

MERCATUS ON POLICY

Technology in Schools: What Does \$27 Billion in E-Rate Spending Accomplish?

Brent Skorup and Raymond
Russell

June 2017



MERCATUS CENTER
George Mason University

3434 Washington Blvd., 4th Floor
Arlington, Virginia 22201
www.mercatus.org

MANY SCHOOLS HAVE BEEN CONNECTED TO the Internet during the last two decades, but no one knows how much of this progress can be credited to the Schools and Libraries program, created by the Federal Communications Commission (FCC) in 1996.¹ Researchers and lawmakers have criticized this inter-carrier subsidy program, commonly known as the E-rate program, for its distortionary financing,² fraud,³ and lack of oversight.⁴ This paper explores a different aspect of the program: American consumers spend billions of dollars in fees annually for a school technology program that largely has not translated into student achievement gains.

In 1997, then US Secretary of Education Richard Riley stated that E-rate had to accomplish more than just wiring schools. The program “must show that it really makes a difference in the classroom, and that means helping students to learn the basics and other core subjects to high standards,” he argued.⁵ Despite ballooning costs, E-rate has failed to show an appreciable effect on student achievement, and the program’s defenders quickly began to downplay earlier promises about student achievement.⁶

Despite E-rate’s mixed record, in 2014 the FCC unilaterally increased the program’s annual cap from \$2.38 billion to \$3.90 billion. We recommend rolling back this “ed-tech” subsidy program. Our recommendation stems from a recent Organisation for Economic Co-operation and Development (OECD) report, which reached the following conclusion after finding few positive effects of technology in classrooms:

Put simply, ensuring that every child attains a baseline level of proficiency in reading and mathematics seems to do more to create equal opportunities in a digital world than can be achieved

by expanding or subsidising access to high-tech devices and services.⁷

Absent congressional action, consumers will be on the hook to spend tens of billions of dollars more in fees for this program.

BACKGROUND: THE FUNDING EVOLUTION

The Telecommunications Act of 1996 added a statutory objective for the FCC to provide “advanced telecommunications services” to schools and libraries as part of the Universal Service Fund (USF), a new telecommunications subsidy program.⁸ The E-rate subsidies range from a 20 percent discount to a 90 percent discount on eligible telecommunications expenses, depending on the school’s share of students who qualify for the National School Lunch Program.⁹

Today, the FCC permits the telecommunications industry to raise \$3.9 billion annually from phone customers and to redistribute those funds among themselves, via the Universal Service Administrative

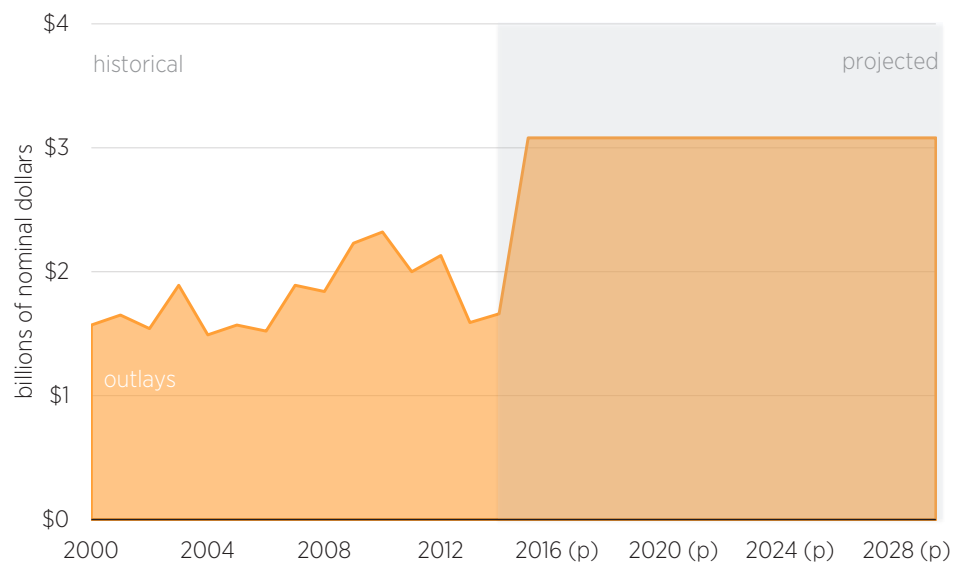
Company (USAC),¹⁰ to hook up schools and libraries.¹¹ USF fees are determined by the FCC based on USAC’s projections of financial needs to fund the USF programs.¹²

US PHONE CUSTOMERS’ TAB TO FUND E-RATE WILL SOAR

From 2000 to 2014, US phone customers paid \$26.9 billion in surcharges to fund E-rate disbursements, according to USAC data. This is about 79 percent of the FCC-set cap, which totaled \$34.1 billion.¹³

Drafters of the USF in the House and Senate, as well as the Congressional Budget Office (CBO), expected the cost of USF programs to decrease over time.¹⁴ Despite this expectation, in 2014 the FCC voted to raise E-rate’s disbursement cap from \$2.38 billion to \$3.90 billion. If current trends hold, we conservatively project that telephone and broadband customers will pay between \$39 billion and \$53 billion over the next 15 years to fund the E-rate program.¹⁵

Figure 1. Annual E-Rate Outlays, 2000–2029



Note: The 2015–2029 projected outlays are fixed at \$3.08 billion, or 79 percent of the current E-rate cap. This percentage equals the percentage of the cap spent over the previous 15 years. Sources: FCC E-rate proceedings and USAC data.

If current trends hold, we conservatively project that telephone and broadband customers will pay between \$39 billion and \$53 billion over the next 15 years to fund the E-rate program.

TECHNOLOGY IN CLASSROOMS DOES NOT APPRECIABLY IMPROVE ACHIEVEMENT

It is reasonable to infer that adding technology to classrooms improves student outcomes.¹⁶ Anecdotes aside, however, results are mixed. Some researchers find small, positive effects on student performance,¹⁷ but most research suggests negligible effects.¹⁸ In a 2006 article about E-rate's impact in California schools, University of Chicago economics professor Austan Goolsbee and Northwestern University economist Jonathan Guryan write that "at least in the short run, there is no evidence whatsoever that schools with E-rate subsidies learn over time how to use Internet technology in a way that improves test scores."¹⁹ Clemson University economics professor Thomas Hazlett and his coauthors likewise found in 2016 that E-rate dollars had no real effect on SAT scores in North Carolina.²⁰

These findings are in line with research about ed-tech subsidies and student performance in Israel²¹ and other countries around the world. In the most extensive international study to date, OECD researchers examined dozens of countries, standardized test scores, and technology use. After accounting for social background and demographics, the 2015 report found that

the results . . . show no appreciable improvements in student achievement in reading, mathematics or science in the countries that had invested heavily in ICT [information and communication technology] for education. And perhaps the most disappointing finding of the report is that technology is of little help in bridging the skills divide between advantaged and disadvantaged students.²²

Early proponents believed E-rate would improve educational measures,²³ but now E-rate advocates flatly reject incorporating educational outcomes in assessments of the program.²⁴

CONCLUSION

As advocates and telecommunications vendors retreat from justifying E-rate for its educational benefits, lawmakers should examine whether the billions of dollars in telecommunications fees are justified. Based on current trends, consumers will pay more than \$45 billion in telecommunications fees in the next 15 years to subsidize networks in schools and libraries, but they will see little improvement in student achievement. Other federal programs that incorporate technology in schools have less distortionary financing.²⁵ After 20 years, as OECD researchers suggest, it may be time for lawmakers to discontinue E-rate's ed-tech subsidies and focus on improving education generally.

ACKNOWLEDGMENTS

The authors wish to thank Nita Ghei and two anonymous reviewers for comments and recommendations on earlier drafts. The authors also thank Joe Kane for research assistance.

NOTES

1. Government Accountability Office, "Greater Involvement Needed by FCC in the Management and Oversight of the E-Rate Program," February 2005. Years later, the FCC still has not determined the results of the subsidies. Maurice McTigue and Jerry Ellig, "Comprehensive Review of the Universal Service Fund Management and Oversight" (Public Interest Comment, Mercatus Center at George Mason University, Arlington, VA, December 15, 2008), 9.
2. The FCC decided to levy the Universal Service Fund tax on long-distance services and currently requires providers to contribute 17.9 percent of interstate and international telecommunications revenue. FCC, "Proposed Third Quarter 2016 Universal Service Contribution Factor" (Public Notice, CC Docket No. 96-45, June 14, 2016). This added fee "conflicts with established principles of public finance and welfare economics." Jerry Hausman and Howard Shelanski, "Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies," *Yale Journal on Regulation* 16, no. 1 (1999): 21. The Tax Foundation estimates that the Universal Service Fund fees significantly depress consumer demand for wireless services. Scott Mackey and Joseph Henchman, "Wireless Tax Burdens Rise for the Second Straight Year in 2016" (Fiscal Fact no. 530, Tax Foundation, Washington, DC, October 11, 2016).
3. *Problems with the E-Rate Program: Waste, Fraud, and Abuse Concerns in the Wiring of Our Nation's Schools to the Internet*, Hearing before the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce, 108th Cong. 2-7 (June 17, 2004). The hearing cites improper or fraudulent multimillion-dollar E-rate payments in Chicago, San Francisco, New York City, Milwaukee, Houston, and Atlanta.
4. Government Accountability Office, "Greater Involvement Needed by FCC." The FCC Office of Inspector General in two separate reports found that the E-rate program in recent years had an erroneous payment rate of around 13 to 14 percent, significantly larger than the 9 percent rate for all Universal Service Fund programs, and deemed it an "at risk" program. Kent R. Nilsson (FCC inspector general), "Semiannual Report to Congress: April 1, 2007–September 30, 2007" (FCC Office of Inspector General, September 2007), 17; Kent R. Nilsson, "Semiannual Report to Congress: October 1, 2008–March 31, 2009" (FCC Office of Inspector General, March 2009), 19.
5. Department of Education, "Statement of U.S. Secretary of Education Richard W. Riley Re: FCC Approval of the E-Rate," May 7, 1997.
6. A publication from the Benton Foundation, for instance, urged E-rate assessors to "move beyond seeking a direct correlation between technology investments and rising standardized test scores." Norris Dickard, ed., "E-Rate 102: Politics, Policy and Progress 11, Great Expectations: Leveraging America's Investment in Educational Technology," Benton Foundation, 2002.
7. *Students, Computers and Learning: Making the Connection* (OECD, 2015).
8. 47 U.S.C. § 254(b)(6), (d).
9. FCC, 47 C.F.R. § 54.505 (2012).
10. FCC, By-Laws of Universal Service Administrative Co., 47 C.F.R. § 54.701 (2007). USF day-to-day operations are run by USAC, an independent, nonprofit entity owned by a private industry trade group comprising American communications companies.
11. FCC, "In the Matter of Modernizing the E-Rate Program for Schools and Libraries," WC Docket, No. 13-184, Second Report and Order and Order on Reconsideration, December 19, 2014.
12. Krishna P. Jayakar, "Reforming the E-Rate," *Info* 6 (2004): 42.
13. In 2010, disbursements exceeded the annual cap. This is likely because of an accounting idiosyncrasy. USAC disburses funding from several fiscal years simultaneously on an ongoing basis for recurring expenses. Lynne Holt and Mary Galligan, "Is It Time to Recreate the E-Rate Program?," *Federal Communications Law Journal* 64, no. 2 (2012): 309.
14. See House Report No. 104-204 (I) (1995), Arnold & Porter Legislative History P.L. 104-104 at 60: "Over time, CBO expects . . . the total amount of [USF] subsidies necessary would decline." This view was also expressed by Senator Ted Stevens during debate on the act: "In fact, I find it interesting that the Congressional Budget Office has said that this bill will reduce the cost of universal service from the existing system by at least \$3 billion over the next five years." 141 Congressional Record S7881 (1995), Arnold & Porter Legislative History P.L. 104-104 at 210. S. Rep. No. 23, 104th Cong., 1st Sess. 26.
15. These figures assume that the \$3.9 billion nominal cap is unchanged over the next 15 years. If outlays average 79 percent of the cumulative cap, the 15-year total will be \$46.1 billion. The \$14 billion range between upper-bound and lower-bound estimates factors in the 12 percent standard deviation from 2000 to 2014.
16. *Problems with the E-Rate Program*, Hearing, 7 (statement of Rep. Gene Green); Education and Library Networks Coalition, Letter to the US Senate, April 11, 2005. An Obama White House education initiative, ConnectEd, called for an expanded E-rate and declares of broadband that it "is real, it is available, and its capacity to improve education is profound." White House, "ConnectED: President Obama's Plan for Connecting All Schools to the Digital Age," 2.
17. See Michael R. Ward, "The Effects of the E-Rate Internet Subsidies in Education" (working paper, 2006).
18. Austan Goolsbee and Jonathan Guryan, "World Wide Wonder: Measuring the (Non-)Impact of Internet Subsidies to Public Schools," *Education Next* 6, no. 1 (2006): 65; Joshua Angrist and Victor Lavy, "New Evidence on Classroom Computers and Pupil Learning," *Economic Journal* 112, no. 482 (2002): 761.
19. Goolsbee and Guryan, "World Wide Wonder," 65.
20. See Thomas W. Hazlett, "Obama's Misguided Plan to Connect Schools to the Internet," *Politico*, August 23, 2016.
21. See Thomas Fuchs and Ludger Woessmann, "Computers and Student Learning: Bivariate and Multivariate Evidence on the Availability and Use of Computers at Home and at School" (Working Paper No. 8, Ifo Institute, 2005), 17.
22. OECD, *Students, Computers and Learning*.
23. As one scholar noted, "One of the fundamental propositions underlying the E-rate project is the expectation that computers and Internet access can have a beneficial effect on educational quality and equality." Jayakar, "Reforming the E-Rate," 44.
24. Comments of the Education and Libraries Networks Coalition, November 12, 2008, 7. Reply Comments of the American Association of School Administrators and the Association of Educational Service Industries, December 19, 2005, 4. Comments of the National Rural Education Advocacy Coalition, October 18, 2005, 2. Comments

of the Private School Technology Coalition, October 18, 2005, 3. Administrators at Chicago Public Schools, the nation's fourth largest school district, state that "in the overall equation [of educational achievement], technology plays a relatively small role, and . . . E-rate is only a small part." Comments of the Chicago Public Schools, October 18, 2005, 9-10.

25. Section IV of the Every Student Succeeds Act, passed in December 2015 to replace the No Child Left Behind Act, authorizes about \$1.6 billion annually in block grants to states for education and technology initiatives. Many researchers, including CBO, have pointed out that general taxes are more efficient than sector-specific taxes like USF, which tend to distort consumers' choices by affecting the prices of goods and services. CBO, "Financing Universal Telephone Service," March 2005, 20; Holt and Galligan, "Is It Time to Recreate the E-Rate Program?," 313; Hausman and Shelanski, "Economic Welfare and Telecommunications Regulation," 33.

About the Authors

Brent Skorup is a research fellow in the Technology Policy Program at the Mercatus Center at George Mason University. His research topics include wireless policy, new media regulation, competition, and telecommunications. Skorup has a BA in economics from Wheaton College and a JD from the George Mason University School of Law.

Raymond Russell was a 2016 Google Policy Fellow at the Mercatus Center at George Mason University. His research interests include data science and the economics of technological change. He has a BS in physics and economics from the University of Washington.

About the Mercatus Center

The Mercatus Center at George Mason University is the world's premier university source for market-oriented ideas—bridging the gap between academic ideas and real-world problems.

A university-based research center, Mercatus advances knowledge about how markets work to improve people's lives by training graduate students, conducting research, and applying economics to offer solutions to society's most pressing problems.

Our mission is to generate knowledge and understanding of the institutions that affect the freedom to prosper and to find sustainable solutions that overcome the barriers preventing individuals from living free, prosperous, and peaceful lives.

Founded in 1980, the Mercatus Center is located on George Mason University's Arlington and Fairfax campuses.

Views and positions expressed in the Mercatus on Policy series are the authors' and do not represent official views or positions of the Mercatus Center or George Mason University.