BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of

Modernizing the E-rate Program for Schools and Libraries

WC Docket No. 13-184

COMMENTS OF INTERNET2

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I. EXECUTIVE SUMMARY

Internet2 commends the Commission for taking up the very important task of modernizing the E-rate program to further increase the availability and adoption of high-capacity broadband for the nation’s schools and libraries. Internet2 recommends the following:

• The Commission’s efforts should be guided by three simple principles: (1) more broadband options for schools and libraries; (2) increased bandwidth and better quality service for schools and libraries; and (3) greater cost-effectiveness of E-rate funds. In many ways, these three principles are interrelated. The more options that are made available to schools and libraries, the more likely they will get the affordable bandwidth they need.

• The Commission should not set the goals for broadband connectivity too low. The Commission should consider alternative methods for measuring the E-rate program’s success – methods that take into account constantly increasing, then-available, connectivity speeds that encourage schools and libraries, and the entities that provide them with broadband services, to continuously realize more capacity for critical educational programs as their online activities continue to increase.

• The Commission should focus E-rate resources on enabling a framework for scalable, flexible, and affordable fiber infrastructure solutions because fiber has proven to be the most future proof infrastructure for broadband connectivity.

• The Commission should remove the artificial disparity in treatment of dark and lit fiber. Treating dark fiber on par with lit fiber will help maximize the options available for schools and libraries seeking to deploy fiber to their premises, and greater options ordinarily lead to lower costs.
• The Commission should encourage the deployment of lateral fiber builds to the extent that such builds increase capacity for schools and libraries and provide a cost-effective means to provide broadband services.

• The Commission should streamline the process for schools and libraries that wish to enter into multi-year contracts for broadband services by requiring full contract review only once before the first year of the contract. Encouraging multi-year contracts can lead to cost savings by creating administrative efficiencies while at the same time allowing schools and libraries to spread the costs of capital expenditures over a longer period of time, encouraging investment in much-needed broadband solutions.

• The Commission should further encourage schools and libraries to participate in consortia and take advantage of bulk purchasing opportunities so that they receive the benefit of the economics of scale – helping to stretch the limited E-rate funds even farther. Internet2 knows from experience that these types of group-based purchasing efforts can help to aggregate demand, influence existing carriers to lower prices, and promote efficient use of shared facilities.

• The Commission should clarify that Internet access service provided by Internet2 is an eligible service under the E-rate program. The Universal Service Administrative Company’s current eligible services list would appear to be inconsistent with the Commission’s precedent by artificially discriminating against Internet2.

• The current Notice of Proposed Rulemaking is a critical part of the nation’s larger broadband connectivity goals. As the Commission is well aware, there are other important components at play to help achieve those goals, including the Commission’s efforts to reform other universal service support programs and the Broadband Technology Opportunities Program.
administered by the National Telecommunications and Information Administration.

Internet2 urges the Commission to harness every available resource at its disposal to advance the nation's broadband goals.
II. INTRODUCTION

Internet2 submits these comments in response to the Notice of Proposed Rulemaking ("NPRM") released by the Federal Communications Commission ("Commission") on July 23, 2013, in the above-captioned proceeding concerning reforming and modernizing the E-rate program. This proceeding builds on the E-rate reforms adopted by the Commission in 2010 and the reforms that the Commission has implemented for each of the other universal service programs.¹

A. About Internet2

Internet2 is a member-owned, not-for-profit corporation founded in 1996 by the nation's leading higher education institutions. Its members include several hundred U.S. research universities, government agencies and laboratories, companies, and regional networks that provide advanced networking for a wide range of universities, government agencies, and community anchor institutions ("CAIs"). During its nearly two-decade history, Internet2 has played an integral role in deploying and expanding advanced broadband capabilities across the country, building on the legend of the advanced research and education ("R&E") networks – such as the Advanced Research Projects Agency Network, the Computer Science Network, and the National Science Foundation Network – that pre-dated Internet2's existence.

Today, Internet2 owns and operates a premier advanced national network infrastructure ("Internet2 Network") and identity management framework, and serves such varied constituencies as the R&E community, federal agencies, and industry. Using the latest generation of optical transport equipment, the Internet2 Network supports native 100 Gigabit services with near-term potential of offering 200 and 400 Gigabit services. Additionally, the

³ See for example, In the Matter of Rural Health Care Support Mechanism, 27 FCC Rcd. 16678
Internet2 Network has advanced Layer-2 services built on software defined networking ("SDN"), which allows users to optimize the network for their specific application needs. Internet2’s current 8.8 Terabit national network positions Internet2 as one of the most advanced networks in the world.

B. The Broadband Technology Opportunities Program and the U.S. Unified Community Anchor Network Program

In 2010, the National Telecommunications and Information Administration ("NTIA") awarded Internet2 a $62.5 million Broadband Technology Opportunities Program ("BTOP") grant. This BTOP grant helped to fulfill the National Broadband Plan’s ("NBP") recommendation that government entities work with the R&E community to facilitate a "Unified Community Anchor Network," that would support and assist anchor institutions in obtaining and utilizing broadband connectivity.\(^2\) Internet2’s U.S. Unified Community Anchor Network program ("U.S. UCAN"), the outgrowth of its BTOP award, fulfills this role of focusing on extending R&E network resources to all CAIs. Today, with the BTOP project completed, the Internet2 Network serves as the backbone for state and local networks that interconnect more than 93,000 CAIs throughout the country, including university and college campuses, schools, libraries, hospitals, state and local governments, and public safety entities. Given these recent upgrades and expansions, the Internet2 Network has become a unique national asset that already is being leveraged to support a number of national broadband policy initiatives, including other universal service programs.\(^3\)


\(^3\) See for example, In the Matter of Rural Health Care Support Mechanism, 27 FCC Red. 16678 (2012) ("Rural Health Care Support Order").
C. Internet2’s K20 Initiative

K-12 schools and libraries are the lifeblood of our nation’s higher education system. Internet2 member colleges and universities depend upon students being prepared to begin their advanced studies immediately upon enrollment. Therefore, Internet2's membership has a vested interest in the success of every K-12 school in the country. Access to advanced R&E network infrastructure helps to ensure this success by enabling knowledge and expertise to flow seamlessly between higher education institutions and K-12 schools, providing limitless opportunities to expand and strengthen learning experiences for all K-12 students no matter where they are located. Ultimately, strengthening ties across the educational spectrum also fortifies our country's global economic competitiveness and leadership.

Recognizing the multiple mutual benefits of engaging the education community in the development of the next-generation Internet, Internet2 launched the K20 Initiative in 2001. The purpose of the K20 Initiative, which is now part of the U.S. UCAN program, is to extend access to the Internet2 Network to K-12 schools and public libraries, as well as community colleges, and cultural organizations such as museums, science centers, zoos, aquariums, and performing arts centers. Providing our nation’s schools and public libraries with access to the Internet2 Network’s advanced networking resources not only supports higher education’s future scholars and research scientists, but it also provides an innovation platform where 21st century teaching and learning applications can be incubated and developed. This builds on the proven ability of R&E networks to accelerate the development of next-generation Internet capacity.4

Through the K20 Initiative, Internet2 member universities have been instrumental in bringing K-12 schools and libraries into the larger U.S. UCAN vision. To participate in the U.S. 

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4 For example, R&E networks of the past, which offered 10 Mbps Ethernet in an era of 9.6 Kbps dial up, enabled the development of social networking, search, peer-to-peer technologies, and cloud computing.
UCAN program, schools and libraries are sponsored by Internet2 member universities for Internet2 connectivity in a particular state. This allows schools and libraries, and other CAIs in the sponsored state, to connect to the Internet2 Network. This connection ordinarily is accomplished through an education network in the state that is connected to a local Internet2-affiliated regional network or Internet2 connector. Higher education institutions currently sponsor Internet2 connections in 42 states across the nation, connecting an estimated 84,000 K-12 schools and more than 4,000 public libraries.

In addition, Internet2, through the K20 Initiative, develops programs and partnerships designed to leverage its advanced R&E networking infrastructure to deliver high quality content and learning experiences to students of all ages. For example, the Presidential Primary Source Project ("PPSP") is an annual program series developed in partnership with state and regional R&E networks, the National Park Service, the Library of Congress, and the National Archives-administered Presidential Libraries and Museums. The PPSP program series enables students to engage in dialogue with world-class presidential historians via advanced interactive videoconferencing and to access rich collections of primary source documents for research and presentations. Also through the K20 Initiative, Internet2 is providing the opportunity for students and teachers in K-12 schools and other formal and informal learning environments to have access to sophisticated scientific instrumentation where they otherwise would not.5

D. Research and Education Networks

R&E networks, like the ones operated by Internet2 and Internet2’s state and regional network partners, are uniquely designed and engineered to meet the needs of some of the most

5 The Electron Microscopy Center at North Dakota State University and the iLab Network developed by Northwestern University’s Office of STEM Education Partnerships offer just two examples of how Internet2 member institutions and partner universities overseas are making high-end scientific equipment remotely accessible over advanced R&E networks.
demanding Internet users in the country, namely scientists, academics, and researchers in the nation’s leading academic and research institutions. They are designed to be low latency, uncongested networks that do not throttle users’ connections and that allow plenty of headroom for innovation in applications without capping a user’s throughput or appetite for information. These networks are fully capable of supporting library and K-12 teaching and learning applications now and in the future. Moreover, Internet2 provides flat-rate, robust connectivity to its regional partners, who then pass these related cost savings and network efficiencies on to schools and libraries, thus optimizing their Internet connection and cost structure.

R&E networks, however, are only one part of the solution. No matter how fast the Internet2 backbone operates, an individual institution’s capacity is limited by the weakest link in the connectivity chain. For example, a 1.544-Mbps copper connection from a school or library to a state or regional education network, to say the least, does not provide a school or library with sufficient bandwidth to take full advantage of the national 100 Gbps Internet2 Network. To fully realize the potential of the Internet2 Network and the learning opportunities it enables, K-12 schools and public libraries throughout the nation must have access to scalable, flexible, and affordable fiber infrastructure solutions, wherever it is feasible, to meet their current and future bandwidth needs.

III. DISCUSSION

Internet2 recommends that the Commission should be guided by three simple principles in its efforts to modernize the E-rate program: (1) more broadband options for schools and libraries; (2) increased bandwidth and better quality service for schools and libraries; and (3) greater cost-effectiveness of E-rate funds. In many ways, these three principles are interrelated. The more options that are made available to schools and libraries, the more likely they will get
the affordable bandwidth they need. This is so because greater options for recipients will lead to
greater competition in the broadband service market, and greater competition will, in turn, lead
to more affordable options and more cost-effective use of the limited pool of E-rate funds.

A. Internet 2 Supports the Commission’s Policy Goals for the E-Rate Program

Internet2 commends the Commission for taking up the very important task of
modernizing the E-rate program to further increase the availability and adoption of high-capacity
broadband for the nation’s schools and libraries. There can be no question that increased
availability and adoption of high-capacity broadband is a matter of national importance. No
matter how Americans get connected, more broadband can only benefit the country. Broadband
sparks economic growth and job creation, creates entirely new industries, and transforms existing
sectors as varied as education, healthcare, energy management, public safety, and government
management. These innovations, which are so important to the ability of the U.S. to remain
competitive in the global economy, should not be stifled by constraints on bandwidth, speed,
quality, or access to broadband. Yet, even today, educators, businesses, researchers, inventors,
and entrepreneurs are pushing broadband demands to new heights. This demand will only
continue to grow with the constant invention of new applications and increase in the number of
Internet-dependent devices in U.S. schools, businesses, and homes. It is vital that we prepare
today for the broadband needs of tomorrow.

Perhaps nowhere does the importance of adequate broadband connectivity manifest itself
than in our schools and libraries. As the NBP made clear (i) “[t]he country’s economic welfare
and long-term success depend on improving learning for all students, and broadband-enabled
solutions hold tremendous promise” to achieve that result;\(^6\) and (ii) libraries “are critical to

\(^6\) NBP at 226.
improving digital proficiency in communities” all across the country.\footnote{Id. at 178.}

The Administration echoed these sentiments when earlier this year it launched the ConnectED initiative, stating that “[p]reparing America’s students with the skills they need to get good jobs and compete with countries around the world relies increasingly on interactive, individualized learning experiences driven by new technology.”\footnote{What is ConnectED?, available at \url{http://www.whitehouse.gov/blog/2013/06/06/what-connected} (last visited Aug. 26, 2013).} The Administration understands that the converse also is true: schools and libraries without adequate and affordable broadband connectivity put the nation’s students at a disadvantage both at home and abroad. That is why the White House tasked the ConnectED initiative with ensuring that 99 percent of America’s students are connected to the digital age through next-generation broadband and high-speed wireless in their schools and libraries within the next five years. In order to achieve this goal, the President has called on the Commission to modernize and leverage the E-rate program.\footnote{See, ConnectED Fact Sheet, “ConnectED: President Obama’s Plan for Connecting All Schools to the Digital Age,” available at \url{http://www.whitehouse.gov/sites/default/files/docs/connected_fact_sheet.pdf} (last visited Aug. 27, 2013).} Internet2 also recognizes that the E-rate proceeding is just one vehicle as part of the Administration’s overall strategy to “jump-start the effort to connect American students to today’s modern broadband connections.”\footnote{Id. at 2.}

Under the Commission’s guidance, the E-rate program has been an indispensable tool in bringing basic connectivity to schools and libraries across the country. As the Commission noted, when the E-rate program was first created, only 14 percent of classrooms had access to the
Internet, and the vast majority of these had only dial-up connections.\textsuperscript{11} Today, nearly all schools and public libraries have some form of basic Internet connectivity.\textsuperscript{12}

But as the Commission is well aware, goals with respect to broadband connectivity are not static targets. What was adequate even three years ago certainly is not adequate today – and what is adequate today certainly will not be adequate three years from now. Moreover, heeding the Administration’s call to leverage existing programs to provide more advanced broadband connectivity, the Commission rightly recognized in the NPRM that “[t]he challenge we now face is modernizing the program to ensure that our nation’s students and communities have access to high-capacity broadband connections that support digital learning while making sure that the program remains fiscally responsible and fair to the consumers and businesses that pay into the universal service fund.”\textsuperscript{13} Now is the time for the Commission – along with schools, libraries, and the entities that provide them broadband service – to take the nearly 20 years of lessons learned from E-rate implementation and use it to move broadband for schools and libraries forward.

To that end, Internet2 fully supports the principles set forth in the NPRM. Specifically, Internet2 agrees with the Commission that schools and libraries need affordable access to ever-increasing speeds of broadband connectivity to take advantage of the rapidly expanding number of interactive digital learning opportunities. Each day, the number of options available to schools and libraries through massive online open courses ("MOOCs") and other online learning resources grows. Increased broadband connectivity will make these resources more readily available. Internet2 also supports the Commission’s proposals to increase flexibility within the

\textsuperscript{11} 2013 E-Rate NPRM at ¶ 2.
\textsuperscript{12} Id.
\textsuperscript{13} Id.
E-rate program so that schools and libraries have a wider range of options for fulfilling their broadband connectivity needs. Additional flexibility and greater options under the E-Rate program will help make advanced broadband more affordable through increased competition. Finally, Internet2 supports the Commission’s efforts to ensure that the E-rate program is cost-effective and that the funds available are put to their highest and most efficient use.

B. Due to Rapid Technological Advancement, the Commission Should Consider Performance Measurements That Are Future Proof

In the NPRM, the Commission sets forth the laudable dual goals of ensuring that (i) schools and libraries have sufficient access to advanced broadband capacity to enable students, teachers, and library patrons to take full advantage of opportunities for digital learning and (ii) schools and libraries can actually afford such services.\(^\text{14}\) In order to determine the success of the E-rate program in achieving these goals, the Commission is seeking comment on what performance measures it should adopt. In particular, the Commission proposes benchmarking the performance of schools’ and libraries’ broadband connections against specific speed targets of at least 100 Mbps service currently, with a target of 1 Gbps to most schools and libraries within 5 years.

While Internet2 recognizes that proposing to set a connectivity floor of 1 Gbps within the next five years provides the Commission with a readily available benchmark against which it can measure the E-rate program’s success, Internet2 is wary that such “minimum” benchmarks all too easily become the de facto standard. The result can be a perverse disincentive to achieve even greater results. Unfortunately, no one knows what the appropriate connectivity speeds will be for 2020. Rather than measure progress against minimum benchmarks as though broadband connectivity is a scarce resource, the Commission should operate from the position that

\(^{14}\) Id. at ¶ 13.
broadband is an abundant resource that tends to grow exponentially as opposed to linearly. The Commission could do this by providing E-rate funding incentives to applicants who choose broadband solutions that impose no “cap” on bandwidth or by creating “race to the top” incentives that would award those schools and libraries who can achieve “best in class” connectivity results.

As the operator of one of the world’s most advanced broadband networks, Internet2 and its regional R&E partners know that broadband connectivity well above 1 Gbps already is achievable today. Whatever performance metric the Commission chooses to adopt, it should take care that it does not have the unintended effect of causing the E-rate program to shoot for the floor. The fact is that the U.S. is at a crossroads with respect to educational achievement and broadband infrastructure. It is no longer at the top of many categories that track these metrics. This proceeding can help the nation regain its international status as a symbol of high educational and technological achievement.

Thus, Internet2 recommends that the Commission consider alternative methods for measuring the program’s success — methods that take into account constantly increasing, then-available, connectivity speeds and that encourage schools and libraries, and the entities that provide them with broadband services, to strive for ever greater capacity. Advanced network applications, such as remote or virtual real-time instruction, will continue to use more and more bandwidth. As opportunities for interactive digital learning continue to expand and are built with

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16 See for example, Cisco System’s white paper High-Speed Broadband in Every Classroom: The Promise of a Modernized E-Rate Program (Sept. 2013) available at http://www.cisco.com/web/strategy/docs/education/e_rate_connected_wp.pdf. Cisco argues that the Commission should aim higher than 1 Gbps, recommending a minimum broadband goal of at least 2 Gbps per 2,000 students in 2014 and 8 Gbps per 2,000 students by 2018.
cutting-edge broadband connectivity in mind, schools and libraries without adequate connectivity will face the risk of being left behind.

The Commission also proposes setting forth performance requirements for quality of services, such as latency, jitter, and packet loss, that are tailored to the specific uses of broadband connectivity by schools and libraries to ensure successful learning experiences. Because connectivity speed is only one piece of the high-capacity broadband puzzle, Internet2 fully supports this proposal. Consistent with the requirements of Section 254(b)(1), “quality” of broadband service is just as important as speed. To be successful, real-time, remote instruction and use requires broadband service that is low latency, has less jitter, and reduces packet loss. Low quality broadband with instances of high jitter or latency rates degrades online, remote, and virtual education programs, interrupting the flow of education and student attention, and ultimately diminishes the overall educational experience. Therefore, creating benchmark performance requirements for quality of service to ensure that online learning experiences are usable should be a high priority for the E-rate program.

C. Internet2 Supports the Commission’s Proposals to Provide More Flexibility to Schools and Libraries Under the E-Rate Program

The Commission offers a number of proposals in the NPRM that would provide schools and libraries with greater flexibility to meet their broadband connectivity needs through the E-rate program. In particular, Internet2 supports the Commission’s proposals to provide: (1) support for scalable, flexible, and affordable fiber infrastructure solutions; (2) equal treatment of lit and dark fiber; (3) support for lateral fiber builds from middle mile networks; and (4) support for multi-year contracts.

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17 2013 E-Rate NPRM at ¶ 28.
18 Id. at ¶¶ 67-89 (discussing technological architecture, the disparity in treatment between lit and dark fiber, and lateral fiber builds); ¶¶ 239-246 (discussing support for multi-year contracts).
1. The Commission should promote scalable and flexible fiber-based infrastructure solutions

The Commission has requested comment on the most efficient technological architectures that schools and libraries are likely to use for connectivity. While there will be limited circumstances that require non-fiber-based solutions, the Commission should generally promote support for scalable, flexible, and affordable fiber infrastructure solutions. These fiber-based infrastructure solutions should primarily focus on terrestrial buried fiber followed by overhead fiber installations, whether dark or lit (discussed more fully below). In instances where it is not feasible to implement fiber infrastructure, microwave or other fixed wireless solutions may also provide an acceptable solution.

2. Internet2 supports the Commission’s proposal to eliminate the current disparity of treatment between dark and lit fiber

To further improve flexibility for schools and libraries in obtaining cost-effective means of receiving high-capacity broadband, the Commission proposes to make its E-rate treatment of lit and dark fiber more consistent. This includes making the modulating electronics necessary to light dark fiber and special construction charges for leased dark fiber eligible for priority one funding. Internet2 supports this proposal. Treating dark fiber on par with lit fiber will help to maximize the options available for schools and libraries seeking to deploy fiber to their premises, and greater options ordinarily lead to lower costs.

Allowing schools and libraries to invest in fiber broadband will enable greater control over their broadband connectivity, support dynamic changes in broadband capacity needs from day to day or month to month, and create an opportunity to future proof their broadband services. The Common Core State Standard’s online testing requirements provide an example of a

\[19\quad \text{Id. at ¶¶ 67-69.}\]
\[20\quad \text{Id. at ¶¶ 70-72.}\]
school’s need to dynamically alter its broadband capacity. With a flexible fiber-based broadband connection, schools could increase their capacity rates during Common Core testing periods to ensure that every student has the bandwidth needed to successfully complete the exam.

The Commission has on several prior occasions recognized the benefits of dark fiber, especially as a potentially cost-effective broadband option. For instance, the NBP concluded that “[a]llowing funding for ownership or leasing of dark fiber and associated communications equipment could allow recipients to use locally underutilized commercial or governmental capacity to provide lower-cost, high-value broadband instead of leased services currently eligible for E-rate discounts.”21 Similarly, in the Rural Health Care Support Order, the Commission concluded that “supporting dark fiber provides an additional competitive option to help [health care providers] obtain broadband in the most cost-effective manner available in the marketplace.”22 Even in the 2010 E-rate reform proceedings, the Commission recognized that excluding dark fiber from the options available to schools and libraries “would unduly limit the flexibility of schools and libraries to select the most cost-effective broadband solutions to meet their needs, which would be inconsistent with our schools and libraries policies.”23 Thus, the Commission found that “broadening the scope of potential suppliers of broadband increases competitive options, which in turn enhances choice and reduces cost.”24

The Commission’s proposal to take the next step in eliminating the disparity in treatment between dark and lit fiber will help to ensure that there are no regulatory inequities that artificially distort the choices available to schools and libraries. Otherwise, effectively denying schools and libraries this choice deprives many of them the opportunity to benefit from multi-

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21 NBP at 237.
22 Rural Health Care Support Order at ¶ 123.
24 Id.
party competition, and to better themselves, their students, and the public they serve. Proposals like this that increase the options available are exactly what schools and libraries need – maximum flexibility for maximum competition. In those instances in which dark fiber presents a lower-cost option, it will help to ensure that the already limited E-rate funds go farther.

3. The Commission should encourage the deployment of lateral fiber builds to provide a more efficient, cost-effective means to deliver broadband services to schools and libraries

The Commission also seeks comment on whether it should prioritize special construction charges to deploy fiber or other technologies from middle mile networks to schools and libraries (also known as lateral fiber builds). Internet2 supports the Commission’s recommendation because it will increase capacity for schools and libraries by providing them with cost-effective connections to middle mile networks through lateral fiber builds. By strategically supporting lateral fiber builds, the Commission can increase broadband capacity for a large number of schools and libraries.

4. The Commission should streamline the application process for multi-year contracts

The Commission also seeks comment on proposals to amend its rules regarding multi-year contracts under the E-rate program. Multi-year contracts provide cost savings by creating administrative efficiencies. They also allow schools and libraries to spread the costs of large capital expenditure projects over a longer period of time, encouraging investment in much-needed broadband solutions. Multi-year contracts also avoid service gaps that can result when large consortia requests are not reviewed and approved before the start of a funding year.

25 2013 E-Rate NPRM at ¶¶ 75-76.
26 This could be particularly fruitful if such lateral fiber builds were able to connect to high-capacity WAN infrastructure that, in turn, connects schools to their district offices. If strategically implemented, a lateral fiber build such as this could help eliminate the potential bottlenecks discussed supra at p. 8.
27 Id. at ¶¶ 239-243.
providing additional predictability and incentive for applicants to provide better applications with more planning. The Commission recognizes, however, the current E-rate application process is not conducive to multi-year contracts. Schools and libraries that enter into multi-year contracts currently are required to have those contracts re-approved every year to continue to receive funding commitments. Requiring that such contracts be re-vetted year after year is not only counter-intuitive, but it can actually discourage the very type of investment in broadband connectivity that the Commission desires to promote.

Accordingly, the Commission should amend its rules so that multi-year contracts are not only allowed under the E-rate program, but are subjected to the full contract review process only once before the start of the first year of the contract, barring certain substantive changes. Although the Commission proposes to amend its rules to streamline the process for multi-year contracts that are no longer than three-years, the Commission should consider allowing a streamlined review process for contracts with terms up to five years, including options for up to seven years with additional review measures built in. This will help ensure that schools and libraries – particularly in high cost areas – are not arbitrarily discouraged from pursuing necessary, but capital intensive, broadband solutions.

D. Internet2 Supports the Commission’s Proposal to Further Encourage Strategic Use of Consortia and Bulk Buying Opportunities

As discussed above, Internet2 is, itself, a large consortium of universities, government agencies and laboratories, companies, and regional R&E networks. Internet2 knows firsthand the power of aggregating interests in order to achieve common goals. In fact, many state, regional, and R&E networks already utilize E-rate support to provide a number of cost-effective services that assist schools and libraries. They help schools and libraries achieve enhanced

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28 Id. at ¶ 240.
network efficiency by employing strategies such as direct content-provider peering, state backbones that coalesce key content sources and consumers, caching servers, commercial peering services, and private cloud storage, just to name a few. These strategies improve the reliability and quality of connectivity to schools and libraries and achieve greater cost efficiencies through aggregated purchasing of broadband services. Though beyond the technical scope of the E-rate program, such group and consortia purchasing has the secondary benefit of forming communities of formal and informal education providers such as schools, libraries, science centers, museums, aquariums, and cultural centers that work together to develop and deliver rich educational content and programming to schools and libraries over these state, regional, and R&E networks.

From experience, then, there is no question that the Commission’s proposal to reform the E-rate program in ways that will further encourage schools and libraries to participate in consortia can help to aggregate demand, influence existing service providers to lower their prices, and promote efficient use of shared facilities. The Commission should examine additional opportunities for consortia to drive down service rates, increase bandwidth, improve service quality, and reduce administrative overhead.

One way that the Commission can help to promote and incentivize consortia applications for E-rate funding is to simplify the application process for them. In particular, the Commission should: (1) collect free/reduced lunch and total student population data at the school district level as opposed to the campus or building level; (2) make Letters of Agency and Forms 479 submission for consortia a one-time occurrence unless a school district or library drops from, or joins, a consortium or changes its Children’s Internet Protection Act compliance policies; (3)

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29 2013 E-rate NPRM at ¶ 179-85.
train and designate consortium reviewers to expedite the Program Integrity Assurance ("PIA")
review process so that a funding commitment is issued no later than six months after the
application window closes; (4) require PIA review of long-term contracts only once and then
validate every year thereafter via invoices for the duration of the contract: and (5) create a special
class for state government applicants when their own internal audit and federal OMB review
process entities agree to participate in coordinated compliance activities with the Commission
and the Universal Service Administrative Company ("USAC"). This final measure would
provide the benefit of requiring these applications to go through only one PIA review as opposed
to the current dual federal and state audit and assurance oversight processes. By implementing
these simple measures, the Commission can provide additional incentives to facilitate the use of
consortium purchasing in the E-rate program.

Similarly, the Commission’s interest in pursuing other types of bulk buying opportunities
that can facilitate lower prices for broadband services makes perfect sense.\(^{30}\) Specifically, the
Commission seeks comment on whether E-rate applicants can lower costs by aggregating data
traffic, among other items. Specifically, the Commission noted that

many schools and libraries use district-wide or regional WANs to provide
broadband connectivity between buildings. Similarly, state R&E networks can
provide high capacity routes from major locations within a state, relying on
national networks for long-distance connections and local connections to reach
smaller communities and buildings within a community. By partnering with
WANs or R&E networks and aggregating Internet traffic, schools and libraries
may be able to further drive down prices. E-rate applicants may also work with
WANs and R&E networks to purchase circuits and network equipment in bulk
and to take advantage of knowledge and relationships with commercial service
providers.\(^{31}\)

In many ways, what the Commission has described in the NPRM is similar, though not
identical, to Internet2’s K20 Initiative. Internet2 recommends that aggregating current and future

\(^{30}\) Id. at ¶¶ 186-90.
\(^{31}\) 2013 E-rate NPRM at ¶ 190.
data demands, while at the same time utilizing state R&E networks and other high capacity middle mile networks, can provide significant cost-effective solutions to schools and libraries.

In addition to these consortia and bulk buying proposals, the Commission should also promote private-public broadband partnerships and incentivize private and non-profit broadband solutions for E-rate funded school and library connectivity. For example, Internet2 and other R&E networks are able to provide schools and libraries with a Commercial Peering Service, which is a settlement-free peering service provided in conjunction with commercial network providers for the transit of advanced broadband traffic. This allows for the voluntary interconnection of administratively separate networks for the purpose of exchanging traffic freely between the users of each network for mutual benefit. Such arrangements could improve the service quality of connections, consistent with Section 254(b)(1), and can provide a faster, less expensive Internet source than that provided solely by commercial Internet access.

E. Internet2 Requests Clarification Regarding USAC’s Determination that Internet Access Service Provided by Internet2 Is Not an Eligible E-Rate Service

In the Commission’s 2010 E-rate Reform Order, the Commission concluded that schools and libraries “should be free to meet their communications needs” by obtaining eligible telecommunications “from any entity, including but not limited to telecommunications carriers and non-telecommunications carriers, such as research and education networks; regional, state, and local government entities or networks; non-profits and for-profit providers; and utility companies.” As a result of this decision, the Commission amended 47 C.F.R § 54.502(a)(2) to provide that “supported telecommunications can be provided in whole or in part via fiber by any entity.” However, according to the most recent Eligible Services List ("ESL") issued by USAC,

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32 2010 E-rate Reform Order at 9 (emphasis in original).
Internet access service provided by Internet2 is not an eligible service under the E-rate program. Internet2 has researched the background of this action and finds no Commission or Bureau order discussing or otherwise providing an underlying rationale regarding why Internet access service provided by Internet2 should be excluded from the ESL.

Accordingly, the Commission should clarify that, consistent with 47 C.F.R. § 54.502(a)(2) and the 2010 E-rate Reform Order, Internet access services provided by Internet2 are eligible services under the E-rate program and that Internet2 clearly falls within the meaning of “any” entity. USAC’s current ESL appears to be specifically discriminatory against Internet2 and inconsistent with the 2010 E-rate Reform Order by artificially eliminating Internet2 as an option for schools and libraries in the event that Internet2 offers a robust, cost-effective broadband solution in certain communities. The current ESL leads to a particularly absurd outcome insofar as it would undermine the NBP’s explicit recommendation that Internet2 and other R&E networks be utilized to serve a national broadband connectivity function. Indeed, Internet2’s U.S. UCAN program, funded in part through a BTOP grant from NTIA, exists to fulfill that very NBP recommendation. The Commission should accordingly correct the inconsistency introduced by the ESL.

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33 See, Eligible Services List attached to In the Matter of Modernizing the E-Rate Program for Sch. & Libraries, 13-184, 2013 WL 3829446 (July 23, 2013).
34 In addition to being inconsistent with the 2010 E-rate Reform Order, this treatment of Internet2 under the E-rate program would also appear to be inconsistent with the Commission’s recent findings under the rural health care support program that “broadband services required to connect to Internet2 ... should be eligible for support under the Healthcare Connect Fund, as well as any broadband services obtained directly from Internet2.” Rural Health Care Support Order, at 16739. In that proceeding, the Commission recognized the potential that Internet2 “may provide a level of service not available from commercial providers in certain situations.” Id.
35 NBP at 154 (recommending that government entities should work with the R&E community to facilitate a “‘Unified Community Anchor Network,’ that would support and assist anchor institutions in obtaining and utilizing broadband connectivity.”)
F. The Commission Should Harness All Available Resources to Advance the Nation’s Fundamental Broadband Goals

Congress, through the American Recovery and Reinvestment Act of 2009 ("Recovery Act"), directed the Commission to develop a national broadband plan that would ensure that every American has “access to broadband capability,” including for the purpose of advancing education and civic participation, among many others. Since that time, the Commission has taken a number of steps to implement and realize this goal, including the release of the NBP as well as reforming and modernizing the various programs under its jurisdiction. The current NPRM is a critical part of that larger national broadband framework. However, as the Commission is well aware, while the current NPRM is a critical part of this framework, there are other important components, including the Commission’s efforts to reform other universal service support mechanisms such as the high cost and rural health care programs.

In addition to the Commission’s important work, the Recovery Act also directed NTIA to implement the BTOP program and provided it with $7.2 billion to expand the physical broadband infrastructure so that more Americans could have access to broadband service. As a result of NTIA’s successful implementation of the BTOP program, the country is now the beneficiary of more than 74,000 miles of newly deployed broadband infrastructure that will, among other things, connect thousands of CAIs, including schools and libraries, nationwide. Between the Commission and NTIA, the nation’s broadband infrastructure, and access to it, has received a much needed boost. But even more needs to be done.

That is why Internet2 urges the Commission to be vigilant in pursuing other opportunities that will advance the country’s broadband goals. One of the many ways the Commission can do this is to work with NTIA where possible to utilize the considerable expertise and experience it has in effectively addressing national broadband infrastructure challenges. Such coordination
also would be responsive to the Administration’s direction in the ConnectED initiative, calling on the Commission to leverage “the expertise of the National Telecommunications and Information Administration to deliver [broadband] connectivity.”36 The Commission should consider ways in which it can harness NTIA’s significant expertise in broadband deployment to make the E-rate program as effective as possible.

Finally, the Commission should be vigilant regarding ways in which the practical results of its reforms of the other universal service programs may be used to complement one another. As just one example, the funds used to connect a rural health care facility under the rural health care program may very well provide a foundation for increased broadband capacity to the schools and libraries in the same area. To the extent that the E-rate program can be reformed to take advantage of such synergies, the limited funds may be stretched even farther.

IV. CONCLUSION

For all of the foregoing reasons, Internet2 respectfully requests that the Commission issue an Order in this proceeding consistent with the recommendations set forth herein.

Respectfully submitted,

[Signature]

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