

E-RATE AND ALASKA EDUCATION



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As the Alaska School Broadband Audit and Needs Assessment Survey have shown, connecting schools to broadband in Alaska is a considerable challenge and a costly one, with the consequence of geography, accessibility, population density, and the economics of broadband networks. The federal E-rate program (officially called the Schools and Libraries Universal Service Fund) is the nation's largest education technology program that is specifically designed to bridge these gaps. For Alaska K-12 schools and libraries, the E-rate program plays a particularly important role.

The Federal Communications Commission (FCC) administers the E-rate program, which provides substantial discounts for telecommunications services such as voice and data services, Internet access, and on-campus (internal) networks that are purchased or constructed by school districts and public libraries. The E-rate program only pays for network **connectivity** and does not help pay for connected devices, digital curricula, applications, or electronic textbooks.

In the 2013/2014 school year, the E-rate program spent \$49.2 million in broadband and voice connectivity to Alaska K-12 schools.<sup>7</sup> **The analysis of Audit data below shows that the lion's share of these funds is used for broadband connections to Alaska K-12 schools – approximately \$35.2 million dollars.** As the demand for education technology in Alaska has increased, E-rate funding has followed. E-rate funds in the amount of \$62.6 million have been committed to Alaska schools for the 2014/2015 school year, and in the most recent application window as a result of changes made by the FCC to the E-rate program last year, Alaska schools and consortia have requested over \$93 million in E-rate funds, a substantial increase from prior years.

This section provides a general overview of how the E-rate program works, its impact in Alaska, and a summary analysis from Audit data on how E-rate subsidies are being used to upgrade broadband connectivity to Alaska schools. While Alaska schools have been drawing increasing amounts from the federal E-rate program for broadband, the broadband gap to K-12 schools, documented in the Alaska Broadband Education Gap section of this report, remains. The FCC has created additional funding channels designed to help bring schools up to national connectivity benchmarks.

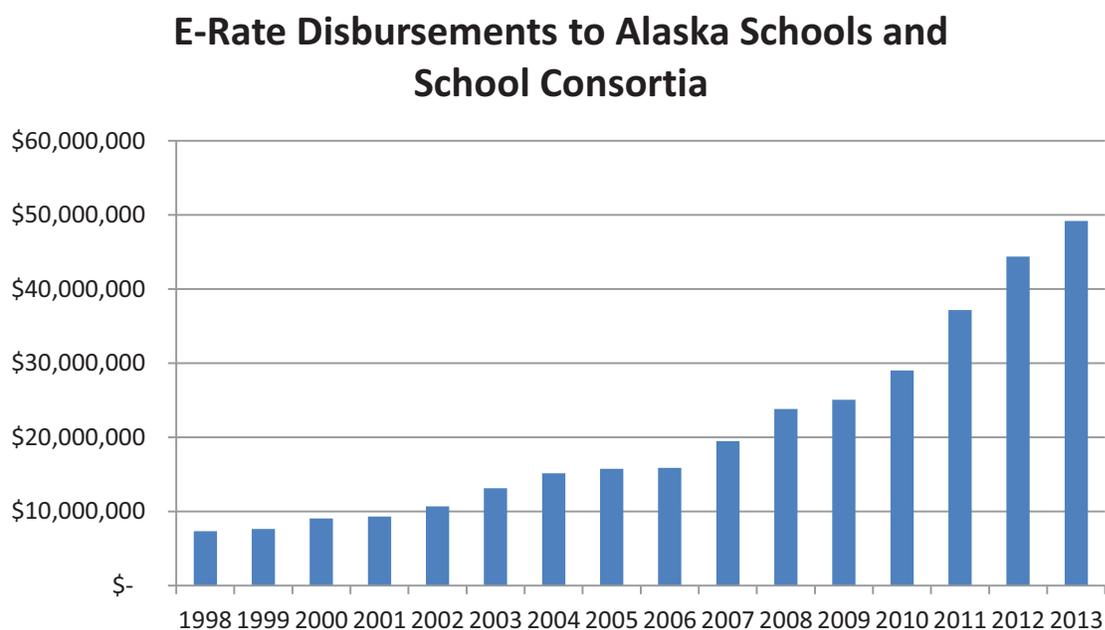
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<sup>7</sup> The E-rate program operates on a school year basis, and disbursements from the fund occur as procured services are provided. Public libraries in Alaska are also significant beneficiaries of E-rate funds. In 2013, public libraries received over \$1.7 million from the E-rate fund.

## E-Rate Funding Levels in Alaska

The E-rate program has provided over \$350 million in funding for connecting Alaska schools since its inception in 1998.<sup>8</sup> In 2013, the E-rate program distributed \$49.2 million in funding to Alaska schools and consortia including school applicants. In addition, from 1998 through 2013, disbursements from the E-rate fund to Alaska have increased steadily. This is important because, as discussed below, since its inception in 1998 until last year, total nationwide spending in the federal E-rate program has been capped at approximately \$2.25-2.3 billion per year.<sup>9</sup> Indeed, disbursements to Alaska schools from the E-rate program have increased from approximately 0.5% of the E-rate program from 1999-2001 to over 2% in recent years.

Figure 19: E-rate Disbursements to Alaska Schools and School Consortia

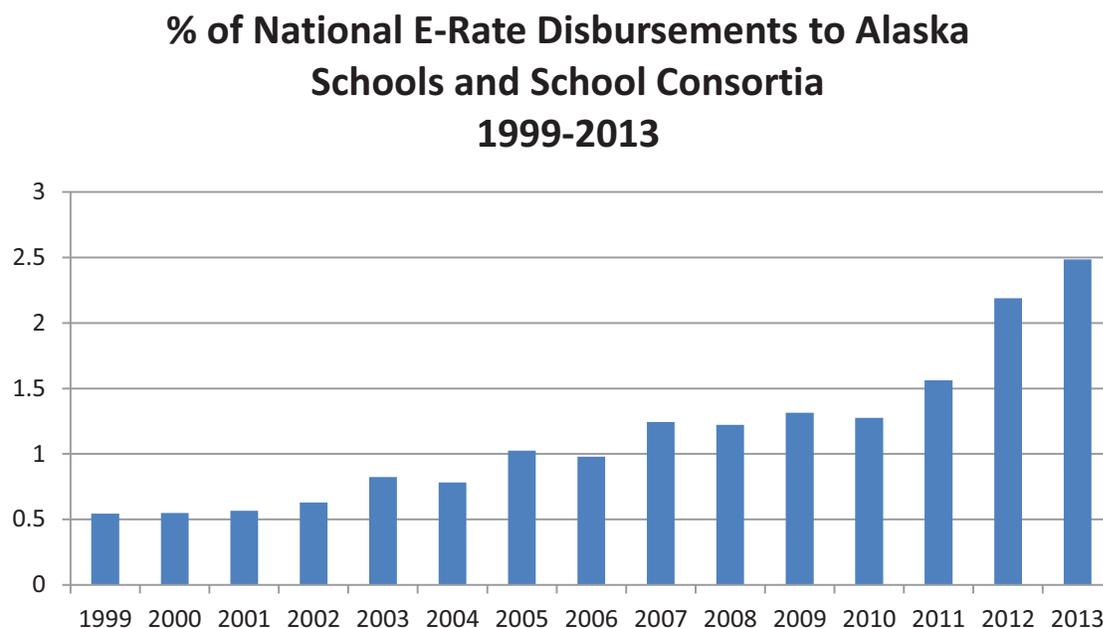


Source: Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: 2014* (Dec. 2014), Supplementary Report Material, <https://transition.fcc.gov/wcb/iatd/monitor.html>.

<sup>8</sup> For a general overview of the history of the E-rate program and the FCC's efforts in 2014 to shift the program's focus to broadband, see *Modernizing the E-rate Program for Schools and Libraries*, WC Docket No. 13-184, Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 8870 (2014) (*First E-Rate Modernization Order*), available at: [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-14-99A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-99A1.pdf); and *Modernizing the E-rate Program for Schools and Libraries*, WC Docket No. 13-184, Order and Further Notice of Proposed Rulemaking, FCC 14-189 (rel. Dec. 19, 2013), available at: [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-14-189A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-189A1.pdf) (*Second E-rate Modernization Order*).

<sup>9</sup> Because disbursements are made based on service fulfillment, disbursements for 2014 commitments are not included. For example, in 2013, USAC has committed to disburse \$57.6 million but as of latest reports had only distributed \$49.2 million. As a result, services contracted in 2014 that E-rate will eventually help fund may be in the process of being installed, but many significant disbursements are not likely to have occurred as of latest reports.

**Figure 20: Percentage of National E-Rate Disbursements to Alaska Schools and School Consortia, 1999-2013**



Funding requests by Alaska schools from the E-rate program have also increased significantly over time as well, rising to \$93 million in the most-recent funding request cycle, which closed in April 2015.<sup>10</sup> Because E-rate is an application-based and capped program, not all funding requests are approved for funding, but the steady increase in E-rate funding requests from Alaska schools demonstrates the growing need for broadband connectivity at Alaska schools.

However, this program-wide information does not present a complete picture of the extent to which the E-rate program helps fund **broadband** connections at Alaska schools. The E-rate program funds not only broadband, but also voice telephone service and other related services purchased by school districts. Unfortunately, the summary data released by the FCC and the Universal Service Administrative Company (USAC, the company that manages the E-rate program for the FCC) cannot generally be analyzed to identify how much of these funds have historically been spent specifically on broadband connections to Alaska schools.

One of the main purposes of the Alaska School Broadband Audit was to overcome this difficulty and determine, as best as possible, the amounts specifically being invested into broadband service and on-campus connections in Alaska schools. Connect Alaska engineers worked directly with school administrators and IT directors to make attempt to parse out the parts of a school’s E-rate funding commitment that is attributable to broadband Internet access service. As a result, the cost per megabit reported in the Alaska Broadband Education Gap section of this report and on the Audit website represents Connect Alaska’s best efforts to discern the amount that a particular school or district’s USAC funding commitment can be attributable to broadband.

<sup>10</sup> This summary of 2015 applications was determined using the Universal Service Administrative Company Funding Request Data Retrieval Tool, which is available at <http://www.siforms.universalservice.org/DRT/Default.aspx> .

## How the E-Rate Works

The E-rate program is fundamentally a **discount** program, in which the E-rate fund pays for a percentage of the costs of telecommunications and Internet access services that schools and libraries purchase and use for educational purposes. All public and private K-12 schools and public libraries are eligible for the E-rate discount program.

Schools and libraries receive this discount when they negotiate and purchase eligible services from telecommunications and other providers. Eligible services include broadband data and Internet access services (wireline, wireless, and satellite), as well as voice telephone service.<sup>11</sup> In order to receive the E-rate discount, the school or library must have an open, competitive bidding process. Eligible providers are required by FCC rules to place bids on these services that are consistent with their “lowest corresponding price” for “similarly situated,” “non-residential” customers for those services.<sup>12</sup>

After the school selects a winning bid, the school applies for the E-rate discount by filing FCC Form 471 with the Universal Service Administrative Company (USAC), a non-profit corporation organized by the FCC to administer the program.<sup>13</sup> USAC reviews these submissions and contracted services, and if it finds that the services and contracting process were followed appropriately, USAC will issue a funding commitment to the school district. Once the contracted-for services have been installed and started, the school district informs USAC, and USAC begin to pay the service provider the federal portion of the service. The district pays its portion of the contract directly to the provider.

As a result, since E-rate funds flow directly from USAC to the provider, what the school or library pays out-of-pocket for broadband service is generally substantially different than the total billed cost for that service. In addition, the nature of the E-rate application and approval process makes it difficult to identify precisely how much money the E-rate program pays for broadband service. In particular,

- USAC does not clearly collect or report data specifically for broadband Internet connectivity.
- Competitive bids might include not only broadband Internet access but other eligible services like voice telephone service, and distinguishing the cost of such bundled services can be difficult.

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<sup>11</sup> The FCC adopted the current Eligible Services List in October 2014, which can be found here: [https://apps.fcc.gov/edocs\\_public/attachmatch/DA-14-1556A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DA-14-1556A1.pdf).

<sup>12</sup> 47 CFR 54.500(f).

<sup>13</sup> USAC accepts these applications on a school year basis in the first part of the calendar year. As a result, schools seeking discounts for the 2015/2016 school year needed to file their FCC Form 471s by April 16, 2015.

- USAC funding commitments typically exceed actual funding disbursements, rather significantly. For example, in 2013, USAC committed over \$50 million in school and library requests, but only distributed \$46.3 million. This is a nationwide phenomenon that is a consequence of the involved, multi-step process for funding. A USAC funding commitment is perhaps better thought of as a commitment to spend “up to” a certain amount for the requested services in the district.<sup>14</sup> It is not uncommon nationally for committed funds to be held up in contracting or service provision delays, never to be spent.<sup>15</sup>

The amount of federal support varies based upon the urban or rural nature of the school district and the percentage of students in the district eligible for free or reduced price school meals through the National School Lunch Program (NSLP).<sup>16</sup>

Districts are eligible for discounts based on the income level of their community, their “urban” or “rural” nature (as defined by FCC rules), and the category of services for which districts request the discount. All school districts are eligible for discounts, even those in the most affluent and urban areas of the country. Discounts range from 20% to 90%. The following table summarizes the E-rate “discount matrix.”

**Table 29: Category 1 and Category 2 Services Based on Income**

Income <i>Measured by % of students eligible for the National School Lunch Program (% of students in district)</i>	Category 1 Services <i>Connections TO Schools</i>		Category 2 Services <i>Networks INSIDE Schools</i>	
	Urban Districts	Rural Districts	Urban Districts	Rural Districts
Less than 1%	20%	25%	20%	25%
1% to 19%	40%	50%	40%	50%
20% to 34%	50%	60%	50%	60%
35% to 49%	60%	70%	60%	70%
50% to 74%	80%	80%	80%	80%
75% to 100%	90%	90%	85%	85%

Source: Universal Service Administrative Company, 2015

<sup>14</sup> Because so many steps are involved in the process, a school seeking connectivity usually has to begin the E-rate bidding process well over a year before any connectivity is actually installed. This naturally results in an incentive for bid requests and resulting awards to request and contract for more services that may ultimately be installed. For districts with multiple or diverse schools, or schools that may see fluctuating enrollment, year-to-year variation can be considerable.

<sup>15</sup> USAC reserves these committed but unspent funds, and occasionally the FCC will order USAC to release and re-purpose those stale funds for new funding purposes. Indeed, the FCC’s creation of dedicated funding for on-campus internal networks, discussed below, is largely funded by repurposing of these committed but unspent funds.

<sup>16</sup> Students are eligible for the National School Lunch Program if their household income is less than 185% of the federal poverty guidelines. In Alaska, the poverty guideline for a family of 4 in 2014 was \$29,820. As a result, a student from a household of 4 in Alaska would be eligible for the NSLP if his or her family income was below \$55,167. In the E-rate program, in lieu of NSLP eligibility, schools have the option of demonstrating need in their community through surveys that collect data on family income and household size as well. To facilitate consistent analysis for this Audit, we have focused our analysis solely on NSLP eligibility.

## What are Category 1 and Category Services?

**Category 1 services include voice and data connections and other services to school or public library facilities. They include voice and dial-tone services, data connectivity, Internet access, and leased fiber connections.**

**Funding for Category 1 services receive priority when USAC processes funding requests. Category 2 services include connections inside school buildings and campuses, such as Wi-Fi networks, Ethernet cabling in classrooms, routers and racks, and maintenance of those networks.**

**A certain level of Category 2 funding is available over the next five years to all schools and public libraries, based on the number of students for schools and the square footage of public libraries.**

*Source: USAC and 2015 E-Rate Eligible Services List, available at <http://www.usac.org/sl/applicants/beforeyoubegin/eligible-services-list.aspx>.*

Pursuant to rules written by the FCC in 2014, all schools in a school district receive the same discount. The percentage of students in the NSLP is calculated on a district-wide basis, and the determination of a school district's "urban" or "rural" status is made by reference to all schools in the district. This represents a change from 1998-2013, in which a different discount was assigned to each individual school, based on the demographics of the student and physical location of the facility.<sup>17</sup>

## E-Rate Support for Broadband in Alaska

As noted above, the E-rate program is a substantial source of funding for broadband connectivity in Alaska schools. Because of recent FCC changes to the discount matrix, to understand how large that impact will be going forward, one must first estimate the level of discounts for which Alaska school districts will likely qualify in the future, and then apply that discount to the estimated broadband costs determined through the Alaska School Broadband Audit.

Connect Alaska estimates the new E-rate discount category for 53 Alaska public school districts in the Alaska School Broadband Audit dataset.<sup>18</sup> The majority of students attend the three districts regarded as "urban" under the new E-rate rules, and those districts are eligible for a 60% E-rate discount. A considerable number of school districts qualify for discounts of 80-90%. It is important to note that this is an estimate only, based on most recent NSLP data, and student body information is subject to change. In addition, districts may provide their own proof of community income to qualify for a certain discount

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<sup>17</sup> Classification as "urban" or "rural" is based on 2010 Census data. A school district is considered to be "urban" if a majority of its schools are located in either an "Urbanized Area" or an "Urban Cluster" with a population of more than 25,000. The FCC's first attempt to re-write these discount category rules in 2014 would regard all "Urban Clusters" as "urban" areas. This rule resulted in a number of small, remote districts in rural Alaska being classified as "urban," including Barrow, Bethel, Kotzebue, Nome, and Sitka. The state of Alaska and others successfully requested the FCC change this rule, and the FCC agreed to the change in December 2014. As a result of the change, only the Anchorage, Fairbanks, and Matanuska districts are designated as "urban" under the new FCC rules.

<sup>18</sup> Mt. Edgecumbe High School in Sitka, a state-run residential boarding school for Native American students, is not included in the dataset given its unique status.

rate. This estimate is based on the new FCC discount qualification rules, so that prior E-rate distributions to schools will likely have used different discounts for many schools.

**Table 30: Estimated E-Rate Discount Level by Income**

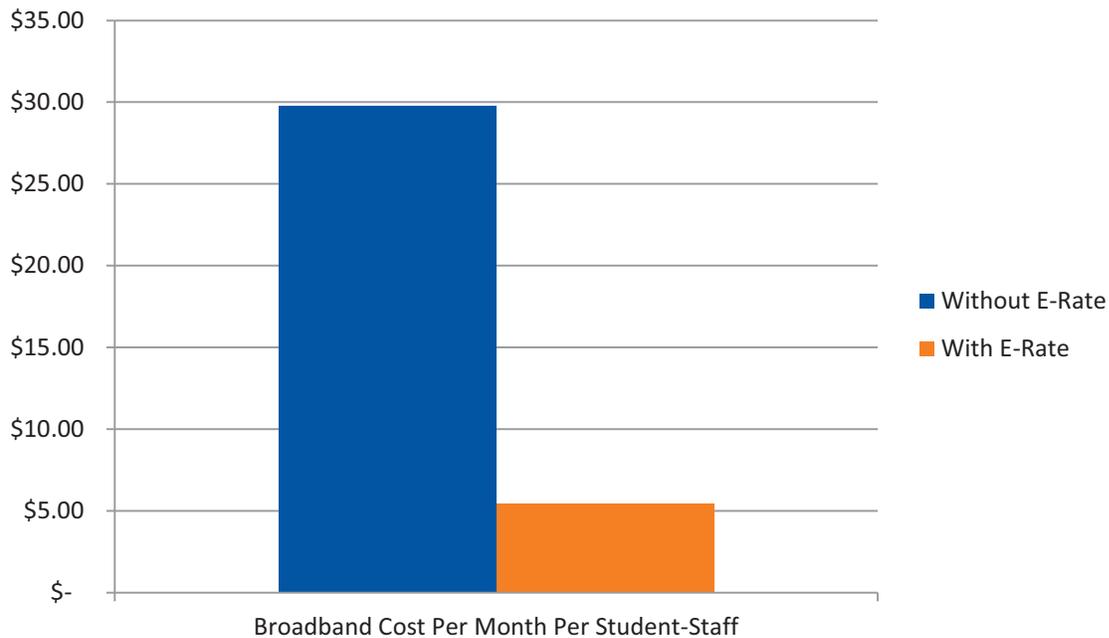
Income <i>Measured by % of students eligible for the National School Lunch Program (% of students in district)</i>	Estimated E-Rate Discount Level <i>Alaska Districts and Students</i>	
	Urban Districts	Rural Districts
Less than 1%	20%	25%
1% to 19%	40%	50% 2 Districts 499 students
20% to 34%	50%	60% 3 Districts 6,309 students
35% to 49%	60% 3 Districts 80,082	70% 7 Districts 19,707 students
50% to 74%	80%	80% 18 Districts 13,402 students
75% to 100%	90%	90% Category 1 85% Category 2 20 Districts 11,462 students

Applying these discount factors to the total broadband cost data collected through the Audit, we estimate that the E-rate program currently pays approximately \$35.3 million per year for broadband connections to Alaska schools. This is an estimate only, based on current levels of connectivity

discerned in the Audit. This estimate does not include any recent broadband upgrades or planned upgrades in the current E-rate funding cycle. When the FCC and USAC make that data available, the Audit dataset can be updated to reflect those upgrades.

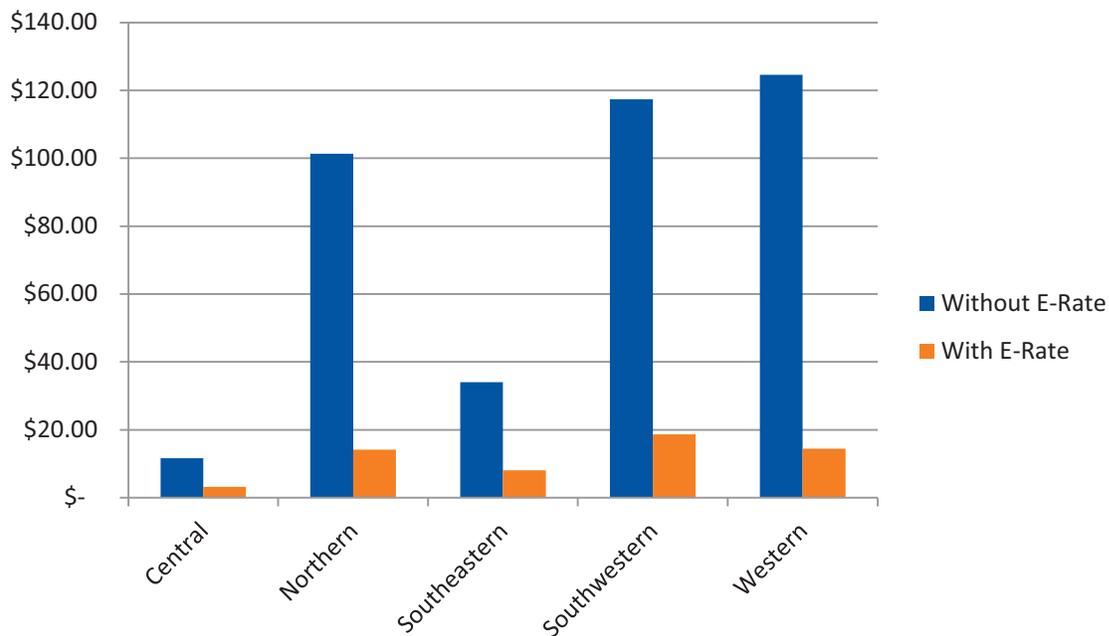
Even with this limitation, E-rate funds clearly have a dramatic effect. Without E-rate funds, it would cost Alaska \$29.79 per month for every K-12 student and staff at the current level of connectivity. With E-rate, Alaska spends \$5.48 per month for every K-12 student and staff member.

**Figure 21: Impact of E-Rate on Broadband Cost per Month per Student and Staff**



The impact of E-rate is even more important when examined by reference to the five regional groupings of Alaska school districts. As discussed above, there are significant regional differences in school district broadband connectivity in Alaska in terms of technologies available and cost. As Figure 22 demonstrates, E-rate funding plays an important role in the more remote regions of the state. For instance, without E-rate funds, the cost of providing the current level of connectivity in the Western Region would be over \$124 per month for each student and staff member, and it would be \$117 per month in the Southwestern Region.

**Figure 22: Impact of E-Rate by Region**



## Recent FCC Rate Changes

Recognizing the increasing importance of broadband connectivity to education, in 2014, the FCC made the most significant changes to the E-rate fund since its inception. The main components of the FCC modernization initiative were to:

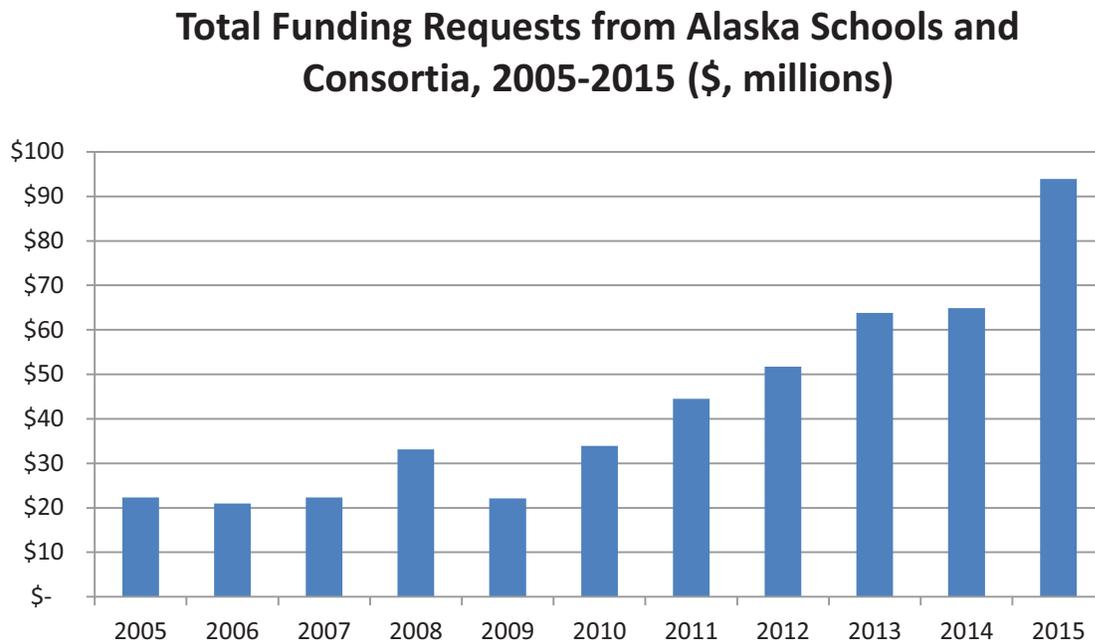
- Increase the E-rate funding cap to \$3.9 billion per year;
- Establish the robust per-student and staff broadband connectivity targets discussed above;
- Dedicate and increase funding for on-campus connectivity for all schools, using a per-student formula;
- Modify rules to incentivize deployment of higher-speed network connectivity, including additional discounts if the state directly helps fund broadband network upgrades and lower the upfront costs of special construction, through temporary revisions of amortization rules; and
- Phase out **all** E-rate support for legacy voice services.

The FCC's goal in this modernization effort is to encourage school districts to increase their investment in broadband capacity and on-campus networks while cutting back E-rate subsidies for school district spending on legacy voice services.

Alaska school districts seem to have reacted overwhelmingly to these changes. In the most recent application cycle that closed in April 2015, school districts increased their funding requests to upgrade broadband connections to schools dramatically, and Alaska districts also sought substantial funding to improve on-campus internal networks.

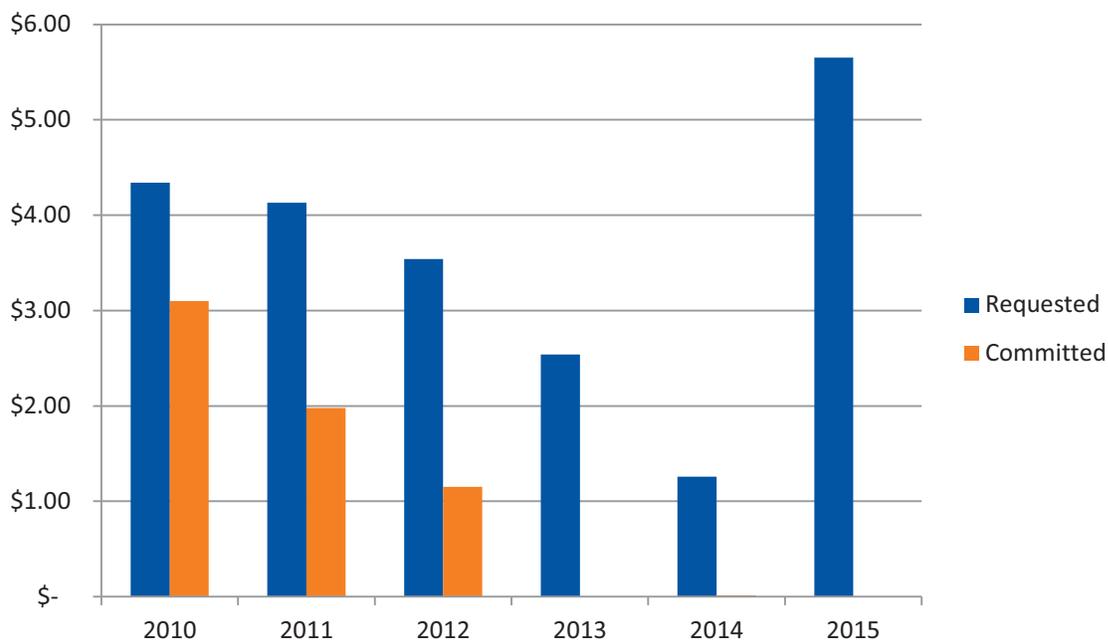
USAC data shows that Alaska school requests for funding in 2015 increased over 44% from 2014, from \$64.9 million to \$93.9 million.

Figure 23: Total Funding Requests from Alaska Schools and Consortia, 2005-2015 (\$, millions)



As part of this surge, Alaska schools in 2015 have aggressively pursued \$5.65 million in funding for Category 2 internal network connections. This action is likely a direct result of the FCC's actions to identify and dedicate funding for this purpose. Because E-rate is a capped program and Category 1 services have received priority in all funding requests, in 2013 and 2014, the E-rate program was essentially unable to fund **any** request for on-campus connections nationwide. In 2014 the FCC responded, by dedicating \$1 billion per year in funding for on-campus networks. Alaska school districts seem to have responded strongly to this FCC initiatives.

**Figure 24: E-Rate Funds for On-Campus Networks in Alaska Schools (\$, millions)**



The FCC’s dedicated funds for on-campus networks is a five-year program that allocates a certain amount of funding to schools on a per-student basis, with a minimum of \$9,600 for each school over that period. Using Audit data of student population and discount factors, Connect Alaska estimates that public K-12 schools in Alaska will be eligible to receive approximately \$12.8 million in E-rate funds for internal connections from 2015-2019. In 2015, Alaska schools appear to have requested approximately 44% of that allocated amount.

### Future E-Rate Opportunities

Beginning next year, the FCC will be offering additional matching funds to schools to help offset the capital cost of school networks upgrades – but only if the state helps defray these costs as well. This FCC program is part of a series of medium-term measures designed to reduce the out-of-pocket costs to districts for “special construction” of fiber and other high-speed broadband connections.

In particular, the FCC will provide an additional, matching discount to states that directly contribute to special construction charges for projects that will bring Alaska schools up to the 1,000 Kbps/student and staff benchmark. The initial costs of upgrading to meet this benchmark can be costly and run into the tens of thousands of dollars per location, especially if roads and property need to be dug up to install fiber optic cable. As discussed in the Alaska Broadband Education Gap section of this report, most schools in Alaska do not meet this long-term connectivity benchmark and would be eligible for the FCC’s matching program.

Beginning next year, the FCC will provide an additional discount that “matches” any additional funding that a state directly provides these schools to help pay for any special construction charges for such an upgrade, up to 10 percentage points above and beyond the discount rate applicable to the relevant entity.

The cost savings of this program could be substantial. For example, before this program, a school in the 60% discount category facing a \$50,000 construction charge for high-speed broadband installation would ordinarily need to find \$20,000 to pay for its portion of the project (with E-rate paying \$30,000, or 60%). If the state, however, implements a program that would pay \$5,000 of that special construction cost, the E-rate program now will match that amount with an additional \$5,000. As a result, the school would only need to find \$10,000 to fund that project. Collectively, the state and school authority would save 10% of the project cost over the standard E-rate program.

This program is available not solely for fiber connections but also for wireless technology, provided that the state assists districts with special construction costs and that the technology to be deployed will be capable of meeting the long-term, 1000 Kbps/student and staff connectivity benchmark. Schools do not need to subscribe to that level of connectivity to have that infrastructure project qualify.

The FCC also has taken other steps designed to lower the out-of-pocket costs districts face in upgrading broadband network connections, including a suspension of amortization rules for infrastructure projects (allowing districts to apply the E-rate discount earlier) and allowing districts to pay non-recurring construction costs over multiple years. In addition, school districts now also have flexibility to invest directly in infrastructure, such as a Wide Area Network, rather than procure a network service from a broadband provider if the district can show that that investment is the most cost-effective solution.<sup>19</sup>

These changes could aid districts in rural Alaska in building WANs, which could substantially increase the speed and lower the cost of delivering digital curricula, applications, and learning materials to classrooms. By combining the district bandwidth currently spread between many satellite locations at remote sites into a single point-of-presence for the district, connected by fiber or wireless technology. By facilitating the high-speed sharing of digital materials and applications between schools in a district, there would be a reduced need to rely upon long-distance transmission of data to and from the Internet, thus potentially lowering the costs per megabit per student and faculty member dramatically. Also, with a WAN configuration, districts could remove large numbers of redundant hardware installations around the district and centralize resources.

Historically, districts have not invested in WAN infrastructure due to the extremely high costs to install in very rural locations, the lack of service provider alternatives, and the general inability to use E-rate funds to pay for direct network investment. As a result, WAN construction has been overwhelmingly more expensive than simply purchasing broadband service from a provider and utilizing E-rate to pay most of the service cost for that connection. However, with the ability now to use E-rate to fund infrastructure projects where such a project is cost-effective, as well as other changes to the E-rate rules designed to lower the upfront, out-of-pocket cost of such projects, a WAN architecture may now be a solution worth exploring for many rural school districts.

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<sup>19</sup> For more detail on these changes, see the Connect Alaska white paper, *FCC E-rate Modernization: Impact on Alaska K-12 Schools*, released in February 2015 : [http://www.connectak.org/sites/default/files/connected-nation/alaska\\_e-rate\\_modernization\\_policy\\_brief\\_conforming\\_final.pdf](http://www.connectak.org/sites/default/files/connected-nation/alaska_e-rate_modernization_policy_brief_conforming_final.pdf).