection and \$3.34/Mbps/Month for commercial Internet access.

First, the Commission must significantly reduce the burden on schools and libraries created by the E-rate's requirement that applicants must fund the unsubsidized portion of any non-recurring capital investments (NRC) up-front. Closing the rural fiber gap will require a significant capital investment in new fiber optic connections and schools and libraries generally do not have sufficient capital reserves to fund their share of these investments.¹⁵ This has the effect of reducing competition for E-rate RFPs requiring new fiber builds as only well capitalized service providers with the financial resources to fund these investments are viable bidders. In addition, this significantly increases the monthly recurring cost (MRC) of fiber connectivity for the E-rate program as the capital expenditures are amortized across the life of the contract.¹⁶

Second, the Commission must make cost-effective, leased dark fiber a viable option for schools and libraries. As is clearly articulated in the comments of SHLB and others, this means that the optical equipment, special construction charges and maintenance costs required to deploy, maintain and upgrade dark fiber networks must be eligible for Category 1 support on an equal basis to lit fiber services provided by vendors.¹⁷ In addition, the Commission should embrace alternative approaches to making dark fiber available to schools and libraries including managed dark fiber services that are similar in approach to the managed Wi-Fi services the Commission

¹⁵ See New Jersey Digital Readiness for Learning & Assessment Project - Broadband Component, Wide Area Network and Internet Cooperative Purchasing Initiative RFP at 36 (July 15, 2014): "the Buyers seek to minimize NRC by amortizing installation costs across many schools and multiple years. Most schools do not have significant available funds to finance large [up-front] expenditures."

¹⁶ It is also important to note that these amortization costs are rarely removed from service provider pricing after the end of the initial contract despite there no longer being a justification for these expenses. As a result, EducationSuperHighway suggests that the Commission require service providers to disclose what portion of the MRC is for capital investment amortization in their contracts.

¹⁷ See e.g. WC Docket 13-184 Comments of Zayo Group LLC at 1-3 (April 7, 2014); comments of Unite Private Networks at 1 (April 4, 2014); comments of Missouri Research and Education Network at 6 (April 7, 2014); comments of Illinois Department of Central Management Services at 6 (April 7, 2014); and comments of SHLB at 7 (September 15, 2014)

embraced in the E-rate 2.0 Order.

Finally, as is persuasively argued by SHLB in its comments, the Commission must allow schools and libraries to self-provision their own fiber networks when they can demonstrate this is the most cost effective alternative. This is consistent with the Commission's actions in the Rural Healthcare Pilot and the Rural Healthcare Program, will significantly reduce costs when applicants have only one commercial service provider option and is the only available option for many schools and libraries that cannot get fiber network connections from a commercial service provider.

To address these issues, EducationSuperHighway recommends that the Commission equalize the treatment of dark and lit fiber and allow self-provisioning in a manner similar to the rules it adopted in the Rural Healthcare Program. In addition, the Commission should adopt the following changes to its E-rate rules in order to significantly improve the affordability of both dark and lit fiber. These rule changes will enable applicants and service providers to utilize cost-effective capital investments to deliver ongoing operating cost savings for schools, libraries and the E-rate program.¹⁸

1. Increase the cap on Non-Recurring Costs for fiber construction to an amount sufficient to cover the construction costs for all but the most remote locations. Very remote locations require special consideration and may often be more cost-effectively served by microwave networks.
2. For locations without fiber, increase the discount rate to 90% for all NRC for fiber construction and pay the subsidized portion of the NRC according to a standard schedule tied to the construction of the fiber network. This will not only make

¹⁸ Eligibility for these provisions should be tied to meeting price targets that ensure that the E-rate program achieves a payback on its capital.

fiber a viable option for most schools and libraries, but will dramatically increase the pool of bidders for fiber builds as it will conform to the business models of fiber construction companies in addition to service providers.

3. Allow E-rate applicants to amortize the non-discounted portion of fiber NRC over the initial contract length in order to eliminate the barrier created by a lack of funds for large up-front expenditures.
4. Allow contracts up to 20 years in length for dark fiber in order to create an incentive for service providers to minimize the NRC subsidies required for dark fiber builds.¹⁹ Such contracts should be required to meet dark fiber price targets for monthly operating costs.
5. Apply the same NRC caps, discount rates, amortization schedules and contract length terms to dark fiber IRUs as new construction. As a general rule, IRUs should be less expensive than new fiber construction and an effective strategy for limiting the likelihood of overbuilding of existing fiber networks.
6. Allow managed dark fiber as an eligible service. This would allow the separation of construction of the fiber network from management of the network, much as the Commission has adopted for LAN/Wi-Fi. The net effect of this would be to significantly increase competition for dark fiber services by allowing network management companies and fiber construction companies to partner and compete with traditional service providers.

By taking these steps to modify the rules of the E-rate program, the Commission

¹⁹ Similar arrangements should be made for other services, which allow applicants to increase their bandwidth by an order of magnitude at no marginal cost, other than their own equipment. Should service providers offer a “virtual dark fiber” service based on DWDM wavelengths or other technology, they should be eligible for similar consideration, making better use of existing fiber networks while still giving applicants the long-term speed benefits.

will not only significantly accelerate the closing of the rural fiber gap but will take another significant step to increase the affordability of broadband for all schools and libraries.

II. THE COMMISSION MUST NOT DELAY IN TAKING ACTION

There is broad agreement that the United States faces an urgent challenge to upgrade the broadband infrastructure to its K-12 schools and libraries to help ensure that our students are able to compete and win in the global economy.²⁰ Around the world, countries are taking bold steps to accelerate action and ensure that their students have the broadband they will need to be competitive in the global economy. Korea leads the way with 100 percent of its schools connected to high-speed broadband. Ireland is poised to deliver 100 Mbps to every school by this year and Finland has made a 100 Mbps connection a legal right by 2015. Singapore will deliver a one Gbps connection to every school by 2015. New Zealand will have 98 percent of its schools connected to fiber by 2017 and Australia by 2019. It is no coincidence that all but one of these countries outperforms the United States in reading, math and science.

America cannot afford to stand by while our competitors around the world invest in the future of education and a workforce that is superior to our own. It is precisely for this reason that a group of more than 50 of the nation's top CEOs wrote the FCC Chairman earlier this year to say, "Today, America's CEOs call on you to ensure that the funding is available to upgrade K-12 school Internet infrastructure for digital learning."

Yet some commenters would disconnect our kids from a high speed learning

²⁰ See e.g. WC Docket 13-184 Comments of Comcast at 1-2 (April 7, 2014)

future and keep them relegated to the digital slow lane by seeking to delay our children's access to the high speed broadband that they need to take full advantage of digital learning opportunities. These telecommunications commenters ignore the preponderance of data, and urgency of need, and would have the Commission believe, as Verizon says, that "there is no reason to revise the {E-Rate} budget at this time."²¹ ITTA – The Voice of Mid-Size Communications Companies – argues that "it is premature to discuss whether there is a need to increase the E-rate program budget to meet these goals at this time." NTCA, in arguing for delaying student access to broadband until after Joint Board action on contributions, indicates that "a more accurate and comprehensive accounting of available network assets is critical to ensure that E-rate funds are directed to areas that lack access to such assets and to ensure that existing network facilities are otherwise leveraged to the greatest extent possible." Similarly the United States Telecom Association (US Telecom) argues that "the Commission should refrain from considering changes in E-Rate Program funding until it fully develops its anticipated needs for the program."

Ironically, these same commenters are in a position to provide the very data that the Commission needs to develop a complete picture of the current state of fiber connectivity to America's schools and libraries. Verizon claims that "most schools already have fiber in place"²² yet refuses to publicly back up this assertion by disclosing which schools in their footprint have Verizon-provided fiber.²³ CenturyLink asserts that "fiber is remarkably available for schools and libraries, even in surprisingly rural areas" yet redacts all

²¹ See e.g. Comments of Verizon, WC Docket 13-184 (September 15, 2014)

²² See e.g. Comments of Verizon, WC Docket 13-184 at 2 (September 15, 2014)

²³ See WC Docket 13-184 Verizon Ex Parte at 1-2 (April 30, 2014)

data from its filings about the proximity of its fiber network to schools and libraries.^{24 25} To the extent that these telephone companies and the associations that represent them believe that more information is necessary in order to better evaluate which schools have access to fiber today and the prices they are paying – the telephone companies are not restricted from doing their homework and supplying such data directly in order to expedite student access to broadband.

To this end, EducationSuperHighway has compiled E-rate Form 471 Block 5 data on a web site (<http://fibercheck.educationsuperhighway.org/>) where service providers can review which E-rate applicants they provide service to and whether the applicant has self-reported that they are receiving their broadband over a fiber connection. Service providers can easily download the applicants they serve into a spreadsheet on a state or national basis and then update the information using their own records. Out of the nearly 4,000 broadband service providers listed in Block 5, fewer than 100 serve more than 100 applicants and the large service providers likely have the systems and resources to quickly provide this information to the FCC. Thus, the task of compiling an accurate picture of school and library fiber connectivity is only a minor burden and if service providers really believe that accurate data is critical to the FCC’s decision making, we challenge them to put this data into the record in the next 30 days.

There is a clear consensus that there is a fiber gap, especially a rural fiber gap. These schools can’t wait, our kids can’t wait, and the Commission shouldn’t wait either. Nowhere is the opportunity so vast, the need so urgent, and action so vital for advancing

²⁴ See e.g. Comments of CenturyLink, WC Docket 13-184 at 19 (September 15, 2014)

²⁵ See Letter from Melissa Newman, CenturyLink, to Marlene Dortch, FCC, WC Docket No. 13-184 (filed Feb. 26, 2014) (**filed subject to protective order**). The letter illustrates the broad availability of fiber, the proximity of fiber to school and library buildings, and the low costs of special construction to connect to carrier Ethernet services, even to rural schools and libraries. Yet CenturyLink is unwilling to make this information public in order to speed the upgrade of schools and libraries.

a brighter, more connected educational future.

CONCLUSION

EducationSuperHighway thanks the Chairman and the Commission for their leadership in recognizing the importance of ensuring that every child, regardless of income or location, has the same opportunity to utilize digital learning to learn the skills necessary to compete in the global economy.

Respectfully submitted,

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