Before the
Federal Communications Commission
Washington, D.C. 20554
In the Matter of
A National Broadband Plan for Our Future
GN Docket No. 09-51

COMMENTS OF PELICAN CITY SCHOOL DISTRICT, PELICAN, ALSAKA, REGARDING INTERNET and E_RATE

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INTRODUCTION

The comments herein were made by the Superintendent of Schools, Connie Newman, and the Technology Support Person, James Newman, of the Pelican City School District, Pelican Alaska. The comments are a response to the below questionnaire document e-mailed to Pelican by The State of Alaska seeking information relating to E-Rate funding, broadband Internet, implementation and other factors to be considered by the FCC.

Not all questions were answered and the questionnaire was not completed past the E-RATE MODIFICATIONS section because of a lack of time but it was decided to send in what was completed at the deadline of 11/20 to help show the conditions and circumstances of Pelican City School District for FCC consideration.

Pelican is a remote community in Alaska situated on Lisianski Inlet of Chichagof Island with a current population of approximately 100 people. There are no roads connecting Pelican to any other community and travel is limited to boat or floatplane.

The Pelican City School District operates a K-12 school system which serves approximately fourteen students with six staff members. The school operates primarily out of two main buildings with several other support and storage buildings.

BROADBAND DEPLOYMENT DATA

1. We seek information on the current state of broadband connectivity, device availability, and adoption in U.S. schools and classrooms.

a. We seek statistics on the current state of network connectivity as well as information on technology deployment projects that address connectivity, access, and adoption.[1]

Pelican Schools constructed a Local Area Network (LAN) in classrooms and offices of its three buildings that is used to facilitate the District's connection to the Internet for the

[1] Press Release, U.S. Department of Education, U.S. Department of Education Study Finds that Good Teaching can to consider, what metrics should be used to measure an effective balance of network, hardware, application development, training, and adoption? Please include comment on metrics, benchmarks, and results against benchmarks.

delivery of educational services to its students and staff. The LAN is constructed utilizing copper Cat5, 10/100 Base-T Ethernet technologies as a backbone.

Each building has a wiring closet where copper Cat5 cable from the classrooms and offices are collected into Ethernet 10/100 switches. The Ethernet switches in the closets of each building are connected to the other buildings through outside copper Cat5 runs. All classrooms and offices feature ample RJ-45 jacks for plug-in data connections to the LAN backbone. 802.11 compatible wireless access points in each building offer complete wireless coverage for those devices that take advantage of wireless connections when connecting to the LAN.

Approximately twelve desktop PC-based workstation computers and twelve PC-based notebook computers are connected to the LAN and use Microsoft Windows XP Pro operating systems in a single-master domain environment defined by a Microsoft Windows 2003 Server domain controller. There is one Macintosh desktop workstation computer connected to the LAN using Mac OS-X v.10.4.11 operating system. All of the workstation computers are multimedia-equipped for maximum educational use.

All workstations communicate on the LAN and with the Internet using TCP/IP protocols as defined in the internationally adopted Domain Naming System rules and Microsoft's implementation of Dynamic Host Configuration Protocol.

Each user of the District's computer equipment has a unique user name and password and is allowed to interact on the LAN and Internet according to security settings configured on the domain controller.

There are four networked printers conveniently available to all users on the LAN and several scanners attached to networked computers. One centrally based, office-grade, high capacity, copier/printer is available to office staff and networked to the LAN.

The District LAN is connected to the Internet through terrestrial-based microwave circuits provided by three-year contract through the service provider, AT&T, and subsidized by the Federal E-Rate program. The AT&T microwave circuits provide the District with a symmetrical non-aggregated, private line connection of 768kb throughput for both download and upload of data communications. This broadband Internet connection alone costs approximately $3,000.00/mo. which is very expensive, primarily because of Pelican's remoteness, for the use of 14 students and six staff and would be impossible to purchase without being a 90% E-Rate school which makes the final cost to the District approximately $300.00/mo. which is affordable.

The terrestrial microwave Internet connection is brought to AT&T's local equipment shed and then passed to a District building by radio transmission between the two. At the District's main wiring closet the connection is passed through two devices owned and maintained by AT&T: a router network device that makes the Internet connection to the District's LAN possible and a firewall network device that provides protection to the

District's LAN from intrusions from the outside. Pelican Schools' Internet requests are passed through a third device owned By AT&T, an off-site Web filter/blocking product, that monitors Internet Web requests from computer users and is configured to protect students from harmful content on the Internet. The District has an internet use policy and is CIPA compliant.

Ping response rates run from about 20 ms to 250 ms total out and back, depending on distance from Pelican, which is fast compared to satellite technology which Pelican used to have. The speed of microwave technology is a definite advantage when running online web-based software compared to satellite which disallows some types of connections due to large latency times of up to 1600 ms total for the satellite.

The symmetrical broadband Internet connection allowed the District to lease a Polycom VSX-7000 video conferencing device from AT&T which is utilized to provide Distance Learning opportunities to widen the scope of subjects available to students, add special education opportunities for special education defined students, facilitate staff development and connect to other organizations around the world.

Some successful District examples of educational interaction using LAN and Internet resources are: the delivery of Spanish language lessons through the LAN from a local server to students using multimedia workstations utilizing the client-server software language package Rosetta Stone; the delivery of Italian language sessions to students on multimedia workstations using Internet web-based client-server software Rosetta Stone; the delivery of individual math instruction to students on multimedia workstations using Internet web-based client-server software package Carnegie Learning Math; limited delivery of services to students with special education requirements through videoconferencing with special education service providers; e-mail communications services for staff and students; social/educational networking opportunities which are vital to the education of the small, very remote Pelican Schools student body.

c. What are the specific barriers to increased broadband deployment and usage for schools and libraries?

Cost, influenced by remoteness which precludes development of sturdy, beefy infrastructure that is already available in urban centers. Also, lack of curriculum in place to utilize connections effectively in educational purpose. Lack of staff development to recognize and use educational opportunities broadband technology offers. Many schools are suffering from decreasing revenue and resources and facing increasing costs for everything which forces hard and bitter choices as to what educational services must be pared down, stretched thin or dropped. Technology often times falls way down the list of priorities when making the bitter choices. Because of its small

size and limited resources, Pelican struggles to provide even core educational services so further implementation of broadband services is not possible due to cost.

Is lack of physical facilities, including, e.g., complete wireless coverage for a school district, a problem for some schools and libraries?

Well certainly, because some buildings are old and not wired or not wired adequately for modern speeds. Wireless coverage is an easy way to solve this problem but brings a different set of problems such as uneven coverage, interference, slow connections, management, maintenance and security which all cost additional time, money and other resources to address.

Is cost of the monthly service or installation too expensive, even with the E-rate discounts?

Pelican has AT&T, a for-profit company, which is as good an Internet service provider there is but consider that, even after very expensive (2k -3k monthly) multi-year contracts which have long since paid for the cost of building and providing maintenance for the infrastructure, costs don't go down as you would expect after paying for the infrastructure – the costs stay the same or go up to put more profit than ever into AT&T. This is the nature of all for-profit companies and a key point in that infrastructure could be built and maintained and upgraded while costs could be kept much lower if a not-for-profit company or cooperative were to provide Internet services rather than for-profit companies like AT&T. Pelican is struggling to provide the 3R's much less any added content like music or arts so any extra costs are problematic as they force hard choices about priorities.

Is funding for services and equipment not supported by E-rate, such as computers or teacher and staff training, too expensive for schools and libraries to purchase additional bandwidth?

Extra services and equipment can sometimes be costly and always factor into the choices schools make about priorities because they do detract funds from the budget. If funds go into equipment and staff development, the budget must be balanced with money from somewhere else and in education it seems there is never enough money to go around which says something about how the people in gov't feel about educational funding. Any extra costs, including services and equipment not funded by e-rate, are always a challenge for schools and require sacrifices somewhere else.

There are some further points.

With current technology, providing broadband Internet access to a small school like Pelican can be a simple straightforward process; a service provider drops in a router and firewall which the provider configures and maintains and the school then has Internet access which can be easily spread to school computers on a simple low-cost school Ethernet LAN. The service provider's equipment can provide all essential network services like DNS, DHCP and content filtering and

the school doesn't need an IT department other than someone to maintain its LAN, computers and software which is fairly easy and low cost. So, there is basic Internet access with all that implies but it still has to be mined for educational opportunity and ways found to apply those opportunities to educate students .

The Internet contains educational content that is ever more useful, available and valuable amidst a sea of things that have little or no educational value. Keep in mind the Internet is essentially a digital medium and lends itself most completely to digital modes of presentation which currently means the use of digital devices like cables, routers, firewalls, switches, networks, multi-media computers, content filters, monitors, digital projectors, printers, whiteboards, videoconferencing equipment, and others. These things help to deliver Internet educational content to a student and education is changing more and more into something quite digital with teachers becoming more like moderators connecting students to appropriate digital content capable of educating the student efficiently, completely and inexpensively.

Also, school networks can become extremely complicated and expensive as the school digs into the Internet and more advanced services are offered by the school in conjunction with the Internet to facilitate digital educational opportunities like: storage servers; application servers and application software; network print servers & printers; library servers; network security; locally controlled content filtering, DNS, DHCP, firewalls; wireless networks; videoconferencing; student notebook computers; digital projectors, whiteboards; databases; SIS systems; content servers and a host of other services which are conducive to education at the highest, most refined levels in the digital age. Highly trained, costly personnel are required to make all these advanced features work properly and stay working and lots of staff development is required to use it all to good educational effect. This is all very expensive and E-Rate pays for some portions of some of it.

Schools are pushed to provide these advanced educational opportunities made possible by computers, networks and the Internet, as well as all the traditional educational tools and methods, by the need to provide all the educational opportunities available to other students in other places.

Are internal networks insufficient to handle increased usage?

In Pelican, internal networks are sufficient for current usage of Internet connections and capable of handling any conceivable increase in Internet connection. Most equipment is connected at 100mb speeds with a few oldsters at 10mb and our Internet connection is 768kb, about ¾ of a mb, so our bottleneck, when we experience one, seems to be the Internet connection.

BROADBAND IMPLEMENTATION

2. We seek comment on school and school system broadband initiatives including infrastructure and large-scale application deployment.

a. What projects have been considered successful and not successful? What were the success criteria?

Getting 90% E-Rate funding has been successful in getting connected at 768kb which cost 3,000.00 a month with Pelican's share 300/month which is all we can afford at this point. The success criteria are informal observation of students using the resultant Internet educational opportunities otherwise unavailable with no appreciable negative impact on performance.

Pelican does not qualify for NCLB funding to purchase technology and many times is viewed as too small, at 14 students, to qualify for other grants and special funding.

b. What have been the barriers to entry and barriers to adoption?

There are lots of barriers but one of the biggest is lack of adequate funding. Looking at the benefits technology initiatives bring to education, they often seem like simple no-brainer decisions to everyone but when examined in detail and every nickel and dime is added up they can come with a hefty price tag called "total cost of ownership" which make administrators balk and politicians backpedal. Also, small schools and even some larger ones cannot afford and don't have specified tech people to go after grants and ultimately implement and maintain the technology so they have to accept less service than they otherwise might have. In some schools many things have to be shouldered by teachers who already wear too many hats.

c. What are the most common needs heard from classrooms and instructional leaders with regard to using broadband for instructional or other purposes?

Once again a lot of needs are heard including: More and better computers; bigger and faster connections; access with fewer filtering restrictions; more staff development; ancillary equipment like digital projectors & network printers; e-mail for students; desire to try new software packages and technical help to implement them.

d. What creates demand for using broadband in education?

This can be a big list but some are: online educational resources like courses, textbooks, curriculum planning, data analysis tools, networking of professionals, access to other students, schools & universities.

BROADBAND AND DIGITAL CONTENT

3. We seek comment on schools' and school systems' online and digital content needs and uses, including content for student instruction (e.g., whole or partial textbooks or supplemental resources) as well as professional development content for educators.

a. What sets of instructional and operational problems are schools and school systems attempting to solve with online content solutions?

With limited resources, Pelican is struggling to provide core content as well as differential learning levels and hopes to find appropriate and reasonable online resources to fill those needs.

b. Of the typical set of online content tools (e.g,: content creation, content publishing, content indexing, content management, content search) what have schools and school districts experienced when making purchasing decisions about the quality and availability of tools that meet their needs?

There are so many offerings available that it can be difficult to make wise choices. Salesmen promise the world and too often fail to deliver. It can be costly and wasteful to learn by trial and error which tools are effective and helpful and which tool are not so good. Generally, peer discussions with other educators are helpful in finding and using good tools. Educator targeted magazines and reports are helpful in bringing good tools and trends, which have worked well for others, to the attention of educators. It would be helpful to have an educator clearing house of solutions and products to turn to for advice and help – I think OETC is an example of this type of educator organization and perhaps Alaska could do something along this line. Also, online experiences and capabilities are very different between urban and remote locations because remote locations generally don't have the big data pipes and that really limits their choices of online services to ones that can be run through skinny connections.

Are there areas where needs are consistently unmet or under-served?

There is a tendency to see media literacy skills not fully developed.

IT staffs trying to support delivery of educational content tend to be underfunded and overworked although this is probably not where this should be listed.

c. How is digital content being integrated with traditional textbooks and other materials? Are there issues preventing this integration?

Lots of ways this happens and it seems to be as varied as the educators' level of tech savvy. Multimedia & video clips seem popular but are severely hindered by skinny connections. There are innumerable canned and web-based educational software available and helpful but, here

again, their delivery is hindered by skinny connections. Many teachers are not tech savvy and almost no digital content is delivered in their classrooms and in many cases and subjects this is acceptable. However, in light of the fact that the world is "going digital" at an increasing rate, digital content is helpful and another tool in the teachers arsenal in engaging students and keeping them engaged as well as providing and expanding educational opportunities otherwise unavailable. A bigger effort should be made at staff development in using and teaching technology skills and also in hiring teachers that are tech savvy. Curriculum needs to be updated for inclusion of new technology and digital content where useful and appropriate.

DIGITAL LITERACY

4. We seek comment on digital literacy programs, standards, and content.

a. Please provide case studies or data relating to the use of digital literacy training to improve access and use of online systems, and the educational, social or economic impact created by such work. Where has such digital literacy work been accomplished in a traditional classroom and where has it been accomplished in an online or blended model for developing these skills?

What physical locations (if any) were used (libraries, schools, etc.)?

b. What barriers or issues have prevented implementation of such solutions?

ONLINE LEARNING SYSTEMS

5. We seek comment on online learning systems.

a. Please provide examples of schools and school systems currently supporting blended online/offline instructional planning and delivery as well as distance learning via broadband and computer-based learning. What online content systems (e.g, online text books, resource libraries, learning management systems (LMS), distance learning programs, student portfolio systems) have been successfully implemented?

Pelican uses: Carnegie Math; Lets go Learn; Rosetta Stone Italian and Spanish languages; online classes from University of Alaska in math, social studies, English & sciences. Students can, and

have become, Microsoft Office User Specialist certified. Online test preparation for all the standardized tests like SAT, HSGQE, PRAXIS, etc. Various career planning programs like AKCIS & AlaskaAdvantage Programs. Videoconferencing is used for CEO/CIS as well as meetings and an occasional virtual field trip.

How do schools and school systems align online learning systems with other traditional instructional tools (e.g., textbooks, curriculum, scope and sequence)?

Many online educational systems and resources are already aligned with Alaska State Standards and Grade Level Expectations or can be brought into alignment with minimal modifications. Pelican seeks those already in alignment or, if there are gaps, supplements with other resources.

b. How do schools and school systems measure the effectiveness of online vs. blended vs. offline instruction?

Informal observation and data collected annually as well as being responsive to students' needs and parent concerns.

What are the benchmarks used to compare delivery approaches?

c. What barriers or issues have prevented implementation of such solutions?

ACCOUNTABILITY AND REPORTING SYSTEMS

6. We seek comment on schools and school system implementation of online/ASP/cloud-based student instructional data reporting systems and their impact on student achievement and school operations.

a. Many school systems have built Adequate Yearly Progress (AYP) systems to fulfill accountability obligations. Have schools and school districts had success building online student data reporting systems that have had a positive impact on student achievement and/or classroom/school operations?

Pelican uses Teacher Ease which is a web based SIS and Lets Go Learn.

How have principals, teachers, students, or families benefitted?

Authorized persons such as parents, guardians and educators can see current, up to date info on grades, attendance, behavior, etc. which aid in evaluation of the student and immediately alert to problems which facilitates timely interaction – a good tool.

b. What barriers or issues have prevented implementation of such solutions?

Once again, limited funding which inhibits acquisition of systems, any data migration, staff development/training to fully use the systems and get all the benefits from the systems.

c. Within these systems, how do schools and school systems protect student-level data?

School policy, in accordance to law, to enforce privacy and limit access to those needing to know; network security limiting access to the systems to authorized persons with proper user account and password; all systems have further built-in intrinsic levels of security which allow viewing of data to students and parents/guardians or various levels of ability to modify the data by pertinent teachers and administrators.

d. How have student data reporting systems supported school reform movements?

Helps to identify and target specific needs of students and helps with planning student instruction. Helps plan professional development.

EDUCATIONAL DATA INTEROPERABILITY

7. We seek comment on data interoperability projects utilizing the Internet and/or wide area networks (WANs). Such interoperability projects could include student record transfer solutions between enterprise software applications within a single organization, or inter-agency data transfers.

a. How effective were these projects?

Here is a subject of interest in that I feel there are different ways to tackle this problem than what I see happening in Alaska where every school seems on its own to develop Student Information Systems as it sees fit..

I am aware of the Unity Project in Alaska and have worked slightly with a Unity server which queries various diverse SIS systems with different formats and protocols and sends requested data to the state educators in a way they need it without having hoards of secretaries digging out and reporting info. This seems costly and unnecessary to me compared to other ways to go about it because now we have two servers, a SIS server of school choice and a Unity server, with over twice the expense, configuration, maintenance and support issues at each school.

Tackling the issue differently, the state of Montana picked a SIS system and requested any and all school SIS systems be the same and be online so as to ease data collection automatically state wide and collect all the data centrally at the state level. The state provides financial resources and support to schools to make it happen. This seems much more sensible because it eliminates the need for a Unity Project with additional servers at schools.

An even better way would be to have the state of Alaska pick a web-based/enabled SIS system and set it up online so all teachers and staff of all schools can enter their SIS data centrally on a web site hosted on a state SIS server which can be controlled, maintained and backed up by the state. Students have a state ID anyway. Teachers have to be trained on SIS anyway. The state is handling servers and data collection anyway and could restructure their resources to save time, money and complexity and be much more efficient in the process. Individual schools would save tens of thousands of dollars from not having to buy SIS systems and servers and the State would not have to spend large sums to implement additional Unity servers to install and maintain on premises and collectively save individual schools and the State a huge amount of money, time & resources in the end. Of course an alternative method could be arranged for schools that have no internet connection but this would be small trouble in comparison to efficiency and savings gained overall and has to be done for those schools now anyway.

I see some problems to overcome but I think it could be done.

b. What metrics were used to define the projects?

c. What barriers or issues have prevented implementation of such solutions?

d. What security systems were implemented and were they effective?

COMMUNICATION AND VIDEO SYSTEMS

8. We seek comment on implementation of other online applications in schools and school systems.

a. How have communication tools like instant messaging and online video conferencing supported instructional program implementation?

Video conferencing has been used for trainings, meetings, online courses & CEO/CIS.

b. Where have live video streaming programs been implemented to scale?

c. Where have social networking tools been implemented to support instructional goals?

Google Doc; clips from myspace, facebook, youtube; blogs; diigo & wikis.

d. How have concerns of content appropriateness/content blocking been addressed in rollout to students (especially in kindergarten through grade 12)?

First off, teachers and staff are the first line of defense and must be aware to the greatest extent possible what students are doing with the technology. This is facilitated by arranging computers in such a way as all monitors are visible to the staff at a glance if possible. Also monitoring software, like Remote Desktop, on staff workstations can be utilized to allow monitoring of computers. Staff development is offered to train staff on best Internet practice in education.

Networks are constructed so as computer users have to have appropriate login and password and users are placed in profiles with different levels of access to the Internet. Wireless networks are encrypted so that only authorized users and computers can gain access by wireless. Computers are further grouped by MAC address into groups with different levels of access.

All computers are required to run approved antivirus/anti-malware software.

Even with these measures it is not possible to completely protect students from inappropriate content, particularly, when students bring their own notebooks to school, so further measures are taken and I have seen and used several measures of content filtering; two of the best are described below.

AT&T offers Pelican turnkey third-party content filtering tailored for schools as part of its Internet service which uses updated databases to place websites into about 80 categories which can be monitored, monitored & blocked, or monitored & allowed. It also allows white and black list capability for further granulation. AT&T provides a web site which authorized school personnel can access to configure the filter as the school wants. One nice thing about this is that the filter is not on the school premise so it can't be tampered with or bypassed as Pelican has had happen in the past when it owned and used its own filter.

Iprism, which I highly recommend, is another turnkey third-party content filtering solution from St Bernard Software which is similar to the AT&T service except the filter is an appliance (server) sitting on the school network and it is much more versatile and granular. Iprism monitors all Internet http and https traffic and some types of other traffic such as instant messaging (P2P/IM), common gaming protocols and ports and some other types of network protocols. Iprism uses daily updated databases to categorize all website into about 80 categories like religion, sex, violence, web search, auctions, etc which cover pretty much every conceivable category and allows authorized personnel to monitor, monitor and allow, monitor and block categories as suits the school educational purposes. It also allows for white and black lists which control access to websites by url, protocol, port, and type. Authorized personnel can also control all ports from 0 to 65535 either UDP or TCP. Authorized personnel can create profiles, such as

student and teacher, and allow for different levels of access between profiles and imposed days and times for different levels of access. The Iprism can talk to Active directory and Open Directory to recognize users and profiles and allows for single sign on authentication for computers and users. Iprism also monitors for certain types of activity like web proxies and can alert and block those types of sites and activity. Web sites and users not recognized by Iprism can be handled with any level of filtering authorized school personnel determines appropriate from the most restrictive (blocked everything) to partially restrictive (block specified things, allow specified things) to permissive (allow all). Every single bit of data is recorded and stored in a database and can be mined by a comprehensive search tool with prebuilt or custom-built criteria to ensure compliance and quickly point out abuse – extremely useful. There are so many features in Iprism that I can't really describe them here but, from my experience with various types of filtering devices and strategies, Iprism is one of the best tools.

e. What single sign-on and identity management tools and approaches have schools and school systems used to ensure security and seamless user experience across online tools?

Microsoft Active Directory and Mac Open Directory to recognize and group users with differing levels of security and access along with the two above mentioned solutions: AT&T's filter offering and Iprism from St. Bernard software which can also deal with unknown or rogue users and computers.

COLLABORATION AND COMMUNITY SYSTEMS

9. We seek comment on implementation of collaboration and best-practice-sharing online systems. For example, we have been directed to a number of systems which demonstrate features of collaboration or online community capabilities including: www.curriki.org, www.nylearns.org, www.oercommons.org, www.schooltube.com, www.boepilot.org.

a. Please provide examples of successful online collaboration systems rolled out to educators and/or students. How have projects measured success?

Various moodles; elluminate.

b. If they were not successful, what were the major challenges?

c. What subject matter(s) attracted the most use or were the most helpful for educators or students (e.g., instructional practice development, classroom management strategies, mentor/mentee relationships, administrative processes, student projects, student research)?

INNOVATION IN BROADBAND AND ONLINE SYSTEMS

10. We seek comment on opportunities for government to support innovation in the education technology sector, both in terms of driving innovative program and product development, as well as driving adoption.

a. What are the opportunities for government to support technology literacy, access to devices, and adoption through school-based programs for students, their families, and their communities?

Government already mandates equal opportunity to a free and appropriate education for all students and that should include equal access to the ever increasing and outstanding educational resources on the Internet. This isn't happening and results in discrimination against students that don't have big pipes to the Internet for whatever reason and can result in a loss of opportunities to meet the requirements of student achievement as required in NCLB.

This is really no different in concept than discrimination according to race, religion, sex, age & creed. If government were to mandate equal access in education, a key component of equal opportunity, it would result in a better quality of life for US citizens just as wiping out other types of discrimination has resulted in a better life and country.

So, Government should mandate and fund equal access to educational opportunities on the Internet. This requires building infrastructure throughout the country that provides equal access. If building the infrastructure is left to private enterprise, only those areas that provide a profitable market for Internet services will be developed, generally urban areas, and rural areas are provided lesser or no access as we see happening. Government could promote equal access with financial incentives and tax breaks to build infrastructure in rural and remote areas not so profitable otherwise. Government could foster not-for-profit companies and cooperatives to provide access at lower cost. Government should regulate utilities and other service providers to prevent inflated costs and abuse. E-Rate is a good start at these efforts but obviously not perfect because Pelican and other schools in remote areas do not have the same access as schools in urban areas.

b. What are the opportunities for government in setting technology standards?

Provide forums for stakeholders to define goals for technology standards & find ways to provide mechanisms to fund methods to achieve the goals. Provide tax & financial incentives to support efforts to meet the goals for the standards.

c. What are the opportunities for government to drive innovation in schools and school systems?

Fund promising efforts that bring about innovation.

d. What are the opportunities for the government to support research and development to drive innovation to the education technology market?

Provide R&D funding.

E-RATE MODIFICATIONS

11. As part of the national broadband plan, we seek comment on how the Commission can modify the Erate program to more effectively meet the needs of applicants as well as whether the program can be a vehicle to stimulate the adoption of broadband throughout communities. For example, in Portugal researchers have found that the usage of broadband in schools creates a "spillover" effect that leads to greater broadband adoption in the community as students increase their Internet usage at home and transfer their technology skills to other family members.[2]

a. Currently, schools and libraries may obtain discounts on various services that provide highspeed access to the Internet as telecommunications and Internet access (priority 1) services.[3] *We are aware that applicants may characterize their funding requests according to*

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[2] Patrick Agyapong and Pedro Ferreira, *Spillover Effects from Wiring Schools with Broadband: Implications for Universal Service Policy*, 37th Research Conference on Communication, Information,and Internet Policy, Arlington, VA. Sept 25-27, 2009, available at http://www.tprcweb.com/images/stories/papers/AgyapongFerreira-TPRC2009.pdf (last visited Oct. 21, 2009).

[3] The Commission's priority rules for the E-rate program provide that first priority for the available funding for all discount categories shall be given to requests for telecommunications services and Internet access (priority 1 services). 47 C.F.R. § 54.507(g)(1)(i). The remaining funds are allocated to requests for support for internal connections (priority 2 services), beginning with the most economically disadvantaged schools and libraries, as determined by the schools and libraries discount matrix. 47 C.F.R. § 54.507(g)(1)(ii); *see also* 47 C.F.R. § 54.505(c). Since funding year 2000, the E-rate program has committed the maximum $2.25 billion before funding all of the requests for internal connections. 47 C.F.R. § 54.507(a) (establishing annual cap of $2.25 billion per funding year).

terminology used on the eligible services list, such as DSL, "internet access via cable modem," ATM, frame relay, T-1, T-3, Ethernet, OC-3, OC-12, ATM, "internet access via fiber optics," etc. We seek information that would enable us to better understand at a more granular level what broadband services eligible applicants are buying today.

Overall, what percentage of priority 1 funding is subsidizing broadband services at what speed levels, and what percentage is subsidizing basic voice service (wireline or wireless)?

Can we segment the applicant community that receives discounts on higher capacity broadband services based on specific characteristics (such as number of students, rural vs. urban, discount level, etc.)?

b. When applicants develop their technology plans, what factors do they consider in determining their bandwidth needs?

c. We seek comment on program modifications to maximize the use of broadband connections that are subsidized by the E-rate program. Recognizing that the statute requires that discounts be provided on services used for "educational purposes," we seek information on whether, and if so, how, past interpretations of the "educational purposes" requirement have restricted demand aggregation at the community level to support higher capacity broadband.[4] *For example, the program could be modified to allow for use of broadband facilities at schools by the general community, rather than just by school faculty and students.*[5] *We seek specific examples of whether and if so, how, expanding the permissible use of E-rate supported services could confer benefits to a larger community or encourage partnerships with private or public organizations to pool resources to maximize broadband utilization. What practical or operational impact would such a change have?*

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[4] *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report and Order, 12 FCC Rcd 8776, 9072, para. 562 (1997) *(Universal Service First Report and Order)* (subsequent history omitted).
[5] *Federal-State Joint Board on Universal Service, Petition of the State of Alaska Petition of the State of Alaska for Waiver for the Utilization of Schools and Libraries Internet Point-of-Presence in Rural Remote Alaska Villages Where No Local Access Exists and Request for Declaratory Ruling*, CC Docket No. 96-45, Order, 16 FCC Rcd 21511, 21513-14, para. 6 (2001) (*Alaska Order*) (granting limited waiver to permit members of certain remote Alaskan communities to use excess Erate services when not in use by schools and libraries for educational purposes).

d. We seek comment on any legislative changes that would expand the classes of eligible users. For example, the statute currently limits E-rate support to elementary schools and secondary schools, which are defined by each individual state.[6] *What would the impact be of modifying the statute to permit colleges, community colleges, pre-kindergarten, Headstart, or other entities to participate in the E-rate program?*[7]

e. To what extent does the fact that the E-rate program does not currently fund computers and other end user equipment inhibit the use of broadband by schools and libraries? Likewise, to what extent does the fact that the E-rate program does not currently fund training for teachers or librarians in the use of technology inhibit the use of broadband by schools and libraries?

We seek specific information regarding what types of services are not available to teachers, students and library patrons due to lack of funding for end user equipment and training. If the E-rate program were to fund computers and training, what would the projected demand be?

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[6] For the purposes of the universal service programs, "elementary and secondary schools" are defined by the Elementary and Secondary Education Act of 1965, which defer to the definitions of those terms by individual states. *See* 47 U.S.C. § 254 (h)(7)(A), 20 U.S.C. § 7801 (18), (38).

[7] We note that certain states currently include pre-kindergarten, Headstart, and adult education within their definitions of schools. *See* USAC Website, Eligibility Table for Non-traditional K-12 Students and Facilities, http://www.usac.org/sl/applicants/step01/non-traditional-k-12/k-12-eligibility-table.aspx (last visited Sept. 8, 2009). However, college education would be prohibited because, pursuant to the Elementary and Secondary Education Act of 1965, "the term 'secondary school' means a nonprofit institutional day or residential school, … as determined under State law, except that *the term does not include any education beyond grade* " 20 U.S.C. § 7801 (38) (emphasis added).

From a policy perspective, what are the potential negative consequences if such a change were adopted?

f. Currently, WANs are not eligible for support "to the extent that states, schools, or libraries build or purchase a wide area network to provide telecommunications services."[8] *Would modifications to this rule regarding WANs, which link schools and libraries within a district or link several school districts together, result in greater broadband deployment?*

g. Are there any programmatic rules and policies that have the effect of deterring requests for broadband funding?

For instance, we understand that some libraries have suggested that compliance with filtering requirements under the Children's Internet Protection Act represents a deterrent to program participation.[9] *Are there other statutory provisions or Commission rules or policies that may reduce program participation by entities that otherwise would utilize discounts on broadband services? Commenters should be specific in identifying which current rules may create barriers to broadband deployment.*

h. We seek comment on these ideas and on other suggestions for changing E-rate eligibility to

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[8] 47 C.F.R. § 54.518.

[9] 47 U.S.C § 254(h)(6); 47 C.F.R. § 54.520. *See, e.g.*, "Public Libraries and the Internet 2008: Study Results and Findings," College of Information, Florida State University, funded by the Bill and Melinda Gates Foundation and the American Library Association at 47 (2006) (2008 ALA Study) (noting that 40.5% of libraries did not apply in 2008 because of the need to comply with CIPA's filtering requirements, up from 36.1% in 2007).

improve broadband deployment.

E-RATE DISBURSEMENT

12. We seek comment on how changing the E-rate disbursement and discount methodology might maximize the deployment of broadband.

a. One possible modification would be to create a new priority level for schools and libraries that do not have broadband or that have extremely slow Internet speeds to permit those entities to receive funding in advance of other eligible requests, which could enable such entities to "catch up." An alternative would be to provide increased E-rate discounts for entities that wish to implement certain levels of connectivity. We seek comment on other methods by which the Commission could implement such changes, if they were proposed.

b. Currently, the program's funding varies for applicants based on the number of their students who qualify for free or reduced lunch and based on their geographic location.[10] *Using this measure, discounts range from 90 percent to 20 percent of the pre-discount price for eligible services, with the poorest schools receiving funding to pay for 90 percent of eligible services. Some rural schools receive additional discounts.*[11] *The Commission could recalculate these Erate discount levels to factor in not just poverty and whether the school is located in a rural area, but also whether the entity lacks broadband services. In addition, the Commission could change its priority structure to give preference for those schools that have not received funding for internal connections in several years. We seek comment on the extent to which schools that have not received funding for internal connections (Priority 2 funding) need to improve their internal connections in order to most efficiently use their broadband connections now and in the future.*

c. To what extent have current rules inhibited the development of or expansion of existing state, regional or local broadband networks? Are there changes to the Commission's rules that would facilitate these types of networks?

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[10] 47 C.F.R. § 54.505.
[11] *Id.*

d. If the Commission established a national broadband goal for schools or libraries, what effect would that have on demand for E-rate funding?

e. We seek comment on these issues as well as other ideas to modify E-rate disbursements and discounts to maximize the deployment of broadband.

E-RATE FUNDING

13. We seek comment on the implications of modifying E-rate funding to support additional broadband deployment and how changes to the E-rate program would improve the ability of the program to meet applicant needs for broadband.

a. To what extent does the annual E-rate funding cap of $2.25 billion limit the extent of broadband deployment by eligible schools and libraries?[12]

What are the financial or programmatic implications of increasing the cap to fund additional services not currently covered by E-rate?

What are the implications of indexing the cap to inflation? Would there be specific implementation issues that would arise related to such changes?

b. To the extent the Commission modifies its E-rate rules to encourage additional requests for funding for broadband services under priority 1, how would that change likely impact the availability of funding for priority 2 services?

c. To the extent that commenters believe that providing additional funding above the current cap would advance broadband deployment, we seek comment on what additional amounts would be needed to achieve specific levels of broadband connectivity. Commenters should identify all assumptions regarding their dollar estimates.

[12] *See* 47 C.F.R. § 54.507(a).

d. The Commission could decrease the discount levels for basic telecommunications, or otherwise modify the existing discount levels, to increase the amount of E-rate funds available for broadband deployment. What would be the effect of such a change?

e. Would eliminating some of the services currently eligible and expanding eligibility to other services result in greater levels of broadband connectivity? Commenters should specifically articulate how proposed changes in the eligible services list would enable greater broadband deployment.

f. What other costs not currently covered under the E-rate program would be incurred if schools and libraries could purchase additional broadband capacity?

Would schools and libraries have to upgrade personal computer equipment, internal wiring, servers, and other hardware?

g. Additionally, we seek comment on suggestions for coordinating with federal or state agencies on grant programs that could supplement the Commission's E-rate program. For example, the United States Department of Education's Enhancing Education Through Technology State Program (Ed Tech) provides grants to state educational agencies to improve student achievement through the use of technology in elementary and secondary schools.[13] *Money from grants such as this, in combination with E-rate funds, could greatly increase a school's broadband connectivity.*

[13] http://www.ed.gov/programs/edtech/index.html (last visited Aug. 28, 2009).

h. Alternatively, E-rate funds could be used in conjunction with funds from other entities to support broadband projects. For example, upon a state's recommendation, a particular project might be funded by having the state pay for the computers and training, and providing E-rate discounts for the broadband connection. Are there other specific ways the Commission could better leverage the benefits of E-rate funding through coordination with other federal, state, local or non-profit programs that seek to advance broadband deployment?

i. We seek comment on these suggestions and other ideas to increase the amount of E-rate funds available for broadband technologies, or to more effectively use E-rate funding to improve broadband deployment.