

# UNREPENTENT POLICY FAILURE

## UNIVERSAL SERVICE SUBSIDIES IN VOICE & BROADBAND

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## ABSTRACT

In the first half of 2013, the Universal Service Fund levied a nearly 16 percent tax on users of fixed, mobile, and VoIP communications, spending nearly \$9 billion to extend networks. Yet, USF expenditures – about \$110 billion (in 2013 dollars) since 1998, of which \$64 billion went for telephone carrier subsidies -- extending voice services to, at most, one-half of one percent of U.S. households. This generous estimate of about 600,000 residences implies a *cost-per-home of \$106,000*, just counting the federal carrier subsidies. Entrenched interests make the program exceedingly difficult to change. These interests include hundreds of rural telephone companies, inefficiently small and opportunistically expensive because funds are paid out according to cost-plus criteria. Some carriers receive more than \$10,000 *per line per year* to support voice service. Yet, FCC data show that mobile voice service is available to 99.9 percent of households and wireless broadband service to over 99.5% of the U.S. population, including 97.8 percent of rural residences. In addition, satellite systems supply voice and data services to households virtually everywhere people live in the United States, using networks built without subsidies. Even with subsidized lines, subscribers typically pay \$400 a year or more just for voice service. While some USF dollars help low-income subscribers pay their bills, 80% of poor households receive no subsidies and yet pay the USF tax. Studies, including several by the Government Accountability Office (GAO), have repeatedly revealed USF waste, fraud and abuse. The Federal Communications Commission (FCC) issued a 751-page Order in late 2011 purporting to deal with part of the situation, but rather than fixing fundamental problems the FCC Order extends subsidies from voice to broadband and mandates increases in payments to carriers. Even when attempting to rein in costs, the Order applies Band-Aids where tourniquets are needed. Emblematic of the new rules is a measure to limit subsidies to rural carriers to *\$3,000 per line per year*. This laughably spacious ceiling – in a day when satellite voice-and-broadband service is offered to virtually every U.S. household for *\$600 a year* -- will fail to remedy the endemic waste in the USF. Instead, it targets the “headline risk” policy makers now face when grotesquely profligate industry payments are made public. Most critically, the FCC provides a new rationale for subsidies – substituting “broadband” for “voice” – breathing renewed political life into a failed government initiative that taxes urban phone users, most heavily poor households who use wireless phones and make long-distance (including international) calls, in order to subsidize phone companies and property owners in rural markets. Indeed, the reform’s first effects were to *increase* the High Cost Fund by about \$400 million. Upon examination, the fig leaf of “public interest” for this transfer wilts. Any plausible cost-benefit test reveals that economic welfare would increase were the entire \$9 billion per year USF program eliminated.

Fannie Mae routinely claimed that it passed along every penny of its cost savings to homebuyers in the form of lower mortgage rates. This allowed the company to argue that any change in its status would result in higher housing costs for everyday Americans.

It wore the claim like a coat of armor, protecting itself from critics' slings and arrows. Only later would it emerge that the company kept billions of dollars – at least one third of the government subsidy – for itself each year. This money it dispensed to its executives, shareholders, and friends in Congress.

-- RECKLESS ENDANGERMENT (2011)<sup>4</sup>

## I. INTRODUCTION

The Universal Service Fund (USF) is a complex mix of government programs that expends more than \$8 billion annually. These monies, raised through taxes on telecommunications services, are to

- “promote the availability of quality services at just, reasonable, and affordable rates,
- increase access to advanced telecommunications services throughout the Nation, and
- advance the availability of such services to all consumers, including those in low income, rural, insular, and high cost areas at rates that are reasonably comparable to those charged in urban areas.”<sup>5</sup>

More than half of the total is earmarked to extend telephone service to those sparsely populated places where, for economic reasons, networks would presumably not otherwise extend. The remainder of the fund—intended for low-income support and for schools and libraries—is available to rural and urban areas. Yet, implementation of the USF, launched by the 1996 Telecommunications Act, has been abysmal. A consensus among expert economists<sup>6</sup> is that instead of improving network coverage or benefiting telecommunications users, the subsidies have been wasted, padding the costs of rural phone companies and delivering only pennies on the dollar, if that, in social value.

And the premises of the two largest components of the USF – the High Cost Fund (HCF, about \$4.0 to \$4.5 billion per year) the Schools and Libraries Program (E-Rate, capped at \$2.25 billion per year) -- have vanished. In essence, these programs have run out of things to subsidize.

The HCF was supposed to ensure that voice telephone service was available at reasonably comparable prices nationwide. Today, competitive mobile carriers provide voice

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<sup>4</sup> Gretchen Morgenson & Joshua Rosner, *RECKLESS ENDANGERMENT: HOW OUTSIZED AMBITION, GREED, AND CORRUPTION LED TO ECONOMIC ARMAGEDDON* (New York: Times Books; 2011), p. 19.

<sup>5</sup> Goals of the Universal Service Fund put forward in the Telecommunications Act of 1996. Universal Service Administrative Company [website](#).

<sup>6</sup> See Appendix 1.

coverage to 99.9% of the U.S. population<sup>7</sup> and at least 95% of U.S. homes have the choice of at least two local network providers for fixed line voice.<sup>8</sup> The idea that “plain old telephone service” (POTS) is (a) a necessity, and (b) often unavailable, and thus (c) worthy of generous public subsidy has been swept aside by simple market evolution.

Since 1998, an average of well over \$2 billion per year has been devoted to connecting all U.S. schools and libraries to the Internet via high-speed connections through the Schools and Libraries, or E-Rate, Program. That task was long ago achieved; indeed, as of 2003, the National Center for Education Statistics reported that 100% of U.S. schools enjoyed Internet access, 95% of which were via broadband connections.<sup>9</sup> Nonetheless, the subsidies continue to flow, large expenditures producing no observed change in opportunity or educational outcomes for school children. In its repeated reports on E-Rate, the Government Accountability Office has pleaded for clearer goals, greater transparency, and effective assessments. Policy makers have largely ignored the GAO. The program, lacking effective oversight, has been plagued by widespread abuse and even criminal fraud in the disbursement of funds to politically connected contractors.

The Federal Communications Commission, conceding that the system is in serious need of reform, issued 751 pages of new rules in 2011 that, it argues, will improve matters.<sup>10</sup> An examination of those proposed changes, as provided below, yields little optimism.

In particular, the primary “modernization” is to switch carrier subsidies from narrowband (voice) services to broadband (data) services. This change does not alter the basic, flawed structure of the USF but leaves it in place; indeed, it reinforces the basic system by providing new justifications for old regulations. Rather than fixing current problems, the Order gives them renewed life. From the very start of this proposed shift, it is unclear why broadband carriers require massive subsidies as unsubsidized markets have already made mobile broadband service available to 99.5% of U.S. households,<sup>11</sup> cable TV systems (virtually all of which provide broadband connections) pass more than 99.3% of households,<sup>12</sup> and phone companies offer digital subscriber line (DSL) service in 97% of *rural* areas.<sup>13</sup> Moreover, for the truly remote

<sup>7</sup> Federal Communications Commission, *In the Matter of Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, Sixteenth Report*, WT Docket No. 11-186 (Terminated) (March 21, 2013) [*“FCC 16<sup>th</sup> CMRS Report”*], p. 7.

<sup>8</sup> During the second quarter of 2011, U.S. cable TV operators offered wireline voice phone service to 112 million households, of 119.02 million households passed by cable. Research Note 3Q2011, Leichtman Research Group, Inc., p. 8.

<sup>9</sup> National Center for Education Statistics, *Internet Access in U.S. Public Schools and Classrooms: 1994-2005* (Washington: National Center for Education Statistics, November 2006); p. 14.

<sup>10</sup> Federal Communications Commission, *In the Matter of Connect America Fund, Report and Order and Further Notice of Proposed Rulemaking*, WC Docket No. 10-90 (November 18, 2011). [*“FCC Connect America Fund Report, Nov. 2011”*].

<sup>11</sup> *FCC 16th CMRS Report*, p. 248.

<sup>12</sup> Federal Communications Commission, *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Thirteenth Annual Report*, MB Docket No. 06-189 (Jan. 16, 2009), Table 1, par. 30. The data are from June 2006. It is not reported what percentage of cable systems deliver broadband modem service, but that is likely to be very close to 100. For instance, Leichtman Research reports that the top ten U.S. cable operators passed 118,540,000 homes in the first quarter of 2011, and offered broadband service to 118 million of them (99.54%). The top ten operators effectively account for the entire cable universe. *Research Notes 2Q2011*, Leichtman Research Group, p. 5.

<sup>13</sup> NECA. *TRENDS 2010 A report on rural telecom technology*, p. 20.

areas in which standard fixed or mobile networks do face difficult obstacles in providing unsubsidized connections, multiple satellite systems exist, in combination blanketing all parts of the country – without subsidies.<sup>14</sup>

The new Order largely retains the cost-plus accounting framework, adopts a per-line “cap” that will have virtually no effect on the size of the fund, sets a “budget” whose binding constraint appears to be a floor on spending rather than a ceiling, and includes no mechanism that will allow regulators to determine whether the subsidies have any effect in increasing rural broadband access. In addition, the Order reduces the effectiveness of some of the FCC’s otherwise positive reforms. For example, the FCC will use competitive bidding to provide subsidies in currently “unserved” areas, but only if the incumbent provider refuses to offer service at subsidies based on cost models.

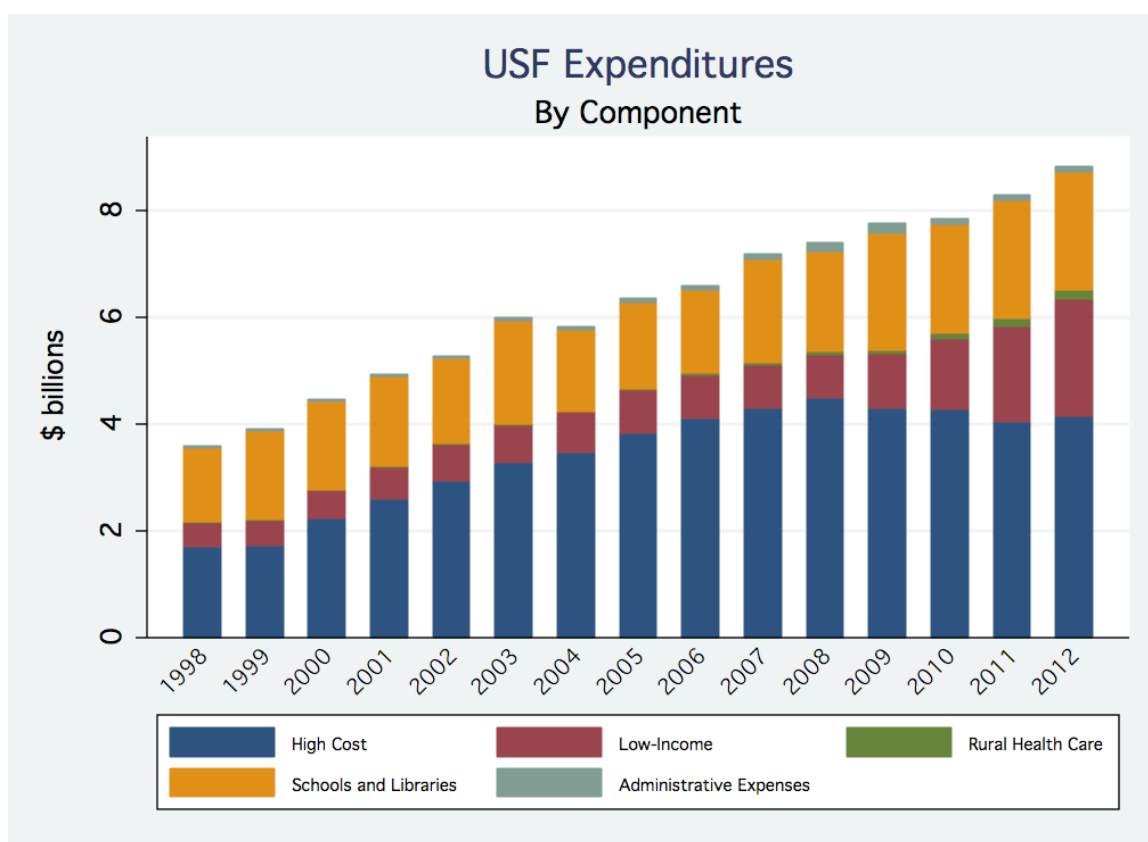


FIG. 1. UNIVERSAL SERVICE SPENDING BY COMPONENT PARTS<sup>15</sup>

<sup>14</sup> “Iridium provides complete coverage of all ocean areas, air routes and all landmasses - even the Poles.” For a summary of satellite-delivered voice and broadband services available in the United States, see Appendix 2.

<sup>15</sup> Universal Service Administrative Company. *2012 Annual Report* (numbers may vary due to rounding). [“USAC Annual Report”]. 2003 – 2011 data are from [Universal Service Monitoring Report 2012, CC Docket No. 98-202 \(Data received through October 2012\)](#) (March 2013), prepared by the Federal and State Staff for the Federal-State Joint Board on Universal Service in CC Docket No. 96-45. [“FCC Monitoring Report”]. Tables 3.1, 2.2, 4.1 and 5.1. (2011 totals are estimated). 1986 – 2002 data are from *FCC Monitoring Report (Data Received Through May 2004)*, (October 2004).

No matter how the FCC tweaks the program, the USF's High Cost Fund (HCF) will fail in the future – as it has until now -- to benefit the consumers it is supposed to help. The system, as designed, awards subsidies to networks supplying approved services. These networks, in return, agree to price such services at rates comparable to those available in average markets (urban and suburban). The idea is that residents in far-off rural locales enjoy lower voice or broadband rates than an unregulated market would offer. Yet these benefits, amenities attached to all residents living in these particular precincts, raise local land prices and housing rents. Just as agricultural subsidies pass through the farmer to the owner of the cropland she farms,<sup>16</sup> a rural build-out subsidy scheme that did manage to deliver, say, \$480 a year in benefits to each household, would raise monthly rents by about the same \$40 or home prices by, depending on interest rates, about \$9,600. The parties reaping the benefits, then, include (a) the owners of the high-cost rural telephone companies, encouraged to operate with excessive cost structures – too many private jets, overpaid managers, gold-plated offices, etc. -- and (b) landowners in areas where service is available due to the subsidies.

On the other side of the ledger, consumers – rich and poor -- are left to pay for all this. The Universal Service Fund is financed not by general U.S. Government revenues but by special tolls levied on “long distance” phone calls and wireless voice service. Between 1998 and 2012, the USF disbursed about \$94 billion (\$110 billion in 2013 dollars) to support its programs: High Cost Fund (HCF), Schools and Libraries (E-Rate), Low Income, and Rural Health Care.<sup>17</sup> The tax rate necessary to support this spending more than quadrupled during the life of the USF, from an annual average of 3.6% in 1998 to 17.1% in 2012 (Figure 2).<sup>18</sup>

The definition of what gets taxed is complicated, as the tax – imposed in the 1990s on long distance revenues – must delineate such flows when the lines between “local” and “long distance” have been erased by time. Residential fixed line, mobile, and voice-over-Internet users are all taxed but at different effective rates. The bottom line is that more than \$8 billion is raised, implying that the tax base is about \$60 billion. This formed about 27.7 percent of all telecommunications service revenues in the United States in 2010 (Table 1).. Because “long distance” is a legacy service category that disappeared after cellphone carriers introduced calling plans with buckets of “anywhere minutes,” regulators have had to extend the tax to a broader base that now includes “digital phone” service offered by cable TV operators, mobile phone service, and independent Voice-over-Internet Protocol services, as well as increasing the tax rate, which is adjusted quarterly.

The taxes represent more than a simple transfer. Each dollar raised by the government deprives private parties of that dollar and, in addition, reduces some transactions that would otherwise take place. In other words, the taxes distort economic activity and thereby create

<sup>16</sup> Barry K. Goodwin, Ashok K. Mishra, François Ortalo-Magné, *The Buck Stops Where? The Distribution of Agricultural Subsidies*, NBER Working Paper No. 16693 (January 2011).

<sup>17</sup> *USAC Annual Report 2010*, p. 56.

<sup>18</sup> The Commission determines tax rates based on forecast revenue from interstate and international end-user telecommunications. POTS, wireless and VoIP providers pay this tax rate on “safe harbor” percentages (proportions of total traffic assumed to be “long distance”) for wireless (37.1%) and VoIP (64.9%) providers. Universal Service Administrative Company, *Federal Universal Support Mechanisms Quarterly Contribution Base for First Quarter 2012* (December 2, 2011), p. 3.

efficiency losses. These distortions are larger the more price sensitive consumers are to the taxed good or service.

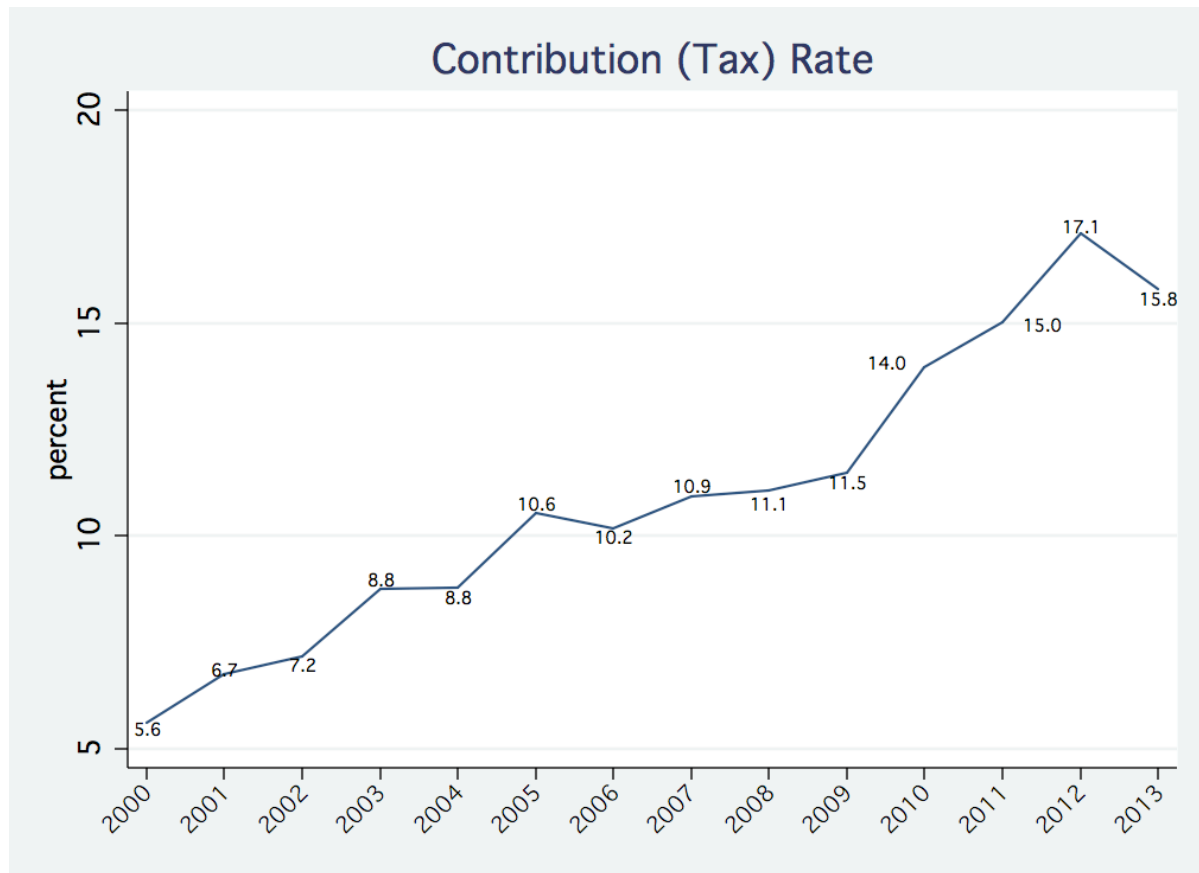


FIG. 2. TAX RATE ON “LONG DISTANCE” TRAFFIC TO PAY FOR USF, 1998-2013<sup>19</sup>

A longstanding criticism of the U.S. approach to universal service in telephony is that the system subsidizes the provision of telephone *access* (attempting to get more local connections to households) with funds generated by taxing long-distance *usage*. This yields relatively large economic distortions because demand for access tends to be *inelastic* (very few households would disconnect if the monthly rate were to increase by, say, 15 percent) and the demand for long-distance and international usage much more *elastic* (many users will talk less when per minute fees rise by 15 percent).<sup>20</sup> For instance, when wireless services are taxed, as they are now for USF support, each dollar collected produces additional losses to the economy of an estimated \$0.72 to \$1.14.<sup>21</sup>

<sup>19</sup> Federal Communications Commission, [Quarterly Public Notes on Contribution Factors](#). The tax rate is adjusted quarterly; the numbers graphed are yearly averages, except 2013, which is the average of Q1 and Q2.

<sup>20</sup> The assertion relies on the total decline in minutes of use being larger, in percentage terms, than the decline in access (subscriptions).

<sup>21</sup> Jerry Hausman, *Efficiency Effects on the U.S. Economy from Wireless Taxation*, 53 NATIONAL TAX JOURNAL 733 (2000), p. 735.

In addition to being inefficient, the system is inequitable. Low-income consumers, who spend a relatively large proportion of their income on international calls, are disconnected from the network for non-payment of (heavily-taxed) long-distance services.<sup>22</sup>

TABLE 1. TELECOM REVENUES, USF SPENDING, AND USF TAX RATES, 1998-2010<sup>23</sup>

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
End User Rev. (\$B)	200	216	229	236	232	231	233	236	238	240	239	226	217
Contribution Base for the USF (\$B)	75	80	81	79	77	77	78	75	74	74	75	71	60
Total USF (\$B)	3.9	4.4	4.8	5.4	5.8	6.6	6.3	6.5	6.6	69	7.1	7.2	7.9
Contribution Base as % Total Telecom Services	37.4	37.0	35.2	33.6	33.1	33.2	33.3	31.7	31.4	31.0	31.3	31.4	27.7
Tax Rate (%)	3.2	3.8	5.7	6.8	7.2	8.8	8.8	10.6	10.2	10.9	11.1	11.5	14.0
Total USF as % Total Telecom Service Revenue	1.9	2.0	2.1	2.3	2.5	2.9	2.7	2.8	2.8	2.9	3.0	3.2	3.6

No evidence suggests that the costs of USF taxes are offset by social benefits. Rural phone carriers, the largest beneficiaries of the program, reap returns in the form of extravagant subsidies. But they incur extravagant costs to qualify for the subsidy payments. The \$2.25 billion annual E-Rate program has similar problems. As shown in Section 7, no visible increase in broadband penetration (among schools and libraries) has occurred due to these subsidies, and none will occur going forward. More essentially, E-Rate subsidies have generated no measured improvement in student performance.

Low-income recipients do receive economic benefit from the programs in the form of transfer payments. In programs described in Section III, welfare-eligible households receive assistance in paying for local phone connections. Yet, because even low-income users pay the taxes that support universal service and 80 percent of low-income users pay the tax but receive no benefits, the bulk of low-income families are, on net, *worse* off because of USF. Even low-income families that receive assistance may be harmed relative to a world without USF programs, depending on the magnitudes of the rival income transfers. And low-income families who do benefit, on net, would gain even more were they simply to receive equivalent cash payments instead.

<sup>22</sup> The effects of universal service taxes took place (in many studies) prior to the birth of the USF in the 1996 Telecommunications Act because, while taxes and subsidies were not arranged in the same way as today, they were baked into the regulated rates charged by local exchange and inter-exchange carriers.

<sup>23</sup> End user revenues were obtained from Susan Lee and Kenneth Lynch, *Telecommunications Industry Revenues: 2009*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (May 2011). Contribution base for USF was obtained from *FCC Monitoring Report (2005, 2006, 2007, 2008, 2009)*, Table 1.4. The data for 2010 are the sum of the contribution base published by the FCC on the [Public Notes on Contribution Factors](#). USF total was obtained from *FCC Monitoring Report (2006, 2007, 2008, 2009)*, Table 1.11 for the years 2005 through 2009; *FCC Monitoring Report 2005* (Tables 3.1, 2.2, 4.1 and 5.1); *USAC Annual Report 2010*. Numbers may vary due to rounding.



In short, USF is ill designed and poorly implemented. It has not been usefully deployed in telecommunications networks and has not delivered what it promises: lower cost access to households needing it most. But it has produced some striking examples of government transfer programs gone haywire, as seen when examining where the High Cost Fund subsidies go.

A 2006 study of how the High Cost Fund (HCF) actually distributed its subsidies revealed startling statistics.<sup>24</sup> As the table below shows, two companies were receiving more than \$12,000 per line annually, with eight others receiving more than \$3,000 per line annually.

TABLE 2. TOP DOZEN HIGH COST FUND SUBSIDIES PER LINE RECIPIENTS (2005)<sup>25</sup>

	<i>Carrier</i>	<i>State</i>	<i>Lines</i>	<i>Total HCF \$</i>	<i>\$/Line/Year</i>
<u>1</u>	Sandwich Isles Communications, Inc.	HI	1,238	15,000,000	12,315
<u>2</u>	NCPR, Inc. (Nextel)	HI	891	11,000,000	12,165
<u>3</u>	Border to Border Communications	TX	108	1,000,000	9,608
<u>4</u>	Accipiter Communications, Inc.	AZ	219	1,400,000	6,311
<u>5</u>	Terral Telephone Co.	OK	282	1,800,000	6,228
<u>6</u>	South Park Telephone Co.	CO	201	838,983	4,174
<u>7</u>	Centennial Cellular Tri-State O.P.	MS	166	719,779	4,336
<u>8</u>	Saddleback Communications Co.	AZ	768	2,800,000	3,164
<u>9</u>	Beehive Telephone Company, Inc.	NV	140	467,608	3,340
<u>10</u>	Elsie Communications, Inc.	NE	232	704,341	3,306
<u>11</u>	Summit Tel. & Tel. Co. of Alaska	AK	250	809,512	3,238
<u>12</u>	Dell Telephone Co-Op, Inc.	TX	781	2,100,000	2,637

Five years later, the Federal Communications Commission itself reviewed the situation. Remarkably, the Commission found that the problem had worsened; by then some 10 companies were getting more than \$5,000 per line per year in federal tax subsidies – double the number in 2005. One company received \$23,000 per line per year in federal payments,<sup>26</sup> or 75% more than the top recipient in the previous study. See Table 3.

<sup>24</sup> Thomas W. Hazlett, [The Universal Service Fund: What Does \\$7 Billion Buy?](#) Analysis Group Economic Consulting (June 2006).

<sup>25</sup> Sources: Working loops data obtained from [USAC FCC filings from the fourth quarter](#). HC05-High Cost Loop Support Projected by State by Study Area 4Q2005. High Cost Payments obtained from [FCC Monitoring Report 2009, files 09t3-22to30](#).

<sup>26</sup> “[S]ome companies with fewer than 500 lines have received USF support for line, switching, and other costs in the last several years ranging between \$8,000 to over \$23,000 per year per line...” [FCC Connect America Fund Report, November 2011](#), ¶ 210. Our tabulation, adding flows reported publicly, produces slightly higher payment levels. In fact, HCF dollar figures are commonly restated after initial publication.

TABLE 3. TOP DOZEN HIGH COST FUND SUBSIDIES PER LINE RECIPIENTS (2010)<sup>27</sup>

	<i>Carrier</i>	<i>State</i>	<i>Lines</i>	<i>Total HCF \$</i>	<i>\$/Line/Year</i>
1	Westgate Communications LLC d/b/a Weavtel	WA	16	375,858	\$23,491
2	Adak Tel Utility	AK	165	2,784,558	16,876
3	Beaver Creek Telephone Company	WA	28	465,690	16,632
4	Border To Border	TX	135	1,828,017	13,541
5	Sandwich Isles Comm.	HI	2,068	25,583,457	12,371
6	Allband Communications Cooperative	MI	96	1,030,962	10,739
7	Accipiter Comm.	AZ	360	3,340,878	9,280
8	Terral Tel. Co.	OK	250	2,060,376	8,242
9	South Park Tel. Co.	CO	180	1,126,056	6,256
10	Dell Tel. Co-Op.	TX	769	4,480,362	5,826

In fairness, these examples—egregious as they are—are outliers. The average rural telephone company receives far less; mean and median payments, per line per year, are shown in Table 4. Subsidy payments that exceed the price of available unsubsidized service by an order of magnitude, however, vividly demonstrate the irrationality of the methodology used to determine the subsidies. And taxpayers are truly hurt by the *average* case, where billions of dollars in costs are reimbursed for hundreds of carriers under a system that possesses no ability to determine whether payments are worthwhile, how to best allocate scarce resources, or to introduce efficient substitutes.

As seen in Table 4, annual mean payments for subsidized carriers equaled \$580 per line in 2010. To put this in context, such payments exceed the price of a year's worth of cell service with unlimited nationwide voice minutes, texting and data.<sup>28</sup> Subsidies, conversely, only supplement carriers' costs; customers are left to pay another \$400 or so annually for service. Consider, too, that in August 2010, FCC data indicate that 99.8% of the U.S. population – all but about 600,000 Americans – lived in the coverage area of a mobile telephone operator.<sup>29</sup> Supplying each of those residents, in about 230,000 households, free unlimited domestic telephone service via satellite would cost no more than \$173 million per year using the retail prices stated by one satellite provider offering a recent low-cost unlimited service plan.<sup>30</sup> This puts the \$4.5 billion annual cost of the HCF into perspective.

<sup>27</sup> [FCC Monitoring Report 2011](#), Table 2.15.

<sup>28</sup> TracFone's Straight Talk service offers unlimited nationwide calling, texting, data and 411 for [\\$45 per month or \\$499 per year](#). TracFone is a subsidiary of America Movil which uses Verizon and AT&T networks.

<sup>29</sup> [FCC 15th CMRS Report](#), p. 6.

<sup>30</sup> Globalstar Voice Pricing service for unlimited minutes for \$39.99 per month plus a \$50 activation fee. [Offer](#) listed with a start date of January 1, 2012 and an end date of March 31, 2012.

TABLE 4. SUBSIDY LEVELS FOR RURAL CARRIERS WHICH RECEIVED HCF PAYMENTS<sup>31</sup>

Year	Total Number of Carriers	Total Loops	Lines Per Carrier			High Cost Fund subsidies per line (current \$)		
			<i>Average</i>	<i>Max</i>	<i>Median</i>	<i>Average</i>	<i>Max</i>	<i>Median</i>
2005	1606	22,774,537	15,019	2,063,198	3,148	415	12,314	253
2006	1642	3,138,201	14,953	1,959,251	3,062	458	14,517	270
2007	1669	3,213,454	14,523	1,954,626	3,081	490	16,494	287
2008	1688	22,241,199	13,770	1,823,158	2,966	530	17,262	293
2009	1708	21,915,445	13,445	1,670,869	2,870	541	24,302	274
2010	1678	23,902,987	14,605	1,463,823	2,809	580	24,171	292

The primary change to the HCF is to redirect funding from voice to broadband services. In addition, the Commission proposes capping certain HCF expenditures, imposing some performance requirements, and awarding some subsidies through reverse auctions. The reforms are steps in the right direction, but when examined, the policies have no more chance of being successful – of delivering at least \$4.5 billion in net annual benefits – than the existing rules.<sup>32</sup>

Consider one of the reforms: capping the maximum subsidy per line at \$3,000 per year, or \$250 per month. Subsidies anywhere near that level are impossible to justify via a realistic cost-benefit test. The most expensive satellite broadband plan offered by ViaSat, for example, is \$130 per month, not including promotional discounts.<sup>33</sup> This is a retail price; the awards handed out to phone carriers are wholesale payments. As discussed elsewhere, satellite services have been largely excluded from the broadband coverage analysis because the speeds offered by operators were below the FCC's requirement that subsidized broadband services should achieve download speeds of 4 mbps and 1 mbps for uploads. Yet, next generation satellites have arrived, offering services that easily exceed those standards. The service mentioned above, for example, supplies broadband network access at speeds of 12 mbps down, 3 mbps up. Prices start at \$50 per month, rising with data usage. These systems accommodate Voice-over-Internet service.<sup>34</sup>

<sup>31</sup> Data obtained from USAC FCC filings from the fourth quarter of each year. Documents are the following: "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2005"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2006"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2007"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2008"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2009"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2010"; "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2011." High Cost payment amounts obtained from *FCC Monitoring Report* (2009 and 2010 Files 09t3-22to30 and 10t3-22to30). The average subsidy size is the total annual support received by each study area divided by the number of working loops. "Total number of carriers" includes those which received support from the High Cost Fund (in a given year).

<sup>32</sup> See Section 6.

<sup>33</sup> ViaSat website: <http://www.exede.com/internet-packages-pricing>. Additionally, press reports note that satellite providers are already planning on launching even satellites in 2014 with double the capacity of existing satellites.. <http://gigaom.com/2013/05/16/viasat-taps-boeing-to-build-new-super-satellite-scheduled-for-launch-in-2016/>

<sup>34</sup> Sean Gallagher, *How ViaSat's Exede Makes Satellite Broadband Not Suck*, ARS TECHNICA (January 11, 2012); David Carnoy, *Exede: The Satellite Broadband Service You've Been Waiting For?* CNET NEWS.COM, (January 19, 2012). See also Appendix 2.

Even ignoring such innovation, subsidies sent to rural telephone carriers of more than twice the retail price of service cannot plausibly benefit society. “Beneficiaries” are hit both with USF taxes, funding the subsidies, and then must pay monthly service charges, which could easily exceed another \$400 per household per year. Moreover, the subsidy scheme clearly undermines the development of unsubsidized competition from advanced technologies that are far more efficient in serving remote regions than the tiny wireline carriers subsidized by the USF.

To be sure, the FCC is attempting to rein in some of the USF’s more egregious features, reforming how carriers’ costs are defined, how subsidies are awarded, and how progress is monitored. The proposed steps, assuming away administrative constraints, generally make incremental sense. But the big picture, and even crucial details, are almost entirely ignored. There is little chance that, when actual results are registered and regulatory gaming plays out, positive change will be recorded. Take the budget that the FCC has established for the HCF, now called the “Connect America Fund” (CAF). In principle, capping the total fund is good; indeed, this is one approach recommended earlier by one of the authors.<sup>35</sup> But it is difficult to supply this fiscal discipline internally, for the simple reason that what the agency “commits” to it may very easily “uncommit” to later on. Hence, the FCC’s announced budget amounts to an attempt to control *itself*. The form of the FCC’s announced budgetary limit is simply not credible as a disciplinary device. Indeed, the commitment could not even last through two full sentences of the Order:

We establish, also for the first time, a firm and comprehensive budget for the high-cost programs within USF. The annual funding target is set at no more than \$4.5 billion over the next six years, the same level as the high-cost program for Fiscal Year 2011, *with an automatic review trigger if the budget is threatened to be exceeded*.<sup>36</sup>

If the Commission cannot even appear to credibly commit to a budget in the Order’s executive summary, one suspects that ongoing pressure from recipients for more funds may soon break the bank – just as it has for many years.

Moreover, the FCC is imposing this cap just as the existing mechanism for determining expenditures was beginning to yield *smaller* payments. As discussed in more detail below, the “budget” of \$4.5 billion is actually several hundred million dollars more than actual expenditures in 2011, and the rules now *prevent* CAF from collecting less than that amount or USAC from estimating demand for subsidies at less than that amount. In other words, the so-called budget is a *floor* rather than a *ceiling*.

Many press accounts greeted the changes as promising steps, revealing how low the bar has been set. When a proposed reform to cap payments to carriers at \$3,000 per line per year

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<sup>35</sup> Thomas W. Hazlett, *The Universal Service Fund: What Does \$7 Billion Buy?* (June 2006).

<sup>36</sup> *FCC Connect America Fund Report, November 2011*, ¶ 18 (emphasis added).

leads the *New York Times* to declare that “[t]he F.C.C. plan is a good one,”<sup>37</sup> one might inquire: what would a boondoggle look like?<sup>38</sup>

## II. HOW THE UNIVERSAL SERVICE FUND WORKS

### The Origins of USF

The federal Universal Service Fund was created under the 1996 Telecommunications Act (96TA), which sought to encourage rivalry in local phone markets. Competition was inconsistent with the way universal service policy had worked. Prior to the 96TA, each regional monopoly “incumbent local exchange carrier” (ILEC) was required to provide “universal service” by extending networks to all customers in its service territory. The ILECs funded this obligation through cross-subsidies, which primarily meant higher rates—set by regulators—for urban consumers, businesses, and long-distance calls.<sup>39</sup>

The retail phone rates necessary to fund these cross subsidies were sustainable only under monopoly. Requiring new entrants to provide service to every customer in a service territory would create a stifling entry barrier, defeating the purpose of the (newly) pro-competitive policy. Yet, without such an obligation new entrants would target low-cost areas (urban and business markets), undercutting inflated (monopoly) prices. That strategy, while good for the majority of consumers, would dissipate the profit flows used to subsidize network coverage in high-cost (rural) areas.

Hence, to both encourage competition and retain universal service policy, the 96TA departed from internal ILEC transfers to explicit taxes and subsidies. The USF expenditures were to help carriers build and operate networks in high-cost areas as market competition drove prices toward costs elsewhere. As the 96TA stated its objectives:

Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services...at rates that are reasonably comparable to rates charged for similar services in urban areas.<sup>40</sup>

<sup>37</sup> Editorial, *New Rules for New Technology*, N.Y. TIMES (February 23, 2011).

<sup>38</sup> Matthew Lasar, a writer for *ARS TECHNICA*, has admonished those who use the word “boondoggle” in this context. Writing about the \$350 million allocated in 2009 for a national broadband map in the U.S., he concludes with: “One small suggestion -- perhaps words like “boondoggle” should stay out of future public exchanges. They may only give credence to those who thought that the National Broadband Map should never have been developed in the first place.” Matthew Lasar, *The National Broadband Map: A \$350 Million ‘Boondoggle’?* *ARS TECHNICA* (June 3, 2011). It is quite correct that, if the objective is to protect particular government programs, care should be taken to shield both the record of their performance and any subsequent editorial outrage emanating therefrom. Yet, the endeavor here is to evaluate the actual effects of the subsidy programs in the context of social efficiency. If the term “boondoggle” fits, it is the appropriate term to use.

<sup>39</sup> An excellent discussion of the development of the U.S. system of funding universal service is found in David Kaserman & John Mayo, “*The Question for Universal Telephone Service: The Misfortunes of a Misshapen Policy*,” in Donald L. Alexander, *TELECOMMUNICATIONS POLICY: HAVE REGULATORS DIALED THE WRONG NUMBER?* (Westport, Connecticut: Praeger; 1997).

<sup>40</sup> 47 U.S.C. § 254(b)(3).

The law created multiple money flows to meet these objectives, under a rubric called the Universal Service Fund (USF). Low Income support dollars, pre-dating the TA96, were folded into the USF, along with portions of the High Cost Fund (HCF). Funding for Schools and Libraries (E-Rate) and for Rural Health Care support was initiated by TA96, which also designated a Joint Federal-State Universal Service Board to determine the structure of the system.<sup>41</sup>

In theory, subsidies have two underlying justifications:

- improving economic efficiency associated with network externalities, and
- advancing social equity by ensuring widespread access to a basic set of services.

In principle, network externalities imply that the individual subscriber fails to realize the full benefits of joining the network and thereby expanding its reach. This implies that some of the benefits of that incremental gain go to other subscribers who can now connect to an additional person. Some people on the margin may choose not to subscribe even though the total benefits would make it worthwhile. The problem with this argument is that even when some benefits are external to the new subscriber, the network operator can internalize much of those extra benefits and therefore has incentives to induce marginal subscribers to join the network. This is commonly seen in various forms of price discrimination, where discounts are extended specifically to highly elastic demanders. The question is not whether there are gains to network growth above and beyond those captured by each additional subscriber, but whether it is the network or the regulatory agency that is in a better position to assess them and to deploy efficient mechanisms for capturing them. The policy relevance of this observation is that the potential societal benefits of even a well-functioning universal service system are not categorically superior to other policy approaches, but must be evaluated on their actual results.

Policies to promote equity are regular features of a democratic society. The role of economics is to steer these policies toward mechanisms that efficiently achieve such goals. Economists and multiple government agencies, including the FCC, widely agree that the USF has fallen far short of the mark. It is a system that, by and large, redistributes income from poor to rich.

### Where Does Universal Service Money Come From?

Funds are collected through taxes on long-distance (interstate and international) and VoIP services nationwide. The administrator of the USF, the Universal Service Administrative Company (USAC), sets the tax rate, or “contribution factor,” quarterly to ensure the fund is large enough to meet the demands of the USF programs.

Figure 3 shows increase in the tax rate -- from 5.7 percent in 2000 to 15.8 percent in the first two quarters of 2013 — and decrease in the base. The increase in the tax rate is not

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<sup>41</sup> Federal Communications Commission, [\*Federal-State Joint Board on Universal Service\*](#).



surprising. USF expenditures are increasing while consumer spending on long distance services decline.

In 2005, the Congressional Budget Office noticed these trends and expressed concern that “rapid changes in the telecommunications marketplace have rendered the current financing system increasingly impracticable and unfair.”<sup>42</sup> To date, the FCC’s primary response to this growing problem has been to *expand* the base to include VoIP and increase the share of wireless revenues subject to universal service taxes.

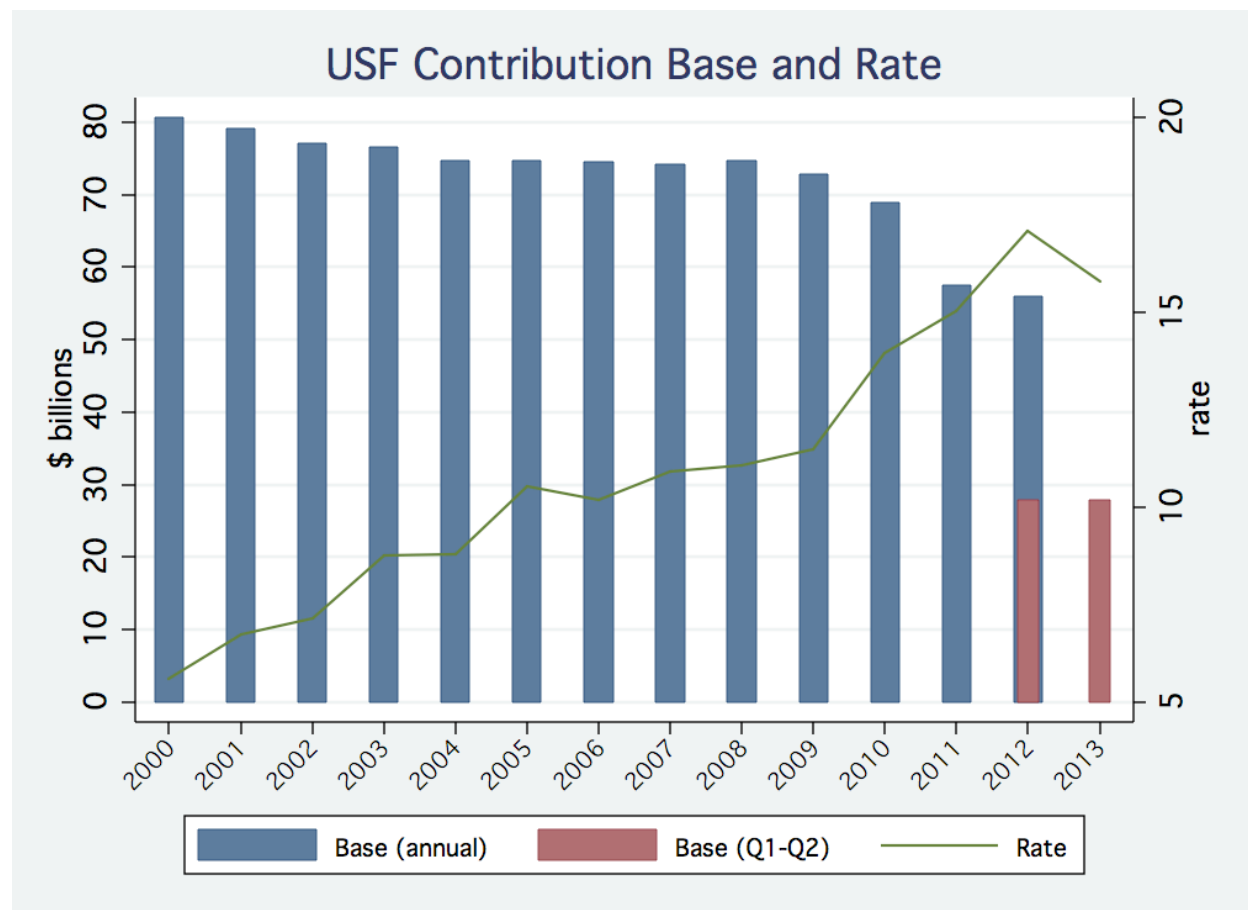


FIG. 3. TAX RATE (“CONTRIBUTION FACTOR”) AND CONTRIBUTION BASE<sup>43</sup>

### Where Does Universal Service Fund Money Go?

The objectives of the USF are illustrated by its various component funds: high-cost, low-income, schools and libraries, and rural health communications. See Figure 1. Each component of the USF distributes funds differently. This section provides more details about how funds are

<sup>42</sup> Congressional Budget Office, *Financing Universal Telephone Service* (March 2005), p. vii.

<sup>43</sup> Data from Federal Communications Commission, *Quarterly Public Notes on Contribution Factors*. Tax rate (“contribution factor”) is the annual average of the rate for all four quarters for 2000-2012. 2013 is the average of Q1 and Q2 2013 rate from the FCC Public Notice. Contribution base for USF was obtained from *FCC Monitoring Reports* (2005, 2006, 2007, 2008, 2009), Table 1.4, and Contribution and Quarterly Filings (2010-2013). The data for 2013 are the sum of the contribution base for Q1 and Q2. Q1 and Q2 2012 are shown for comparison.

distributed in the high-cost, low-income, schools and library, and rural health programs. Until the recent USF order, the high cost and low-income funds supported voice services only.

#### *High-Cost Fund*

According to the USAC, the High Cost Fund (HCF) “ensures that consumers in all regions of the nation have access to and pay rates for telecommunications services that are reasonably comparable to those in urban areas.”<sup>44</sup> From 1986 - 2011, the federal government paid out approximately \$56 billion in high-cost support (not adjusted for inflation).<sup>45</sup> Over \$50 billion (in October 2011 dollars) of that total was distributed in 1998 or later—including almost \$8.7 billion, since 2000, to competitors, not monopoly incumbents. (These are called competitive eligible telecommunications carriers, or CETCs.) Of this, nearly all -- \$8.5 billion -- went to wireless carriers. In other words, subsidies for universal service are growing even as *multiple firms* are serving a given area. Table 5 summarizes the major components of the High Cost Fund (HCF).

The HCF has largely operated without a budget constraint. With limited exceptions, high-cost fund recipients report how much money they “need” and regulators provide it by adjusting tax rates. As a result, neither the recipients nor the administrators of the fund face any inherent incentives other than angry legislators or net payers into the fund to improve efficiency.

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<sup>44</sup> [USAC Overview, High Cost.](#)

<sup>45</sup> Data 2003 – 2011 from [FCC Monitoring Report 2011](#). Data 1986 – 2002 from *FCC Monitoring Report 2004*.



TABLE 5. HIGH-COST FUND PROGRAMS<sup>46</sup>

<i>Program</i>	<i>Eligibility</i>	<i>Stated Goal</i>	<i>HCT Share 1998-2011</i>
<b>HCLS</b> <i>High Cost Loop Support</i>	<u>Rural carriers</u> with average per-line cost at least 15% above the national average.	To support non-traffic sensitive local loop costs. Supplemented by SVS and SNAS. <sup>[a]</sup>	35%
<b>HCMS</b> <i>High Cost Model Support</i>	<u>Non-rural carriers</u> in states where statewide average per-line costs are significantly above the national average.	To keep the price of telephone service comparable in all areas of a given state.	7%
<b>LSS</b> <i>Local Switching Support</i>	<u>Rural carriers</u> serving < 50,000 access lines.	To defray high switching costs of small carriers.	12%
<b>ICLS</b> <i>Interstate Common Line Support</i>	<u>Rate-of-return carriers</u> (rural and non-rural)	To ensure reasonably affordable interstate rates. Long Term Support (LTS), which also related to interstate traffic costs, was replaced by ICLS in July 2004.	31% <sup>[b]</sup>
<b>IAS</b> <i>Interstate Access Support</i>	<u>Price-cap carriers</u> (rural and non-rural)	Analogous to ICLS. Supports companies serving areas where caps do not permit recovery of common line revenue requirements.	15%

<sup>46</sup> [a] Safety Valve Support (SVS) and Safety Net Additive Support (SNAS) each account for less than 0.1 percent of the total. [b] Proportion is sum of ICLS and now-defunct Long-Term Support (LTS).

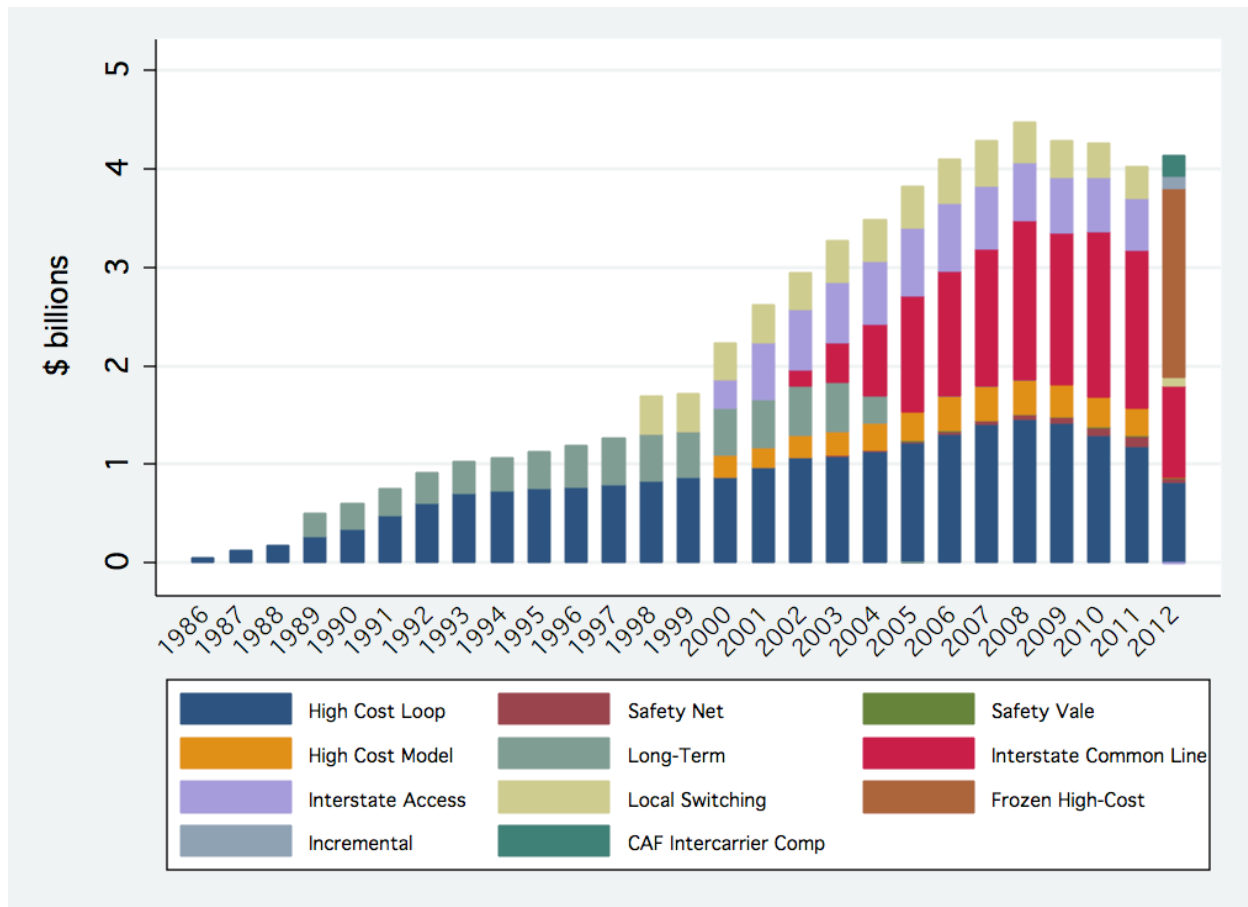


FIG. 4. HIGH COST FUND PAYMENTS BY PROGRAM<sup>47</sup>

<sup>47</sup> 2003 – 2012 data are from *FCC Monitoring Report 2012*; 1986 – 2002 data are from *FCC Monitoring Report 2004*.

TABLE 6. HIGH- COST SUPPORT MECHANISM DETAILS<sup>48</sup>

<i>Type of Support</i>	<i>Rural or Non-Rural?</i>	<i>Price Cap or Rate-of-Return</i>	<i>Is it Capped?</i>	<i>Subject to True-Up Process?</i>	<i>Subject to ILEC Disaggregation Plans?</i>
High Cost Loop Support	Rural	Price Cap and Rate-of-Return	Yes	No	Yes
High Cost Model Support	Non-Rural Only	Mostly Price Cap	No	No	No. Data at wire center level.
Interstate Access Support	Mostly Non-Rural	Price Cap Only	No	Yes. Quarterly reconciliation.	No. Data at UNE Zone level.
Interstate Common Line Support	Mostly Rural	Rate-of-Return Only	No	Yes	Yes
Local Switching Support	Rural Only	Mostly Rate-of-Return	No	Yes	Yes
Safety Net Addition	Rural	Price Cap and Rate-of-Return	Yes	No	Yes
Safety Valve Support	Rural	Price Cap and Rate-of-Return	Yes	No	Yes

*Low-Income Fund*

Since 1984, the Universal Service Program has subsidized residential service for low-income people through the Lifeline and Linkup programs, which provide discounts on connection fees and monthly subscription rates to eligible recipients.<sup>49</sup> Unlike the HCF, these subsidies are provided to consumers although they are paid directly to the provider for each subscriber approved to receive the subsidies. Lifeline subsidizes monthly voice telephone service while Linkup subsidizes any connection fee.

Until the mid-2000s these programs were available only for wireline connections. The growing importance of wireless then led the FCC to expand low-income programs to non-facilities based providers, including prepaid wireless carriers.<sup>50</sup> This change generated significant growth in the low-income program, with Lifeline and Linkup now accounting for more than about \$2 billion annually (see Figure 5).

<sup>48</sup> Universal Service Administrative Company website: [High Cost](#).

<sup>49</sup> For a more detailed description of the program, see, for example [FCC Monitoring Report 2010](#), Section 2. The program also provides support to those living on tribal lands, but that part of the program is not the focus of this paper.

<sup>50</sup> See, e.g., Federal Communications Commission, *In the Matter of Federal-State Joint Board on Universal Service, Petition of TracFone Wireless, Inc. for Forbearance*, 20 FCC Rcd 15095 (2005).

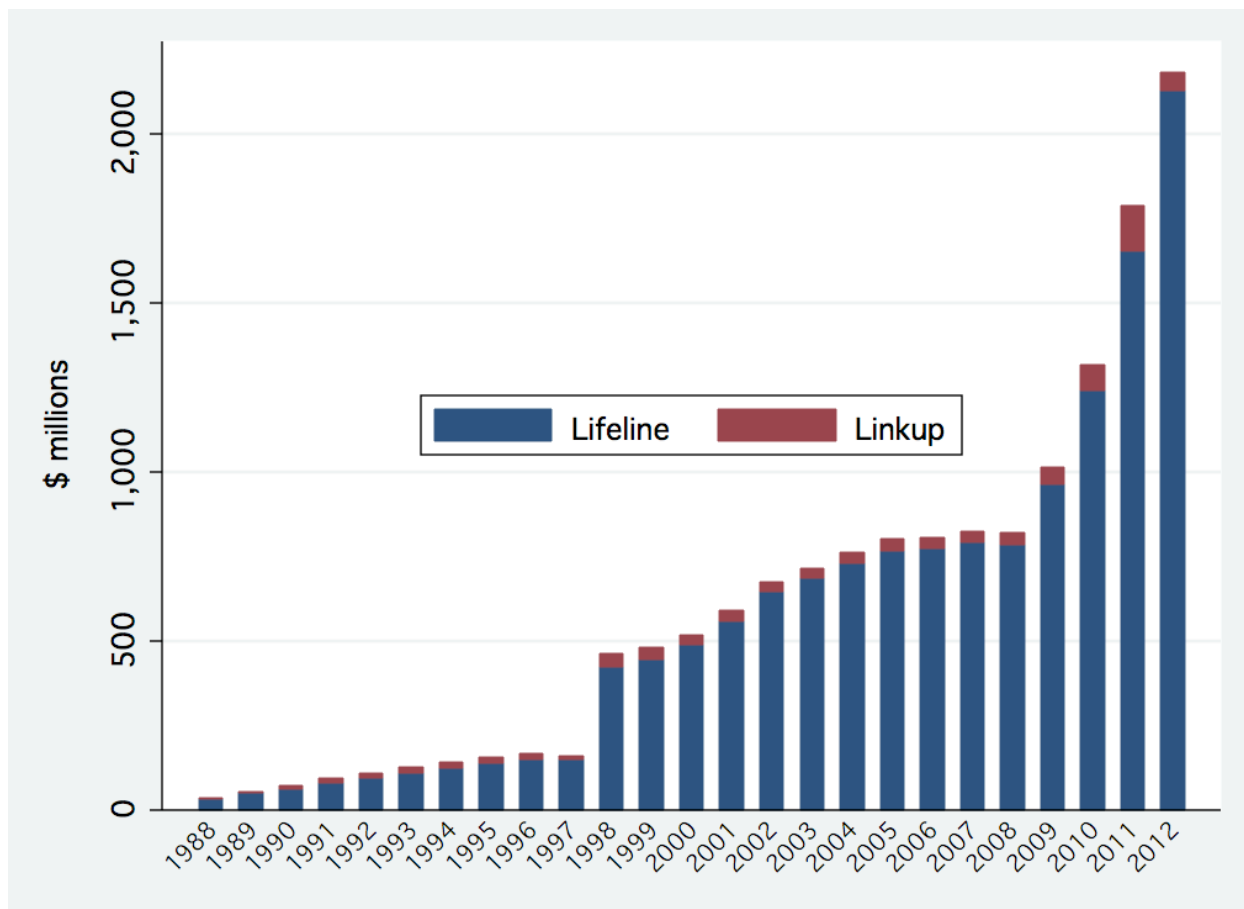


FIG. 5. LOW-INCOME FUND: LIFELINE AND LINKUP PAYMENTS, 1988-2012<sup>51</sup>

Lifeline and Linkup are each composed of smaller programs. Linkup is two funds: non-tribal and tribal. The share of Linkup for tribal support increased from less than one percent of the total the first year it was available (2000) to almost 18 percent in 2008 and about 16 percent in 2012.

Lifeline has three components: non-tribal, tribal, and toll limitation service (TLS). Tribal support has represented between 5 and 10 percent of Lifeline payments since 2005. According to USAC, Toll Limitation Service is

a service that eligible telecommunications carriers (ETCs) must offer to eligible low-income subscribers at no charge. Qualifying low-income consumers choose whether or not they want TLS. This service includes toll blocking, which allows subscribers to block outgoing toll calls, and toll control, which allows subscribers, in advance, to limit their toll usage per month or billing cycle.<sup>52</sup>

TLS support is based on “the incremental cost of providing TLS. These include the costs that carriers otherwise would not incur if they did not provide TLS to a given customer.”<sup>53</sup>

<sup>51</sup> Source: *FCC Monitoring Report 2012*, Table 2.2.

<sup>52</sup> Universal Service Administrative Company website: [Low Income](#).

<sup>53</sup> *Ibid.*

Although telecommunications costs fell rapidly over the relevant time period, costs reported by providers for the service generally increased. While TLS payments are relatively small they increased steadily between 2000 and 2006, spiked in 2010, and then fell in 2011 and 2012 (Figure 6).

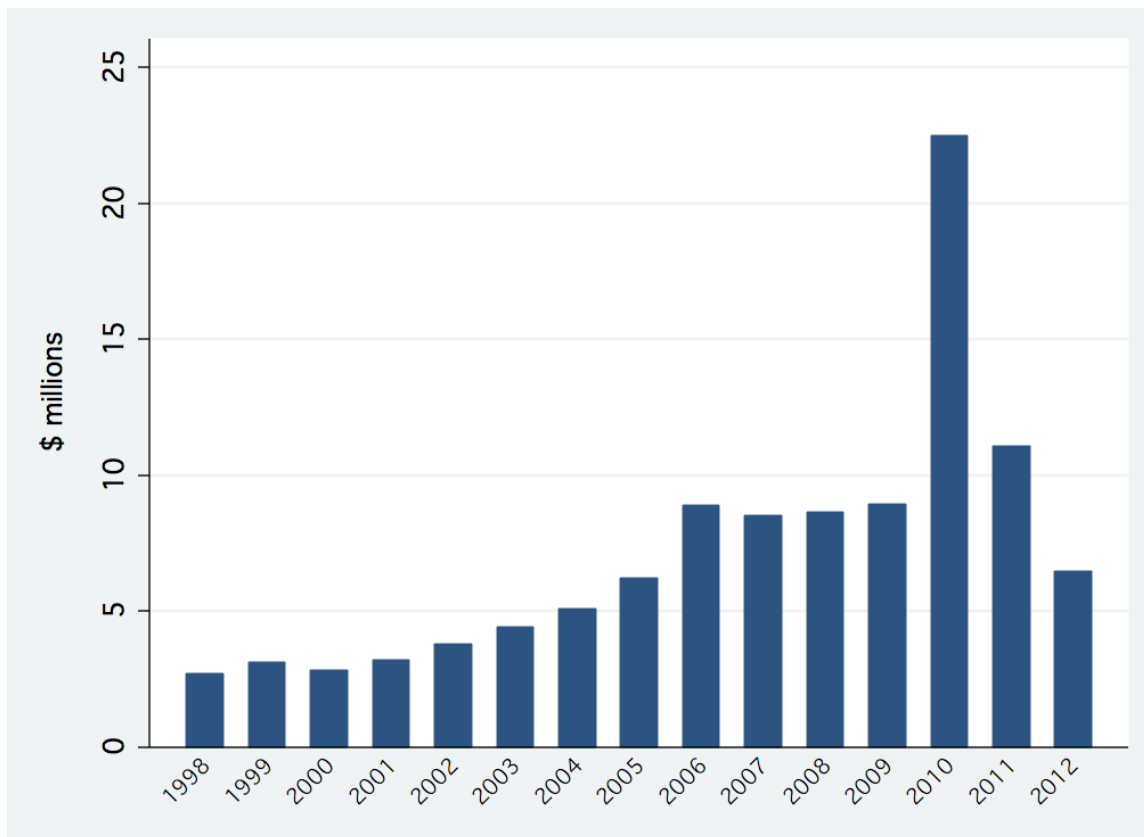


FIG. 6. TLS PAYMENTS, 1998 - 2012<sup>54</sup>

In order to qualify for Lifeline support, customers must typically certify that their household income is no more than 135 percent of the poverty threshold or that they participate in one of seven federal programs: Medicaid, Food Stamps, Supplemental Security Income (SSI), Federal Public Housing Assistance, the Low-Income Home Energy Assistance Program, the National School Lunch Program, or Temporary Assistance for Needy Families (TANF).<sup>55</sup> If a state has its own supplemental Lifeline program, then eligible consumers receive additional federal discounts. Those states also have some flexibility in determining the eligibility criteria, but the criteria must always be based solely on income or factors directly related to income. This is to ensure that benefits are narrowly targeted to low-income residents.<sup>56</sup> Finally, carriers must publicize the availability of the Lifeline support if they offer it.<sup>57</sup>

<sup>54</sup> 1998 – 2011 data from *FCC Monitoring Report 2012*, Table 2.2. 2012 data from USAC 2012 Annual Report.

<sup>55</sup> Universal Service Administrative Company website: [Low Income](#).

<sup>56</sup> *Ibid.*

<sup>57</sup> *Ibid.*

Nonetheless, participation in Lifeline and Linkup prior to making mobile phone subscriptions eligible was low. The FCC estimated that in 2005 only about one-third of eligible households in the United States participated in the program, although the increase in wireless lifeline payments since then has surely increased the participation rate.<sup>58</sup> Additionally, participation rates vary substantially by state (Figure 7).

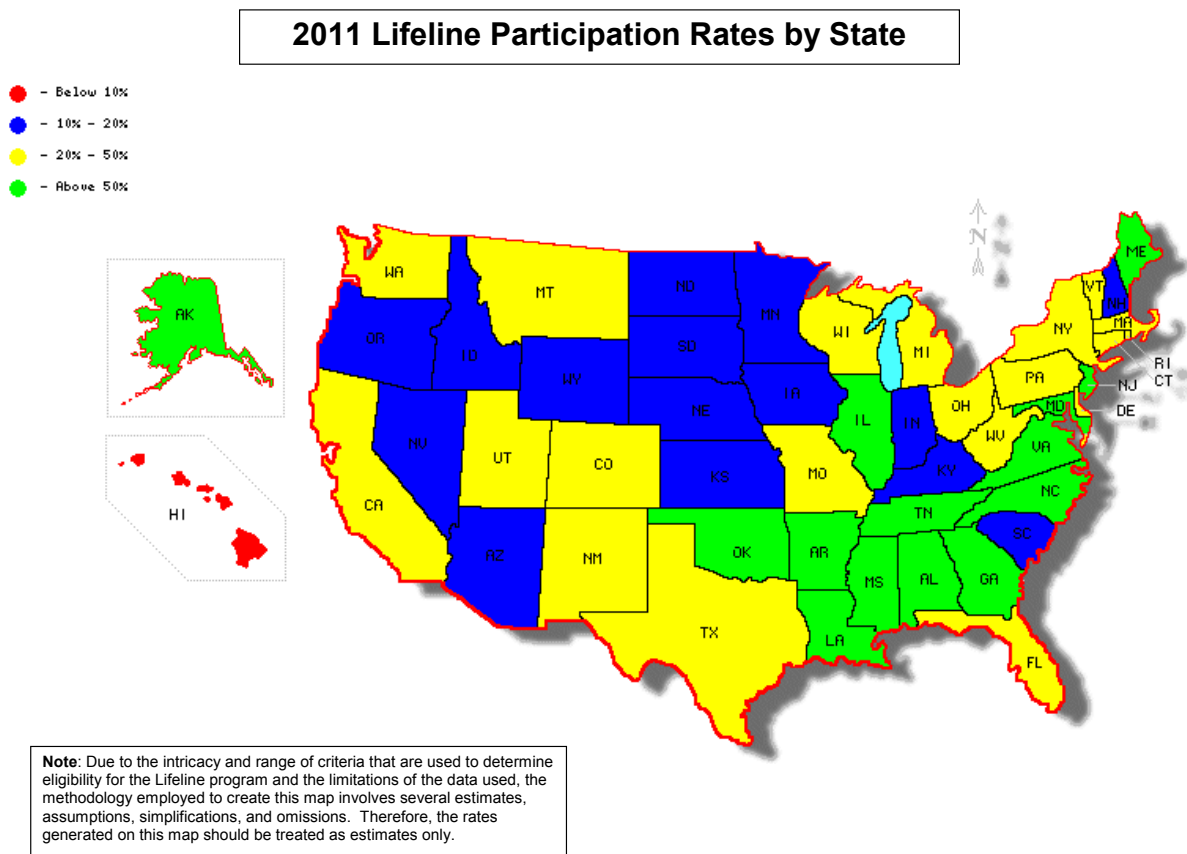


FIG. 7. 2011 LIFELINE PARTICIPATION RATE BY STATE<sup>59</sup>

Based on data from 1997 and 2003, Burton, Macher, and Mayo (2007)<sup>60</sup> find that a state's limitation on supplemental services such as three-way calling or call forwarding had a negative effect on participation rates and that the longevity of the state's Lifeline program (which may proxy for information dissemination among the eligible population) has a positive effect on

<sup>58</sup> Federal Communications Commission, *In the Matter of Lifeline and Link Up, Report and Order and Further Notice of Proposed Rulemaking* (April 29, 2004), App. K, Table 1b. See also Janice A. Hauge, Eric P. Chiang & Mark A. Jamison, *Whose Call Is It? Targeting Universal Service Programs to Low-Income Households' Telecommunications Preferences*, 33 TELECOMMUNICATIONS POLICY 129 (2009).

<sup>59</sup> Universal Service Administrative Company, [2011 Lifeline Participation Rates by State](#).

<sup>60</sup> Jeffrey T. Macher, Jeffrey T., John W. Mayo & Mark Burton, "Understanding Participation in Social Programs: Why Don't Households Pick up the Lifeline?" 7 B.E. JOURNAL OF ECONOMIC ANALYSIS & POLICY (2007).

participation rates. Hauge, Jamison, and Jewell (2008)<sup>61</sup> analyzing location-specific participation in sixty-seven counties in Florida from 2003 to 2005, found that the incumbent's enrollment efforts, local telephone rates, home ownership, age, gender, and education all influenced participation rates.

Although wireless has become increasingly important, research is inconclusive on whether preference for mobile telephony dissuaded people from participating in landline-based Lifeline and Linkup programs. Hauge, Jamison & Jewell (2008) found that the participation rate was lower in counties with higher cell phone usage and concluded that, "this trend towards mobile telecommunications appears to be a leading cause of low participation rates in Lifeline because the program is offered primarily by landline telephone providers."<sup>62</sup>

Most studies of Lifeline and Linkup have found that they positively affect telephone penetration. However, probably because many who received subsidies would have subscribed anyway, the studies find that the effect, while positive, is small.<sup>63</sup> Akerberg et al. (2009)<sup>64</sup> estimate one of the largest price elasticities of demand, but it is still low (-0.016). Overall, they find that Lifeline and Linkup (a program that reduces initial connection charges for low-income subscribers) connected an additional 213,000 low-income households to the telephone network in 2000 at a cost of \$723 each.

### *Schools and Libraries*

The Schools and Libraries program, aka the E-Rate program, subsidizes "telecommunication services, Internet access, and internal connections. The program is intended to ensure that schools and libraries have access to affordable telecommunications and information services."<sup>65</sup> The program works by making it possible for eligible institutions to purchase equipment and services at discounts ranging from 20 – 90 percent, depending on the share of students eligible for school lunch subsidies.<sup>66</sup>

Spending on E-Rate was capped at \$2.25 billion per year until an FCC Order released on September 28, 2010 indexed the cap to inflation.<sup>67</sup> Figure 8 shows annual commitments since

<sup>61</sup> Janice A. Hauge, Mark A. Jamison & R. Todd Jewell, "Participation in Social Programs by Consumers and Companies: A Nationwide Analysis of Participation Rates for Telephone Lifeline Programs," 35 PUBLIC FINANCE REVIEW. 606 (2007); Janice A. Hauge, Mark A. Jamison & R. Todd Jewell, "Discounting Telephone Service: An Examination of Participation in the Lifeline Assistance Program Using Panel Data," 20 INFORMATION. ECONOMICS . & POLICY 135 (2008); Mark Rodini, Michael R. Ward & Glenn A. Woroch., "Going Mobile: Substitutability between Fixed and Mobile Access," 27 TELECOMMUNICATIONS. POLICY 457 (2003).

<sup>62</sup> Burton, Macher, and Mayo (2007), however, did not find that the growth of wireless services affected Lifeline subscription rates.

<sup>63</sup> See, e.g., Ross Eriksson, David Kaserman & John Mayo, *Targeted and Untargeted Subsidy Schemes: Evidence from Postdivestiture Efforts to Promote Universal Telephone Service*, 44 JOURNAL OF LAW. & ECONOMICS. 477 (1998); Christopher Garbacz & Herbert G. Thompson, *Estimating Telephone Demand with State Decennial Census Data from 1970-1990*, 21 JOURNAL OF REGULATORY. ECONOMICS. 317 (2002).

<sup>64</sup> Daniel Akerberg, Michael Riordan, Gregory Rosston & Bradley Wimmer, *Low-Income Demand for Local Telephone Service: Effects of Lifeline and Linkup*, SIEPR Discussion Paper 08-47 (2009).

<sup>65</sup> Universal Service Administrative Company: [Schools and Libraries](#).

<sup>66</sup> [FCC Monitoring Report 2010](#), p. 4-1.

<sup>67</sup> Federal Communications Commission, [Schools and Libraries Universal Service Support Mechanism](#), Sixth Report and Order, CC Docket No. 02-6 (rel. September 28, 2010), p. 2.

1998. Assuming the program yields benefits relative to costs, indexing to inflation would be reasonable. However, that is a very strong assumption, as shown in Section VI.

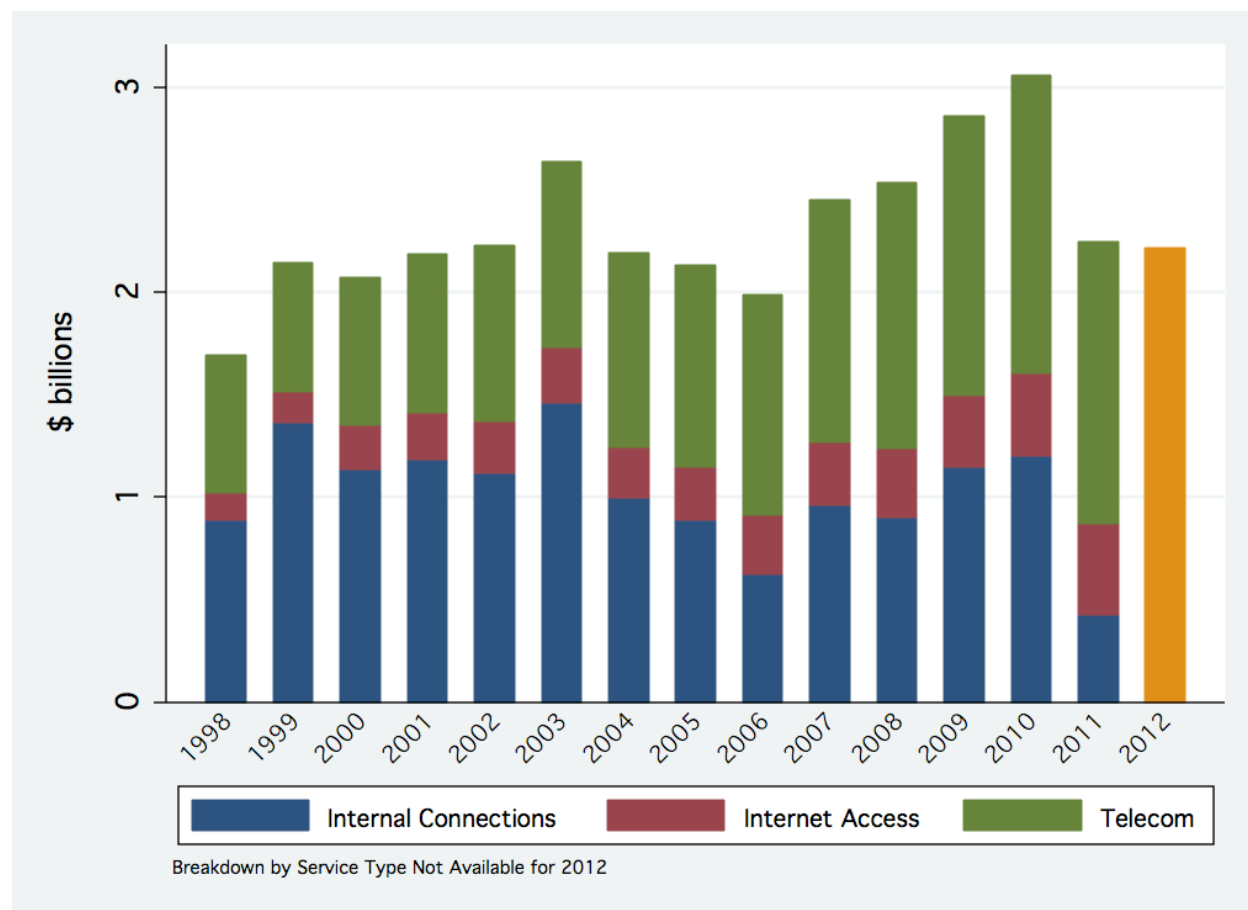


FIG. 8. ANNUAL FUNDING COMMITMENTS FOR E-RATE BY SERVICE TYPE<sup>68</sup>

### III. IF YOU SUBSIDIZE IT, WILL IT MAKE ANY DIFFERENCE?

#### Mechanism Misconstruction

More than \$50 billion in subsidies under the Universal Service Fund since 1998<sup>69</sup> have had little or no effect on telephone service availability. This is the conclusion of researchers who have carefully evaluated the impact of subsidy programs to produce incremental network expansion, pushing growth to where it would not otherwise occur. A study by economists Gregory Rosston and Bradley Wimmer, for example, found only very small effects of universal

<sup>68</sup> Data for 1998 – 2011 from *FCC Monitoring Report 2012*, Section 4. 2012 data from USAC 2012 Annual Report.

<sup>69</sup> From 1998 through October 2011, the HCF had expended about \$46 billion, and the Low-Income Fund about \$11 billion. In total, during that time USF distributed about \$87 billion (in October 2011 dollars).



service subsidies for the HCF.<sup>70</sup> They estimated that eliminating the HCF would have decreased household telephone penetration by no more than 0.5%. But eliminating USF taxes would thereby offset 40% of the (top-end) estimate increase in subscribership, leaving a reduction of just 0.3%, or an estimated 320,000 out of about 100 million U.S. households.<sup>71</sup>

At current expenditure levels, these results imply that each additional household is added to voice networks at an annual USF cost of about \$25,000 or, just factoring in the HCF expenditures, some \$14,000. These are likely to be underestimates. While the Rosston-Wimmer findings are based on analysis in the late 1990s when the U.S. had about 25 million fewer households than now, today's market has more networks competing to offer voice (and broadband) services. These rapidly expanding networks – including those covering “high-cost” areas -- suggest that the already small effects observed by Rosston-Wimmer would be even smaller today.

The rapid growth of rival networks occurred even while traditional voice networks have been heavily subsidized, ostensibly to extend networks and services for great coverage and subscribership in sparsely populated areas. Some of the emerging networks have been subsidized via awards given to Competitive Eligible Telecommunications Carriers (CETCs), but many—including those built by cable or satellite carriers—have not. The ability of unsubsidized providers to compete with heavily subsidized providers demonstrates just how dramatically the market has changed since 1996.

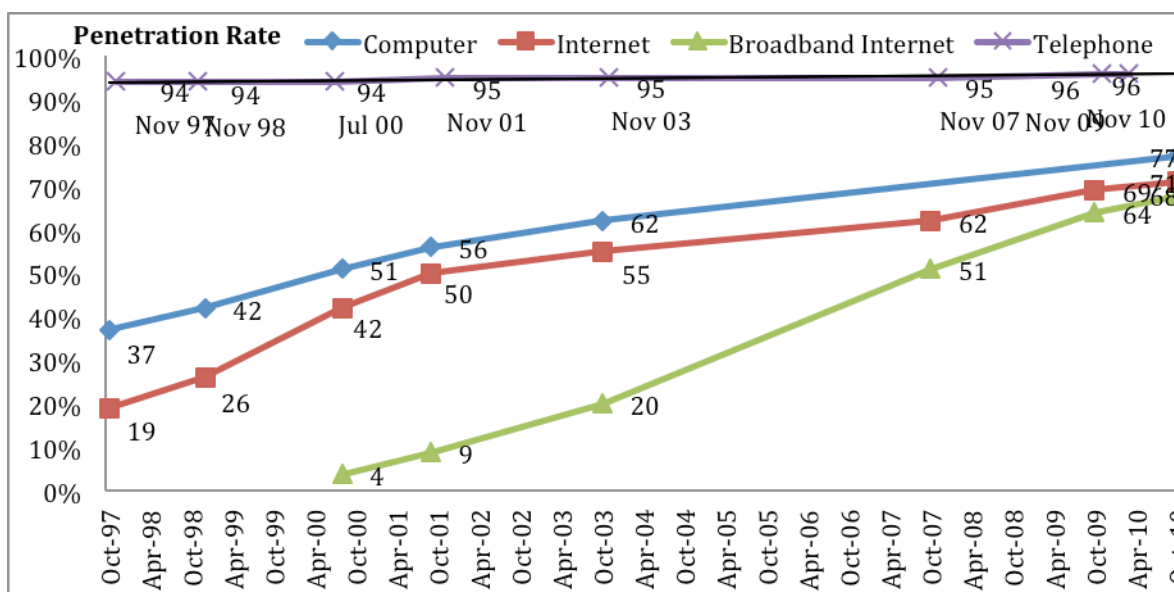


FIG. 9. U.S. HOUSEHOLD PENETRATION OF COMMUNICATIONS SERVICES, 1997-2010<sup>72</sup>

<sup>70</sup> Gregory L. Rosston & Bradley S. Wimmer, *The “State” of Universal Service*, 12 INFORMATION ECONOMICS & POLICY 261 (September 2000) [“Rosston-Wimmer 2000”].

<sup>71</sup> *Ibid.*, Table 2. Also see, Bradley S. Wimmer & Gregory L. Rosston, G. (2000) *Winners and Losers from the Universal Service Subsidy Battle*, in Benjamin Compaine and Ingo Voglesang (eds.) *Selected Papers from the Telecommunications Policy Research Conference* (Cambridge, MA: MIT Press, 2000).

<sup>72</sup> U.S. Department of Commerce, National Telecommunications & Information Administration, [Exploring the Digital Nation: Computer and Internet Use at Home](#) (November 2011), Figure 1, p. 1.

New technologies have been finding their way into U.S. homes even as “plain old telephone service” (POTS) stagnated, as seen in data from the U.S. Department of Commerce (see Figure 9). By October 1997, some 94% of U.S. homes subscribed to basic voice networks, so not many additional areas to wire or homes remained to connect. And yet, the USF kept spending billions of dollars per year. Household POTS penetration increased by a paltry two percent over the next 13 years (through October, 2010)—a remarkably small return even if we make the unlikely assumption that subsidies were responsible for this increase. During this interval, home computer ownership rose from 37 percent to 77 percent, residential Internet access from 19 percent (all dial-up) to 71 percent, and home broadband from zero to 68 percent. Not pictured is mobile telephony, where between year-end 1997 and year-end 2010, subscribership leapt from 55,312,293 to 302,859,674<sup>73</sup> – a 480% increase.

While subsidized POTS marched in place, mobile wireless networks were expanding to serve virtually all of the United States. As of October 2012 the FCC estimated that some 99.9% of U.S. population lived in a coverage area served by at least one mobile carrier.<sup>74</sup> The U.S. mobile broadband coverage map is nearly as large. The FCC estimated that, in October 2012, only 0.5% of U.S. households lived outside of mobile broadband coverage areas, just 0.1% in non-rural areas and 2.2% in rural areas. See Figure 10. The expansion of wireless networks has had such an impact that, by year-end 2011, high-speed mobile data connections, at 106 million, overtook fixed data links, at 81 million. See Table 7.

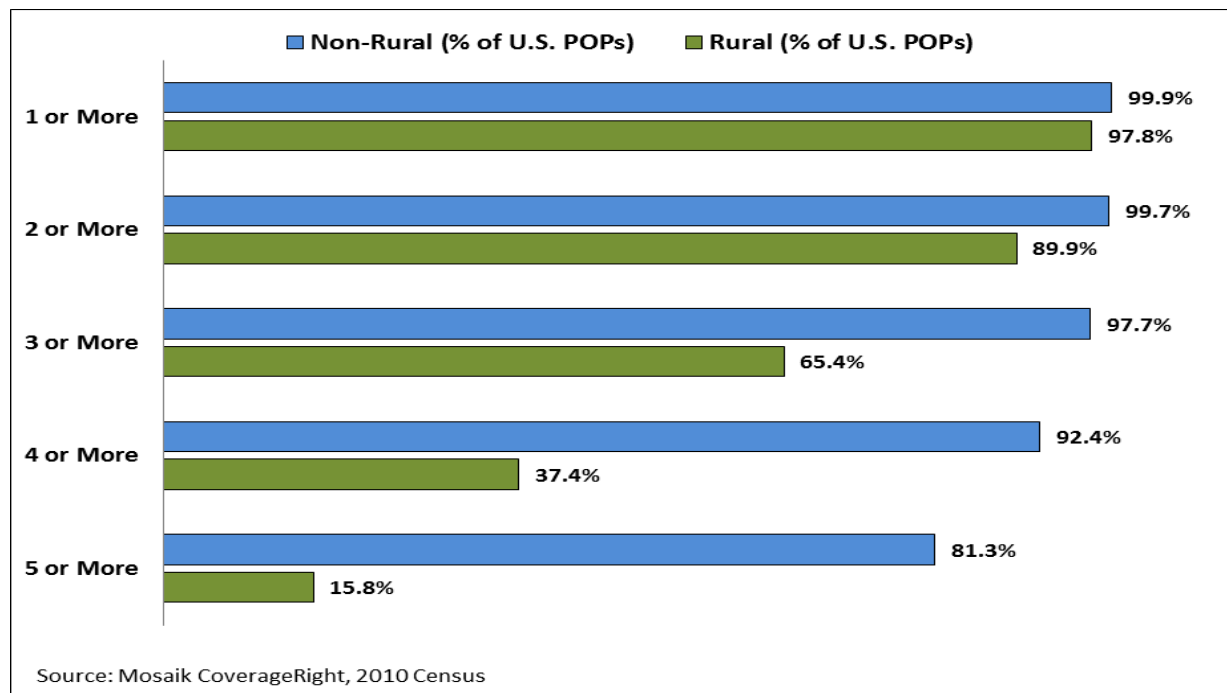


FIG. 10. MOBILE BROADBAND COVERAGE IN THE U.S. (OCTOBER 2012)<sup>75</sup>

<sup>73</sup> Cellular Telecommunications & Internet Association, *Year-end Semi-Annual Industry Survey* (2010).

<sup>74</sup> [FCC 16th CMRS Report](#), p. 6.

<sup>75</sup> [FCC 16th CMRS Report](#), Chart 48, para 392.

TABLE 7. RESIDENTIAL DATA CONNECTIONS AT LEAST 200 Kbps IN ONE DIRECTION<sup>76</sup>

<i>Technology</i>	<i>Dec 2007</i>	<i>Dec 2008</i>	<i>Dec 2009</i>	<i>Dec 2010</i>	<i>Dec 2011</i>
Total	73,984	<b>88,190</b>	<b>117,089</b>	<b>149,441</b>	<b>186,704</b>
Total Fixed	64,875	<b>69,047</b>	<b>73,394</b>	<b>76,918</b>	<b>80,711</b>
aDSL	26,475	<b>26,488</b>	<b>27,402</b>	<b>27,467</b>	<b>27,766</b>
sDSL	82	<b>74</b>	<b>85</b>	<b>53</b>	<b>58</b>
Other Wireline	17	<b>42</b>	<b>51</b>	<b>70</b>	<b>37</b>
Cable Modem	35,341	<b>38,681</b>	<b>40,872</b>	<b>43,295</b>	<b>45,826</b>
FTTP <sup>1</sup>	1,683	<b>2,717</b>	<b>3,758</b>	<b>4,704</b>	<b>5,516</b>
Satellite	626	<b>630</b>	<b>767</b>	<b>811</b>	<b>886</b>
Fixed Wireless	644	<b>410</b>	<b>454</b>	<b>513</b>	<b>620</b>
Power Line and Other	5	<b>5</b>	<b>5</b>	<b>6</b>	<b>3</b>
Mobile Wireless <sup>2</sup>	9,109	<b>19,142</b>	<b>43,695</b>	<b>72,523</b>	<b>105,993</b>

As wireless networks build and grow, many households are cutting their fixed line broadband services to go wireless-only, or simply subscribing wireless without having ever subscribed to fixed-line services. According to a consumer survey by Strategy Analytics, 2011 usage patterns reveal that:

More than 6 million U.S. households will depend solely on a wireless or mobile platform (including 3G or 4G) to access the Internet. That's nearly 7% of total U.S. broadband connections, and a 430,000 net increase from 2010 levels...<sup>77</sup>

### Nothing Left to Subsidize

The HCF has spawned a cottage industry of rural telephone carriers keen on operating at very high cost. Despite the subsidies, POTS has dramatically declined in recent years as customers abandon traditional networks for new technological options. The diminishing scale of subsidy targets has therefore led regulators to refocus: the declining fixed line voice sector will now be brushed aside so as to make way for subsidy flows in broadband.

But policy makers are late to the broadband game. While they were pre-occupied with the policy concerns of 1996, new networks – fixed, wireless and satellite -- “wired” America for high-speed Internet access. Today, coverage is virtually ubiquitous; including satellite broadband services, it *is* ubiquitous. To clear a new pathway the FCC has declared that some forms of broadband do not count. Systems have been arbitrarily defined as those delivering 4 mbps downstream and 1 mbps upstream. Satellite, with its capacity and latency issues, was clearly intended to be excluded. Yet, even when its speed and quality of service came to exceed specified norms,<sup>78</sup> satellite has been ignored as a market supplier. Such *ad hoc* product definition is politically savvy by building a constituency for subsidies, but is hostile to consumer

<sup>76</sup> Federal Communications Commission, *Internet Access Services: Status as of December 31, 2011* (February 2013), Table 8.

<sup>77</sup> Andrew Burger, [Report: 6 Million U.S. Homes Have Cut the Broadband Cord for Wireless Only](#), telecompetitor.com (December 15, 2011).

<sup>78</sup> For instance, see the “Exede” service supplied by ViaSat, described above and included in Appendix 2.

welfare. It ignores the trade-offs between cost and multiple dimensions of performance that consumers make. Customers care about more than just speed, and many are more than willing to trade off some speed for greater mobility or a sufficiently lower price.<sup>79</sup>

TABLE 8. BROADBAND CAPABILITIES OF NECA'S TRAFFIC SENSITIVE POOL MEMBERS<sup>80</sup>

<i>Year</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Companies (Survey Respondents)	1,120	1,114	1,119	1,101	1,091
Switches	6,642	6,430	6,324	6,054	5,850
Access Lines	6,620,078	6,043,558	5,519,917	4,761,023	4,453,795
<i>% change from previous year</i>		-9%	-9%	-14%	-6%
Provide DSL service (%)	94	95	97	97	97
DSL Access Lines	581,921	1,079,748	1,317,208	1,477,876	1,623,747
<i>% change from previous year</i>		86%	22%	12%	10%
DSL as % of Access Lines	8.8%	17.9%	23.9%	31.0%	36.5%
Provide Other Broadband (%)	N/A	56	74	78	58*

Even as telephone users continued to subsidize POTS through ever-higher taxes on usage, POTS households fell from about 94% of total households to just 64%. Simultaneously, without government subsidies, broadband markets were built out. DSL services are today provided in 97% of U.S. markets in *rural areas*, precisely those sparsely populated regions where voice services have, according to regulators, been in need of multi-billion dollar annual support. See Table 8. In other words, prior to subsidies being available for broadband, DSL carriers built out 97% of rural markets. Now the FCC will step in, diverting the HCF's multi-billion dollar annual flow from voice to broadband, presumably to fill in the remaining three percent – already largely served, if not by telco/DSL networks, then by mobile, fixed wireless,<sup>81</sup> cable TV operators, and satellite providers. These operators will face rivalry from incumbent local exchange carriers and so-called competitive eligible telecommunications carriers (CETCs) receiving government subsidies. Complaints of unfair competition will be made – with considerable justification.

<sup>79</sup> Gregory Rosston, Scott Savage, and Donald Waldman, *Household Demand for Broadband Internet Service*, THE B.E. JOURNAL OF ECONOMIC ANALYSIS & POLICY (September 9, 2010). See also, Shane Greenstein & Ryan McDevitt, "[The Broadband Bonus: Accounting for Broadband Internet's Impact on GDP](#)", Publication of Note, Technology Policy Institute (January 2010).

<sup>80</sup> NECA, [TRENDS 2010 A Report on Rural Telecom Technology](#), 20. NECA, [TRENDS 2009 A Report on Rural Telecom Technology](#), 18. NECA, [TRENDS 2008 A Report on Rural Telecom Technology](#), 18. NECA, [TRENDS 2007 A Report on Rural Telecom Technology](#), 30. NECA, [TRENDS 2006 A Report on Rural Telecom Technology](#), 14-15. The data come from a National Exchange Carrier Association survey of 1,100+ rural telcos. Other Broadband includes FTTH, FTTO, fixed (licensed and unlicensed) wireless broadband technologies, WiFi and WiMax, and cable or satellite. \* "Other Broadband" numbers for 2010 do not include cable or satellite.

<sup>81</sup> The FCC recorded fixed wireless broadband subscribership of 620,000 at year-end 2011. See Table 7. This technology is relatively cost-effective in sparsely inhabited markets, where it delivers speeds meeting the FCC's broadband threshold. Yet, the FCC's new broadband subsidy scheme sharply discriminates against such providers, as well as small, rural cable TV operators (which deliver cable modem services now at speeds up to over 100 mbps).

## Gentrification

The consensus among economists is that the universal service system in telephony is an ill-targeted subsidy scheme funded by an inefficient and regressive tax system. In short, poor urban consumers pay significant telecommunications fees to subsidize affluent phone customers in Aspen, Colorado and Jackson Hole, Wyoming – meccas for the rich and famous who enjoy HCF dollars to finance their local phone networks.

[T]he vast majority of low-income customers end up with no subsidy dollars, yet they are forced to pay rates above cost to fund the universal service program. At the same time, there are high-income customers who benefit from subsidized rates. A true universal service program would target subsidies to low-income consumers in danger of falling off the network and would not require these households to contribute to a program that subsidizes the telephone lines of high-income households.<sup>82</sup>

This is generally true, but the situation is actually much worse than characterized. The subsidy program pursued via the High Cost Fund distributes benefits that are not – and, as designed, *cannot be* – delivered to those parties that are most in need of subsidies, i.e., low-income individuals who would not, but for the subsidy, subscribe to basic services. That is because of the way in which the subsidies are structured.

The HCF, which spent more than \$4 billion on subsidies in 2012, lavishes its largesse on rural telephone operators.<sup>83</sup> These companies take the funds as part of a *quid pro quo*: the government compensates the firms for operating with higher costs than phone networks elsewhere, and the carriers agree to charge prices that are “reasonably comparable” to those paid by customers in typical urban and suburban markets. Instead of paying, say, \$50 a month for a local telephone connection (with long-distance charges, if any, added on top of this), the customer in the rural market served by a subsidized carrier pays only a national average price of, say, \$32. In some remote locales, it is conceivable that, monthly access rates might go as high as \$100 a month without a USF program. After that price, substitutes – such as satellite phone service – become highly competitive.<sup>84</sup>

Because the subsidized service is available to any resident who moves into a particular (rural) neighborhood, and because the price discount is public information, the benefits change other economic parameters. Specifically, the price discount is an amenity attached to the residential location, and will raise the value of the property. Consider the case of a home purchase. If the USF-delivered price discount enables local residents to purchase telephone services at \$500 less, per year, than otherwise, and essentially all residents wish to purchase such

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<sup>82</sup> Rosston-Wimmer (2000).

<sup>83</sup> A relatively small part of the USF is directly paid to low-income households through programs such as Lifeline and Linkup. In 2010, some \$1.3 billion was distributed through these channels, about 16% of overall USF spending. The discussion in the text deals with the far larger HCF.

<sup>84</sup> These prices are used as reasonable proxies for the marketplace in urban-suburban v. rural markets, as is the maximum fixed line price, in Rosston-Wimmer (2000). It might be noted that today terrestrial wireless and satellite voice and broadband substitutes kick in at a considerably lower price point.

basic service (highly inelastic demand, known to exist for basic telephone access), then the purchase of the home comes with a coupon worth \$500 per year. This amenity can be transferred to the next home owner, and the next, making its life indefinite (so long as the in-kind subsidy continues). If the flow of annual payments into the indefinite future is discounted at 7%,<sup>85</sup> the present value of this benefit equals about \$7,143.

The seller's real estate agent will smartly emphasize the existence of all the home's amenities – from a nearby park, to a highly-rated school system, to air conditioning – and subsidized phone service. Competition to buy the home turns into a rivalry to claim the bundle of amenities, meaning that the resulting price will tend to be about \$7,143 higher than were the “subsidy” not available to the local phone carrier. This is commonly observed; “amenities-location-specific characteristics-are systematically reflected in land prices.”<sup>86</sup>

Just as agricultural subsidies pass through the farmer to the owner of the cropland,<sup>87</sup> telecommunications subsidies pass through to property owners. The parties reaping the benefits, then, include (a) the owners of the high-cost rural telephone companies, who capture benefits from excessive costs, and (b) owners of land in areas where service is cheaper as per subsidies.<sup>88</sup>

Hence, the carrier subsidy model is inherently flawed; it is a self-fulfilling failure. Benefits delivered in one form will be subtracted in another. Even in the very small number of instances where network services are extended beyond what markets would otherwise provide, the net cost to the customer is not reduced. It simply changes form (from a phone bill to a rent

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<sup>85</sup> The discount rate takes into account the expected flow of future benefits, which incorporates a risk factor, and time preferences.

<sup>86</sup> Paul Cheshire & Stephen Sheppard, *On the Price of Land and the Value of Amenities*, 62 *ECONOMICA* 247 (May 1995), 262. For further development of this argument, see Thomas Hazlett, David Porter & Scott Wallsten, *Using Reverse Auctions to Distribute U.S. Broadband Subsidies*, paper presented at American Economic Association annual meetings (Chicago; January 7, 2012).

<sup>87</sup> That is to say, the farmer may receive the government subsidy check but (due to market competition) it passes through to the landowner in the form of higher land rents. That is because the availability of the subsidy initially increases returns to farming (and/or lowers the risk of farming), attracting entry. This increases demand for productive farmland, resulting in higher land prices, meaning that the landowner ends up benefitting from the subsidy rather than the farmer. Of course, the farmer may own the land she farms (about one-half of U.S. farmland is owned by the farmers who farm it, the other half leased), but this integration is a separate issue. If she is a tenant farmer, she gains nothing from the subsidies. If she is integrated into land ownership, she gains to the extent of her ownership rather than her farming (e.g., she may lease her land, and do no farming, and effectively obtain the subsidy). Barry K. Goodwin, Ashok K. Mishra, François Ortalo-Magné, [The Buck Stops Where? The Distribution of Agricultural Subsidies](#), NBER Working Paper No. 16693 (January 2011).

<sup>88</sup> There are several examples of how programs can benefit an unintended group. Urban renewal projects, while sometimes lifting local neighborhoods economically, simultaneously raise rents. Property owners enjoy windfalls, but longtime residents who find that housing is less affordable often consider themselves net losers despite having an improved range of amenities. The effect has become so regularly distasteful that a recent article on the topic was entitled, “Is gentrification always bad for revitalizing neighborhoods?” Kaid Benfield, [Is Gentrification Always Bad for Revitalizing Neighborhoods?](#), *THE ATLANTIC*, (OCTOBER 2011). The difference between how costs or benefits are ostensibly distributed and how their economic impacts are felt is so important to consider that tax policy analysis commonly separates the “incidence” of a tax (which party pays the government) and the “burden” (the actual reduction in wealth) it causes. With HCF subsidies, phone (or broadband) subscribers living in high-cost markets are claimed to be beneficiaries of subsidies directed to rural phone carriers. It turns out that the beneficiaries are the owners of the rural telco companies and the property owners whose land values capitalize the amenity of cheaper communications services.

payment or home purchase price). The true beneficiaries are those who own high-cost rural telephone companies and those who own land and/or developed property in those specific areas where subscriber rates are reduced.

#### IV. ENDEMIC PROBLEMS

##### *Cost-Plus Subsidies Result in Plus-Sized Costs*

How could the government ever justify spending \$24,000 per line per year to extend a voice telephone network when services are available for a tiny fraction of the price? No earnest policy maker would intentionally design a system that squandered such vast resources while delivering little if anything in social value.

The original plan was to (a) identify areas where phone networks were too expensive for a private company to justify building on its own, (b) identify carriers who could serve those areas, and (c) cover the extraordinary costs that such carriers would incur by doing so. In return, carriers would be subject to some form of rate regulation and extend the benefits of the build-out to customers in the form of competitively priced service.

As it turned out, however, these tasks were complicated, and that complexity was used to stretch costs beyond any reasonable level. Each step involved specific information about economics, geography, engineering, embedded structures, consumer demand, labor markets, and business models. Regulators had extensive knowledge about the administrative process of subsidization but woefully little understanding of the substance of service provision. The system relied on monopoly telecommunications providers, and these firms then became monopoly providers of information to the regulatory system. As such, they had every incentive to inflate costs and expand the mission.

The system has proven unable to adopt new efficiencies from emerging changes in technology. Indeed, when the basic coverage problem was rendered moot – with the appearance of unregulated wireless entrants in the early 2000s – the regulatory system reacted not by ending payments to the erstwhile monopolists, “providers of last resort” now subject to competitive rivals, but by *extending* similar subsidy payments to entrants. Some wireless operators have themselves received in excess of \$10,000 per line per year, subsidies based not on their mobile network costs, but on the paperwork already filed by the incumbent with which they compete.

The endemic cost-plus disease is apparent when one examines corporate overhead levels. America has well over 1,400 phone carriers – far too many for efficient operations -- as a direct result of the design of the HCF. As costs are averaged over geographic “study areas,” subsidies are richer when tiny firms are engineered to specifically serve what look to be high cost markets. Regulators, impervious to cheaper alternatives, cannot independently judge whether the paperwork justifying cost-based subsidies has any basis in reality. Firms face weak incentives to economize; indeed, companies are paid more the higher they can show their administrative costs to be. Compensation for padded expenses offers direct and indirect gains for owners and top management. The gold plating associated with managers of large public or private enterprises –



limousines, private jets, over-staffing, above-market compensation, generous perks – shows up here in the smallest of business units.

[C]ompanies receiving HCLS subsidies have an incentive to report high costs to the FCC in order to qualify for still higher support payments. Using data from 1,136 rural telecom firms in 50 states (1992-2002), this study shows that some companies respond to current incentives by overstating costs (or incurring higher costs) as they approach the subsidy cutoff points. Compared to the no-subsidy group, companies at the point of greatest subsidy jump appear to overstate costs more due to larger marginal benefits. Such perverse incentives need to be recognized in future universal service initiatives.<sup>89</sup>

The result is a burdensome USF tax for U.S. telecommunications users. As one of the authors has previously written, “of each dollar distributed to recipient firms, about \$0.59 goes to ‘general and administrative expenses’ — overhead such as planning, government relations, and personnel.”<sup>90</sup> This is far in excess of the expenses registered at unsubsidized firms. Such high costs are incurred due to misaligned incentives, not to the lack of lower-cost options. Recall that the argument for subsidies is that serving areas where there are ten homes to the mile, not 100 (about the national average), is extraordinarily costly in terms of initial investments. Digging trenches, laying cables, stringing aerial wires, and embedding electronics in a dispersed grid is capital intensive. Large areas with small populations are less able to pay their own way.

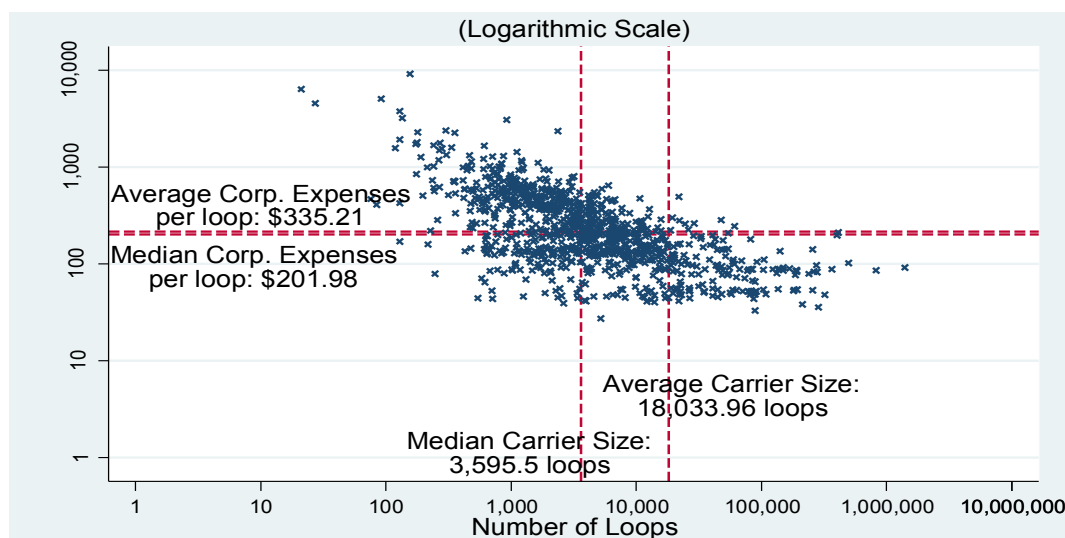


FIG. 11. CORPORATE OVERHEAD PER LINE FOR RURAL TELEPHONE CARRIERS (2010)<sup>91</sup>

<sup>89</sup> HCLS (High Cost Loop Support) was the largest component of the HCF during the sample period. Sanford Berg, Liangliang Jiang & Chen Lin, *Universal Service Subsidies and Cost Overstatement: Evidence from the U.S. Telecommunications Sector*, Public Utilities Research Center, University of Florida (April 11, 2011).

<sup>90</sup> Scott J. Wallsten, *The Universal Service Fund: What Do High-Cost Fund Subsidies Subsidize?* Technology Policy Institute (February 2011), 1.

<sup>91</sup> Federal Communications Commission. Corporate Expense Data from the National Exchange Carriers Association Study Results, file [USF 2010LC11](#). Corporate Expense per Loop is calculated by dividing the total operating expense by the total number of Loops reported in NECA File.



Once assets are in place, however, rural markets – when efficiently served -- tend to exhibit operating costs not much different from urban or suburban areas. The diminished densities characteristic of rural markets presents some challenges, as when larger geographical areas need to be served by service technicians. But it also affords advantages, as when those technicians work for lower wages and travel to assignments without delays due to traffic. These offsetting factors allow reasonably sized rural carriers, those serving at least a few thousand customers, to enjoy corporate overhead costs of less than \$100 per line per year.

TABLE 9. DISTRIBUTION OF RURAL CARRIERS BY CORPORATE EXPENSE PER LOOP (2010)<sup>92</sup>

<i>Annual Overhead/loop</i>	<i>&lt;\$50</i>	<i>\$51-100</i>	<i>\$101-250</i>	<i>\$251-500</i>	<i>\$501-1,000</i>	<i>\$1,001- 2,000</i>	<i>\$2,001- 5,000</i>	<i>&gt;\$5,001</i>
No. of Carriers	44	148	396	239	126	30	8	3
Average Loops	39,840	66,249	13,360	3,687	1,885	558	549	89

The distribution of rural phone carrier costs is seen in Figure 11. The disparity between costs of large and small rural providers is dramatic, as is the effect of skewness – a very large number of very small carriers (size determined by lines supplied). The median sized firm supplies just 3,596 lines (or loops), while the mean sized carrier supplies 18,034. For the 993 rural carriers in the National Exchange Carrier Association database for 2010, size and corporate overhead (not capital) costs, are negatively correlated. Table 9 shows that nearly 200 carriers report annual overhead costs of under \$100. These carriers supply some 11.6 million loops, or 65% of the total. The firms in this cohort average just over 66,000 lines. Among firms with costs over \$250, however, average size is just 2,653. As shown, enormous costs – over \$1,000 per year per line – are incurred by carriers with about 500 loops. The costliest firms, with annual overhead exceeding \$5,000 per line, average just 89 loops each.

### Subsidies To Increase Broadband Deployment

Switching subsidies to broadband would seem to offer a glimmer of hope. Broadband is still an emerging service with a bright future, while fixed line voice is increasingly obsolete, being rapidly abandoned by customers in favor of emerging networks, as well as substitute applications like texting and myriad social media. At a minimum, the switch may present a rare opportunity to overhaul the structure of the universal service program.

At least two preliminary questions must be asked.

1. Does the new broadband support program address the endemic problems that have plagued the voice subsidy scheme?

<sup>92</sup> Federal Communications Commission. National Exchange Carrier Association Study Results, from the file [USF 2010LC11](#). Corporate Expense per Loop is calculated by dividing the total operating expense by the total number of Loops reported in the NECA File.

2. Is there a demonstrated gap in U.S. broadband deployment that the program is likely to fill?

Unfortunately, the FCC's 751-page Order, released in November 2011, makes clear that it will not fix the universal service's self-fulfilling failure, but rather *extend* it, squandering additional billions of dollars more in distributing subsidies to carriers in similarly inefficient fashion to the existing programs.

Even if aiming to bringing broadband connectivity to the last unserved American household, an implausible goal that the Commission itself rules out, the logic of achieving this outcome by doling out billions of dollars annually to hundreds of inefficiently small firms is – by any objective appraisal – an impressive waste of precious resources. While the FCC Order does include a call for “reverse auctions,” they are slowly phased in, deployed only sparingly, and are designed to *augment* cost-plus subsidies rather than *replace* them (which would reduce budgets and return savings to taxpayers). Moreover, the plan organizes competitive bidding according to dubious output metrics, protects incumbents (with years-long delays, and then “rights of first refusal” when winning bids are determined). Overall “high-cost” subsidies under the reforms are slated, according to the Order, to *increase*, while without the reforms they were finally decreasing. (See Section V.)

The second question offers, perhaps, the more interesting answer. The scheme is obviously late to market—cable TV, DSL, mobile broadband, and satellite services are already available to essentially all populated areas of the U.S., almost everywhere featuring a choice of providers. The FCC contends that broadband is unavailable to large swaths of the country—“as many as 24 million Americans...live in areas where there is no access to any broadband network, fixed...or mobile.”<sup>93</sup> But that conflicts with the simple facts published by the FCC. The broader truth is that counting the number of “unserved” is tricky, depending not just on the definition of broadband, but also on the dataset used and the methodology employed to analyze any given dataset.<sup>94</sup> Additionally, as noted above, “unserved” must exclude satellites—even though new satellite coverage meets the FCC's broadband definition.

It seems obvious that with unlimited resources devoted to the task the government could easily improve U.S. broadband coverage, service quality, and household subscribership. All regulators would need do is (a) determine which companies will do the most to improve broadband network build-out and adoption, (b) determine how much it will cost, and (c) award the funds. *Voila!*

But we ran this experiment in voice markets over the past decades and since 1996 with explicit tax-and-subsidy flows as established under the Universal Service Fund. The results, in terms of expanded voice service, appear to be no more than about nil.

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<sup>93</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 5.

<sup>94</sup> Scott Wallsten, “How to Create a More Efficient Broadband Universal Service Program by Incorporating Demand and Cost-Effectiveness Analysis,” Technology Policy Institute Working Paper (2011), Table 1.

Specific projects that received federal money will no doubt pose as candidates to demonstrate the incremental effect of the spending.<sup>95</sup> However, individual projects are photo ops, not evidence. The net effect of any subsidy scheme involves trade-offs, not only in the use of the tax funds – monies which could be devoted to programs dealing with homelessness or the environment, or discovering stem cell treatments to cure ALS – but in the incentives of firms to invest in expanding broadband infrastructure, applications, or subscribership.

Some broadband carriers oppose the FCC’s plan to shift \$4.5 billion in annual subsidies from voice to broadband. Small cable TV operators, primarily serving rural communities, are upset over announced reforms.<sup>96</sup> Subsidies would go to their rivals, incumbent fixed line and mobile phone carriers, and reduce their incentives to invest in infrastructure. Similarly, satellite broadband providers, who can cost-effectively serve sparsely populated areas and who will soon have new technologies that would sharply increase speed and performance of their data services, voice similar complaints.<sup>97</sup>

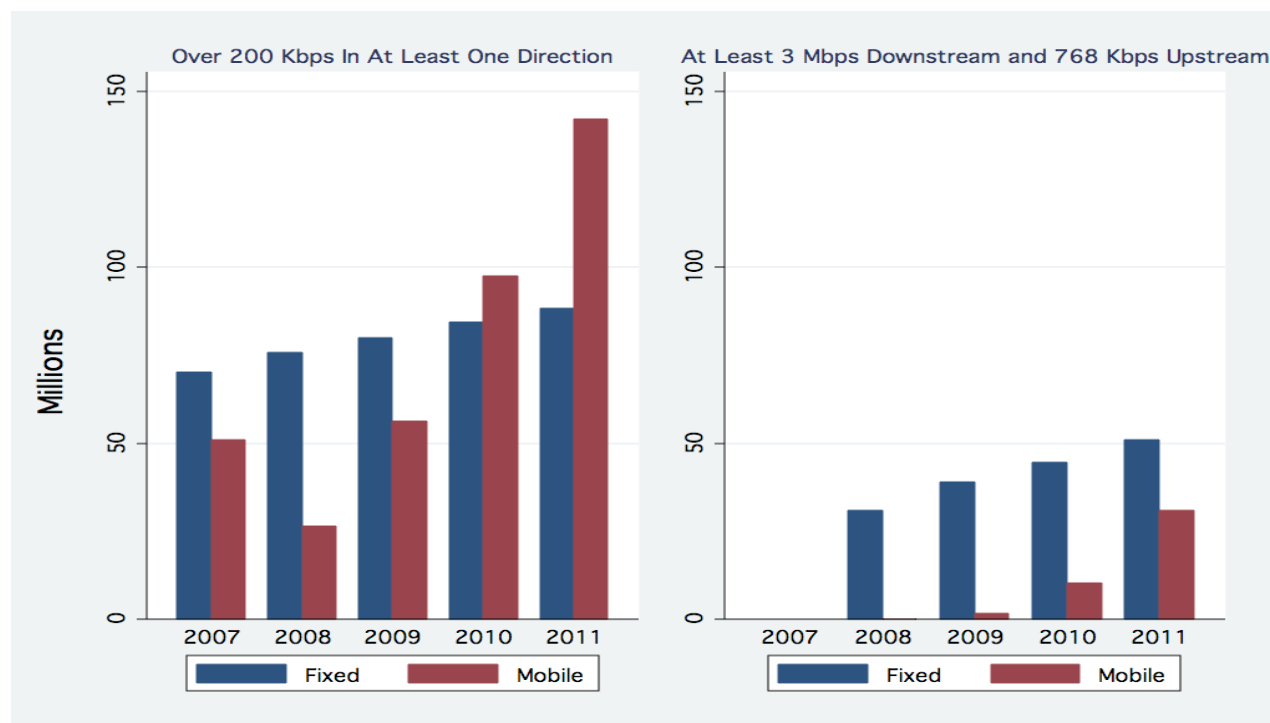


FIG. 12. NUMBER OF U.S. FIXED AND MOBILE INTERNET CONNECTIONS<sup>98</sup>

<sup>95</sup> Indeed, at least one program funded with broadband stimulus funds has made a specific claim to this effect. An online video drama, a “soap opera” called *Diary of a Single Mom*, was given about \$700,000 to produce its shows. Overall, the show and other projects were the result of \$28 million in broadband stimulus spending sent to One Economy Corp. The purpose of the “soap” and other projects, including Internet training classes, was to drive broadband adoption. The producers of the show claim that, due to their efforts, some 150,000 new broadband subscribers have materialized. Jim McElhatton, *Online soap opera cleans up with stimulus broadband cash: Nearly \$1M in federal funds for ‘Diary of a Single Mom,’* WASHINGTON TIMES (December 1, 2011).

<sup>96</sup> American Cable Association press release, *ACA President Responds to Smaller TV Stations’ Acknowledgement and Defense of Price Fixing* (December 22, 2011).

<sup>97</sup> ViaSat press release, *ViaSat-1 Satellite Reaches Geosynchronous Orbit* (November 2011).

<sup>98</sup> Source: Federal Communications Commission, *Internet Access Services: Status as of Dec. 31, 2011* (February 2013), Tables 5 and 7.

## V. THE FCC REFORMS

On November 18, 2011 the FCC released an Order that “comprehensively reforms and modernizes the universal service and intercarrier compensation systems to ensure that robust, affordable voice and broadband service, both fixed and mobile, are available to Americans throughout the nation.”<sup>99</sup> Commendably, the Order seeks to institute some logical changes -- for instance, eliminating the identical support rule that provides subsidies to multiple providers (in the same market) at rates far above economic cost, ending the rapidly growing “safety net additive” program,<sup>100</sup> abolishing high cost support in areas with unsubsidized providers,<sup>101</sup> and introducing competitive bidding (reverse auctions) for the first time.

Unfortunately, these positive steps are – as constituted – relatively minor reforms. The more substantive thrust of the “new” FCC policy is to reinforce the old structure of subsidies to high-cost rural carriers by expanding the subsidies to broadband deployment. As experience with both narrowband and broadband subsidies suggest, the predictable outcome will be more costs but little if any more broadband. The touted reforms range from almost meaningless to potentially harmful; as a bundle, they are cosmetic. Perhaps most importantly, the Order does not address the most basic lesson from the current universal service program: telecommunications markets change rapidly, and even the best-intentioned rules quickly become outdated.

### Budget: The FCC Tries to Price-Cap Itself and Ends Up Spending More, Not Less

In the legacy High Cost Fund certain components, such as subsidies to CETCs, have been capped, but overall program expenditures have largely operated without a budget constraint. Instead, the USAC estimates how much money will be “required” (based largely on filings from recipients) and the FCC then sets a tax rate required to raise that amount of money. Presumably recognizing the inherent problem, the FCC now proudly trumpets, “We establish, also for the first time, a firm and comprehensive budget for the high-cost programs within USF.”<sup>102</sup> The new budget, set initially at \$4.5 billion, however, presents at least three problems.

First, this budget is actually a *floor* on spending rather than a *ceiling*. The new rules appear to prevent the HCF from ever falling below \$4.5 billion. Under the legacy HCF, expenditures could decrease if the various formulae resulted in smaller disbursements. In fact, the HCF finally was shrinking due to reductions in fixed lines, with the 2011 total closer to \$4 billion than to \$4.5 billion. The reforms have staunched this decline. As the Commission states,

We are persuaded that, on balance, it would be appropriate to provide greater flexibility to USAC to use past contributions to meet future program demand so

<sup>99</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 1.

<sup>100</sup> *Ibid.*, ¶ 250.

<sup>101</sup> The Order eliminates funding in areas with 100 percent overlap. Depending on definitions the net effect of this reform could be small.

<sup>102</sup> USF Reform Order, ¶ 18.

that we can implement the Connect America Fund in a way that does not cause dramatic swings in the contribution factor.<sup>103</sup>

Moreover, the new rule prohibits USAC from projecting lower demand:

...beginning with the quarterly demand filing for the first quarter of 2012, USAC should forecast total high-cost universal service demand as no less than \$1.125 billion, i.e., one quarter of the annual high-cost budget.<sup>104</sup>

Second, even if we assume the Commission intended to set a proper budget—that is, a *ceiling* on spending rather than a floor—\$4.5 billion is too high based on the Commission’s own reasoning. The Commission chose \$4.5 billion as the target amount because it is “the same level as the high-cost program for Fiscal Year 2011.”<sup>105</sup> But in reality the high-cost program spent much less than that in 2011. The Order cites USAC 4Q2011 filings as the source of its \$4.5 billion estimate.<sup>106</sup> That filing, however, estimated quarterly payments of \$1.05 billion. Adding the estimate to actual expenditures through the third quarter of 2011 should have yielded a total estimate for 2011 of about \$4.01 billion, not \$4.5 billion (Figure 13).<sup>107</sup> As it turned out, total expenditures for 2011 were \$4.03 billion.

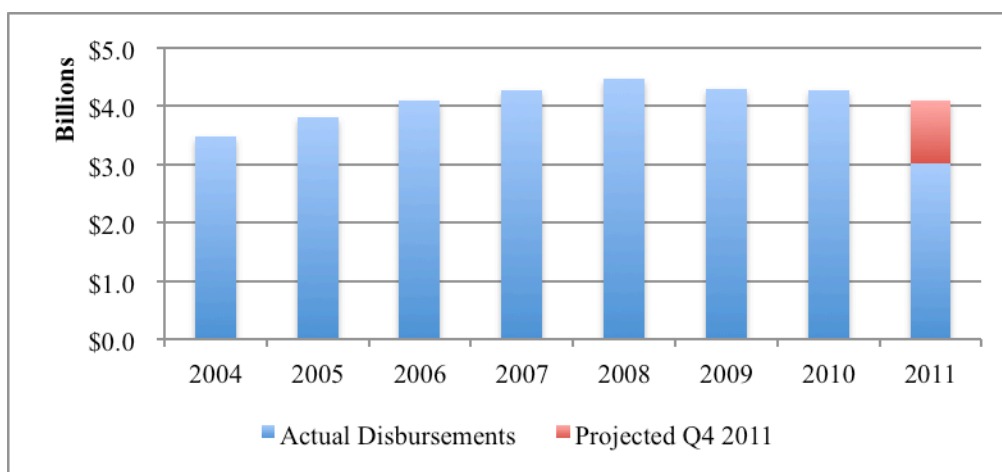


FIG. 13. ACTUAL AND PROJECTED HCF SPENDING<sup>108</sup>

<sup>103</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 559.

<sup>104</sup> *Ibid.*, ¶ 560.

<sup>105</sup> *Ibid.*, ¶ 18.

<sup>106</sup> In particular, the FCC states the estimate came from the USAC 4Q Filing at Appendices at HC01 *Ibid.*, note 434.

<sup>107</sup> The estimate gets closer to \$4.5 billion by including “projected support reserved pursuant to FCC 10-155,” which adds an additional \$59 million to the quarter. However, given that this represents money no longer being spent on universal service due to agreements with Verizon Wireless and Sprint and, according to the Order that established it, “reserved as a potential down payment on proposed broadband universal service reforms as recommended by the National Broadband Plan,” it seems inappropriate, to say the least, to include it as part of an ongoing budget. Federal Communications Commission, [In the Matter of High-Cost Universal Service Support Federal-State Joint Board on Universal Service Request for Review of Decision of Universal Service Administrator by Corr Wireless Communications, LLC](#) (August 31, 2010), ¶ 1.

<sup>108</sup> Source: USAC, Fund Facts, [High Cost Support Program Distribution between CETCs and ILECs](#). USAC data show disbursements through 3Q 2011. Total 2011 is the sum of reported 3Q 2011 disbursements plus USAC’s projection of 4Q 2011 payments (USAC 4Q 2011 Filing in Appendices at HC01).

The fund was set to shrink even further in 2012, but the Order prevented this from happening. In a footnote, the Commission noted that the Order would be released too late for USAC to comply with the rule that it estimate quarterly demand at no less than \$1.125 billion in its first quarter of 2012 projection, so it instructed USAC to update its estimates after the Order was published.<sup>109</sup> This directive demonstrated considerable foresight, given that USAC's estimate for the first quarter of 2012 was originally only \$1.02 billion — considerably below the FCC's floor, consistent with the overall decline in the HCF (Figure 14).

Consistent with the Order, USAC resubmitted its quarterly estimate on December 29, 2011, increasing it to \$1.23 billion.<sup>110</sup> In other words, the first real effect of the Commission's budget was to *increase* the annual HCF by more than \$400 million beyond what it would have been otherwise. Indeed, while disbursements from the High-Cost Fund were \$4.13 billion in 2012, a “reserve” fund had grown to \$562 million.<sup>111</sup>

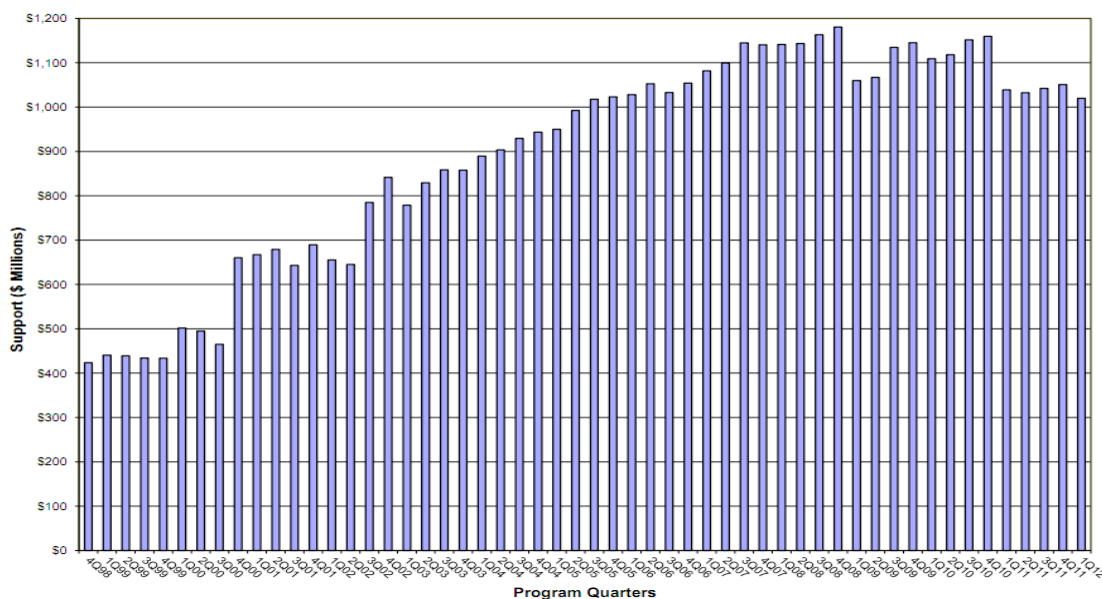


FIG. 14. HIGH-COST QUARTERLY PROJECTIONS THROUGH Q1 2012<sup>112</sup>

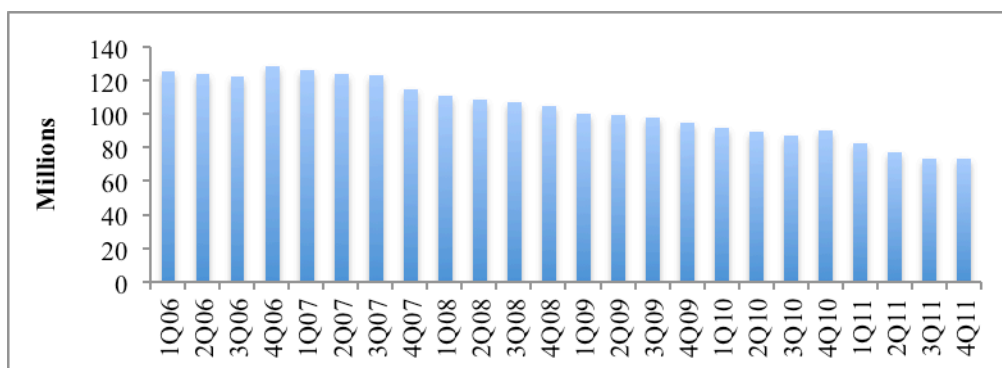
The HCF had plateaued and was beginning to decline. The biggest single component of the HCF for ILECs is High-Cost Loop Support (HCLS), which is (along with ICLS) partly based on the number of loops the ILEC serves. Because consumers are dropping their landlines in such large numbers (see Figure 15), total estimated “need” for HCF subsidies was beginning to decrease. Thus, if the Commission wanted to set the budget at the level of the 2011 HCF, then it should have set the budget closer to \$4 billion.

<sup>109</sup> [FCC Connect America Fund Report, November 2011](#), note 927.

<sup>110</sup> Universal Service Administrative Company. *Revised First Quarter 2012 Federal Universal Service High Cost Support Mechanism Funding Requirement*, WC Docket Nos. 05-337 and 06-122 (December 29, 2011).

<sup>111</sup> [FCC Monitoring Report 2012](#), Chart 2.3.

<sup>112</sup> USAC Fund Facts, [High Cost Quarterly Program Statistics](#).

FIG. 15. HIGH- COST PROGRAM ILEC QUARTERLY LINE COUNTS<sup>113</sup>

Third, the Commission removes all doubt about its intentions regarding budgetary discipline. In the sentence immediately following the first mention of a budget, it notes that it has “an automatic review trigger if the budget is threatened to be exceeded.”<sup>114</sup> In other words, should carriers succeed in driving payments over the budget, the first response of the FCC will not be to reduce the flow of payments, but to re-examine the budget.

#### \$3,000 Per-Line Cap: Protecting the USF From “Headline Risk”

The new Order caps HCF payments at \$3,000 per line.<sup>115</sup> The cap appears no more than a Band-Aid applied to pre-empt embarrassing news stories. When the FCC is forced to explain why Westgate Communications LLC in Washington received over \$23,000 per line in subsidies in 2010,<sup>116</sup> the public might be alerted to the fact that something is amiss. As a meaningful reform, however, it targets a symptom of the problem and leaves the problem itself pretty much intact.

First, this rule will have almost no effect on the size of the fund. As the FCC points out, “fewer than twenty incumbents received more than \$3,000 per line annually.”<sup>117</sup> To be sure, this number has been growing (see Figure 16), but in 2010 total payments to these companies was about \$80 million, or less than two percent of total disbursements.

<sup>113</sup> USAC Fund Facts, *High Cost Program Quarterly Line Count, by ILEC, and Wireless and Wireline CTEC*.

<sup>114</sup> *FCC Connect America Fund Report, Nov. 2011*, ¶ 18.

<sup>115</sup> *Ibid.*, ¶ 272-279, 284, 515-516.

<sup>116</sup> Westgate Communications LLC received US\$375,858 in 2010 and was serving 16 lines at the end of 2010 in the State of Washington. Data obtained from *FCC Monitor Report 2011*, File 11t2-15 (Table 2.15).

<sup>117</sup> *FCC Connect America Fund Report, Nov. 2011*, ¶ 273.



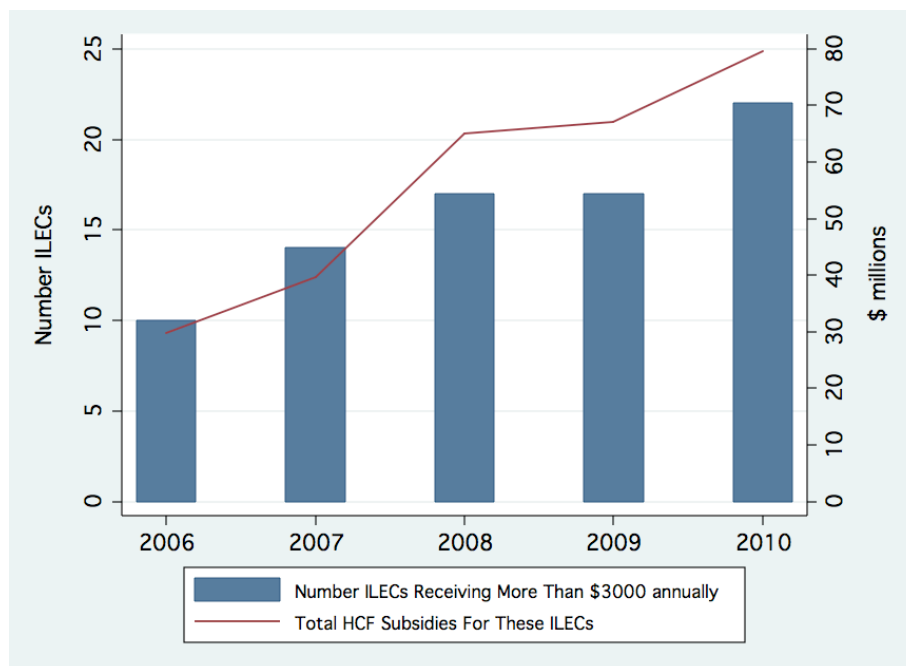


FIG. 16. NO. OF ILECs RECEIVING >\$3,000/LINE/YR. & DOLLAR AMOUNTS INVOLVED<sup>118</sup>

Second, the \$3,000 figure is completely arbitrary and is itself outrageously high relative to the relevant economic factors. The Commission asserts:

After consideration of the record, we find it appropriate to implement responsible fiscal limits on universal service support by immediately imposing a presumptive per-line cap on universal service support for all carriers...<sup>119</sup>

This is not an explanation but a proclamation. Why is \$3,000 per line per year better than \$4,000 or \$2,000 or \$4.39? A more rational – and frugal -- approach would have set the cap at no more than the cost of providing the same service through competitive alternatives. ViaSat, for example, now markets (through partner Echostar, the DISH Network) broadband service that delivers 12 mbps downloads and 3 mbps uploads to virtually all areas in the continental U.S. Monthly plans start at \$49.99, with set-up costs under \$150.<sup>120</sup> This product not only delivers broadband service well above the FCC’s definition (4mbps/1mbps), but also enables subscribers to use voice-over-Internet. Such services suggest a radical revision in FCC thinking about subsidies, given that these unsubsidized services are available for \$600 a year to deliver both voice and broadband access. The USF subsidies do not, of course, actually *deliver* service to the customers; subscribers must pay approximately another \$400 a year (\$33/month) to be connected. Hence, the marketplace now offers services to remote regions that for less than do subsidized carriers receiving about \$200 a year on an apple-to-apples comparison.

The FCC itself takes a baby step towards recognizing this blunt reality, and then retreats hastily: “the State Members of the Joint Board propose that universal service support be limited

<sup>118</sup> Analysis of FCC Data on HCF Recipients.

<sup>119</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 274.

<sup>120</sup> See Appendix 2.



to not more than \$100 per high-cost location per month (\$1,200 annually), which they suggest is somewhat higher than the prevailing retail price of satellite service.”<sup>121</sup> Nowhere does the FCC explain why a cap 2.5 times larger yields benefits larger—let alone 2.5 times bigger—than a \$1,200 annual cap. Or more than five times the size of unsubsidized service already available in the marketplace.

### Competitive Bidding: A Handy Tool Stripped Bare

Competitive bidding has proven an effective mechanism in reducing universal service expenditures in various countries.<sup>122</sup> However, as with all auctions, policy mechanisms, including auction design, matter. One of the key issues concerns how to deal with incumbent providers. The FCC’s Order handles this issue in probably the worst way possible: it gives incumbents the right of first refusal to provide new service with subsidies based on cost models.<sup>123</sup> In effect, this creates an auction in which the incumbent wins at the reserve price.

### No Link Between Performance Goals and Subsidies

The Government Accountability Office and the Office of Management and Budget have repeatedly berated the USF for its lack of any measurable goals, making it difficult to determine whether the program is effective.<sup>124</sup> The Commission appears to take seriously the need to have measurable goals:

Consistent with the Government Performance and Results Act of 1993 (GPRA), clear performance goals and measures for the Connect America Fund, including the Mobility Fund, and existing high-cost support mechanisms will enable the Commission to determine not just whether federal funding is used for the intended purposes, but whether that funding is accomplishing the intended results—including our objectives of preserving and advancing voice, broadband, and advanced mobility for all Americans.<sup>125</sup>

Once more, however, the Order fails to follow through. Instead, it lays out procedures to determine what services are available to consumers, but establishes no way to identify whether the subsidies were actually responsible. For example, a stated objective of the Order is to “preserve and advance” voice services, with the relevant performance measure being the telephone penetration rate. Similarly, for advancing broadband, the performance measure will be “the number of residential, business, and community anchor institution locations that newly gain access to broadband service.”<sup>126</sup>

<sup>121</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 168.

<sup>122</sup> Scott Wallsten, *Reverse Auctions and Universal Telecommunications Service: Lessons from Global Experience*, 61 FED. COMM. L. J. 373 (April 2008).

<sup>123</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 166.

<sup>124</sup> Government Accountability Office, *FCC Needs to Improve Performance Management and Strengthen Oversight of the High-Cost Program*, June 2008. Also U.S. Office of Management and Budget, [Program Assessment: Universal Service Fund, High Cost](#), ExpectMore.gov. 2005.

<sup>125</sup> [FCC Connect America Fund Report, Nov. 2011](#), ¶ 479.

<sup>126</sup> *Ibid.*, ¶ 52.

There is nothing wrong with those measures, *per se*. Indeed, it is important that the Commission identifies what it hopes to accomplish—increasing broadband availability, in this case. The problem is that broadband availability may increase for multiple reasons, some of which will have nothing to do with the Connect America Fund. It would therefore be inappropriate to automatically attribute any increases to the subsidy without some sort of rigorous evaluation mechanism. At some level, the FCC understands this point, as evidenced in its query in its 2011 Notice of Proposed Rulemaking: “How will we isolate USF funding as the cause of change in deployment, to distinguish from other sources of funding, such as BTOP/BIP?”<sup>127</sup> The FCC forgets to answer its own question.

## VI. E-RATE GETS AN “F”

### E-Rate Basics

By the mid 1990’s, a consensus was developing that all of the nation’s schools and libraries should have access to advanced telecommunications services. Starting in 1994, the National Center for Education Statistics (NCES), part of the U.S. Department of Education, began surveying public schools to measure what proportion were connected to the Internet. When the Telecommunications Act of 1996 was passed, its Universal Service Fund included provisions for assistance to schools and libraries for the acquisition of telecommunications and Internet services as well as internal network connections.

The Schools and Libraries Universal Service Support Mechanism—commonly known as the E-rate program—was created in 1997.<sup>128</sup> Any non-profit elementary or secondary institution (with an endowment less than \$50 million) and any library with an independent budget can apply annually for support and, if approved, receive discounts for eligible services actually deployed. The discount rates, varying between 20-90%, are based upon income levels in the local community and whether the location is urban or rural. Total program funding was capped at \$2.25 billion per year and the FCC designated the Universal Service Administrative Company (USAC) to manage the program. From 1998—the first funding year of the program—to 2011, \$26.4 billion<sup>129</sup> in funding commitments have been made to schools and libraries across the country. (See Figure 1 for the annual flows.) But social benefits from this E-rate spending have proven elusive.

Indeed, for a decade and a half the E-Rate has been a case study of how not to run a social program. Lacking clear goals, lax in effective oversight, and riddled with dubious and even outright criminal conduct, the ostensible aim of the billions in public spending – improved student learning – has been entirely lost. Instead, an “E-Rate Industrial Complex” has sprung up

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<sup>127</sup> *Ibid.*, ¶ 485.

<sup>128</sup> While the Schools and Libraries program was initiated in the Telecommunications Act of 1996, specific structure and spending levels were developed by the Federal Communications Commission pursuant to the Act. According to former FCC member Harold Furchtgott-Roth, the approach taken by the FCC deviated sharply from what Congress (and congressional staff) thought they were legislating. See Harold Furchtgott-Roth, *A TOUGH ACT TO FOLLOW* (Washington, D.C.: American Enterprise Institute; 2006).

<sup>129</sup> Total Schools and Libraries (E-rate) funding in 2011 dollars (CPI adjustments).

to claim the lavish awards, sprinkle policy makers with clichés about supporting “computers in the classroom,” and yet leave the public with nothing but higher taxes.

### Aren’t Schools and Libraries Connected Yet?

The immediate objective of the E-rate program was to encourage pervasive Internet access to schools and libraries. That goal was quickly realized. It is unclear how much E-Rate spending contributed to the outcome, as Internet penetration at U.S. schools was high and increasing rapidly prior to E-Rate’s creation. See Tables 11 and 12. As the U.S. Department of Education wrote in May 2001, “By the fall of 2000, almost all public schools in the United States had access to the Internet: 98 percent were connected.”<sup>130</sup> In addition, “By the fall of 2000, the ratio of students to instructional computers in public schools had decreased to 5 to 1, the ratio that ‘many experts consider . . . a reasonable level for the effective use of computers within the schools.’”<sup>131</sup> It could not attribute these results to E-Rate, although it held out the possibility that Internet connectivity “may have been aided” by such subsidies.<sup>132</sup> Yet, in 2005, an assessment by the U.S. Office of Management and the Budget concluded that:

In 2003, nearly 100 percent of public schools now have internet access, including 93 percent of classrooms. 95 percent of these schools reported that they use broadband... There is no data that isolates the impact of E-rate funding on this growth.<sup>133</sup>

The OMB assessment went on to give the E-Rate program a grade of “Not Performing – Results Not Demonstrated.”<sup>134</sup>

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<sup>130</sup> National Center for Education Statistics, [\*Internet Access in U.S. Public Schools and Classrooms: 1994 – 2000\*](#), U.S. Department of Education Office of Educational Research and Improvement, NCES 2001-07 (May 2001), p. 1.

<sup>131</sup> *Ibid.*, p. 3. The passage quoted is from the President’s 1997 Council of Advisors on Science and Technology.

<sup>132</sup> *Ibid.*

<sup>133</sup> U.S. Office of Management and Budget, [\*Program Assessment: Universal Service Fund E-Rate\*](#), ExpectMore.gov. 2005.

<sup>134</sup> *Ibid.*

TABLE 11. PERCENT OF U.S. PUBLIC SCHOOLS WITH INTERNET ACCESS, 1994-2000<sup>135</sup>

<i>School Characteristic</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
All public schools	35	50	65	78	89	95	98
Elementary	30	46	61	75	88	94	97
Secondary	49	65	77	89	94	98	100
Size							
Less than 300	30	39	57	75	87	96	96
300 to 999	35	52	66	78	89	94	98
Over 1,000	58	69	80	89	95	96	99
Metropolitan status							
City	40	47	64	74	92	93	96
Urban fringe	38	59	75	78	85	96	98
Town	29	47	61	84	90	94	98
Rural	35	48	60	79	92	96	99

Connectivity of U.S. public schools and libraries has risen dramatically since 1994, but it has also increased throughout business and residential markets, markets where broadband subsidies have not (until 2009) been distributed. And, as shown, the pace of connectivity growth in schools was already impressive prior to the advent of E-rate. According to data supplied by the U.S. Department of Education, just 35% of schools were Internet-connected in 1994, but 78% were online by 1997. E-rate funds began flowing in 1998. The penetration rate for Internet access in U.S. public schools then climbed to 98% by the year 2000. As the rate is bounded by 100%, it is inevitable that the growth rate beyond 1997 would slow. But it is noteworthy that this high deployment rate pre-dated the introduction of federal subsidies. It also turns out that most public schools graduated from dial-up to broadband connections relatively quickly as well. As noted in a 2006 Department of Education survey, the percentage of all public schools that were broadband connected went from 80% in 2000 to 97% by 2005, while larger schools (>1000 students) maxed out at 100% in 2002. See Table 12.

Beyond providing basic telecommunications services and the initial data link (e.g., a T-1 line) of a school or library to the Internet – “Priority 1 Services” - substantial funds were applied to internal connections – “Priority 2 Services.” These include cabling, routers, switches, network servers and the like. Oversimplifying, Priority 1 services get telecom and Internet access to the building, while Priority 2 services push the data link to classrooms and individual computers. NCES<sup>136</sup> data show the trends and remarkable extent to which public schools are connected. See Appendix 3.

<sup>135</sup> National Center for Education Statistics, *Internet Access in U.S. Public Schools and Classrooms: 1994 – 2000*, U.S. Department of Education Office of Educational Research and Improvement, NCES 2001-07 (May 2001), p. 2.

<sup>136</sup> National Center for Education Statistics, *Digest of Education Statistics* (2010); Table 108, selected years, 1995 through 2008.

TABLE 12. PERCENT OF U.S. PUBLIC SCHOOLS WITH BROADBAND INTERNET ACCESS, 2000-2005<sup>137</sup>

<i>School Characteristic</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
All public schools	80	85	94	95		97
Elementary	77	83	93	94		97
Secondary	89	94	98	97		99
Size						
Less than 300	67	72	90	90		94
300 to 999	83	89	94	96		98
Over 1,000	90	96	100	100		100
Metropolitan Status						
City	80	88	97	97		98
Urban fringe	85	88	92	97		98
Town	79	83	97	98		98
Rural	75	82	91	90		96

Counting all public schools in 2005, 97% of computers used for instructional purposes had Internet access, with a ratio of 3.8 students-to-instructional computer. Also, some 94% of instructional rooms had Internet access. By 2008, it was 98% of computers that had Internet access with a ratio of 3.1 students-to-computer. Not only were virtually all schools connected to the Internet, virtually all computers and classrooms were, as well – and have been for many years. The funds that keep pouring out of E-Rate at more than \$2 billion per year need to find new spending targets. That the program switched from connecting schools to broadband networks, to then connecting classrooms, suggests that the availability of “free money” had resulted in mission creep. This led the program to subsidize new items when the old items – due to total saturation – provided fewer outlets for spending. That classroom connectivity became the next frontier was logical in terms of the structure of the subsidy scheme, but economically irrational: local wireless networks (WiFi), combined with the increasingly dominant use of portable computers (notebooks, netbooks and tablets), render individual classroom connectivity virtually irrelevant in the contemporary elementary, middle, or high school.

Even assuming, far beyond the evidence, that E-Rate funding has materially contributed to broadband connectivity in America’s schools, it would appear that the 1996 Telecom Act’s stated objective has been met. That objective was “...to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms...”<sup>138</sup> Hence, the E-rate program has run its course. While the mission may have been accomplished, the spending continues.

<sup>137</sup> National Center for Education Statistics, [Internet Access in U.S. Public Schools and Classrooms: 1994 – 2005](#), U.S. Department of Education, NCES 2007-020 (November 2006), p. 18.

<sup>138</sup> Telecommunications Act, Sec. 254 – Universal Service: (h) (2).

“If you don’t know where you’re going, any road will get you there.”<sup>139</sup>

From July 2007 to March 2009 the Government Accountability Office conducted an exhaustive assessment of the E-Rate program, focusing on three key areas:

- Trends in demand;
- Levels of, and impediments to, program participation;
- Performance measures and goals.

The GAO’s evaluation of performance measures is particularly informative. The agency summarizes how, over many years, the FCC has persistently ignored, delayed or weakly and inadequately implemented the recommendations made in previous GAO studies. See Figure 17.

<b>Table 2: Summary of Past GAO Findings and Recommendations on E-rate Performance Goals and Measures and FCC’s Response</b>			
<b>Year/GAO report number</b>	<b>GAO findings</b>	<b>Recommendation</b>	<b>FCC response to recommendation</b>
1998/ <a href="#">GAO/T-RCED-98-243</a>	FCC did not provide specific strategic goals, performance measures, or target levels of performance for the E-rate program, as GPRA requires. (See p. 15.)	FCC should develop performance goals and measures for the schools and libraries program.	FCC responded that our recommendation was reasonable and took measures to address it.
1999/ <a href="#">GAO/RCED-99-51</a>	FCC still failed to provide well-defined goals, performance targets, and measures for the E-rate program. (See p. 13.)	We reiterated that the recommendation we made in 1998 for the development of performance goals and measures still needed implementation.	FCC responded that it recognized the importance of our recommendation and intended to address it, but the agency did not indicate when it would do so.
2000/ <a href="#">GAO-01-105</a>	After some false starts, FCC developed performance goals and measures for the E-rate program. (See pp. 33-34.)	Not applicable.	Not applicable.
2005/ <a href="#">GAO-05-151</a>	The goals and measures that FCC set for fiscal years 2000 through 2002, which measured connectivity in public schools, were not useful in assessing the impact of E-rate program funding. In addition, FCC did not consistently set annual goals for the two other major E-rate beneficiary groups—libraries and private schools. (See pp. 20-22.)	For the second time in 7 years, we recommended that FCC establish performance goals and measures for the E-rate program, consistent with GPRA.	FCC responded that it concurred with our recommendation, noting that it was already taking steps to address the recommendation.

Source: GAO.

FIG. 17. HISTORY OF GAO E-RATE FINDINGS AND FCC’S RESPONSE<sup>140</sup>

In report after report, the GAO has deeply criticized the operation of E-rate by the Federal Communications Commission. The Commission has done little of substance to improve matters, spending billions of dollars annually without proper accounting to determine if anything has been accomplished. GAO’s insights relay the basic story:

<sup>139</sup> Paraphrasing Lewis Carroll, *ALICE IN WONDERLAND*.

<sup>140</sup> Government Accountability Office, [Long-Term Strategic Vision Would Help Ensure Targeting of E-rate Funds to Highest-Priority Uses](#), GAO-09-253 (March 2009).

- “In response to our 1998 recommendation that it should develop performance goals and measures, FCC included goals and measures in its annual performance reports.... But we determined that FCC’s goals and measures were not meaningful. For instance, in 1999 FCC set an annual performance goal of ensuring that 30 percent of eligible schools and libraries would have Internet access by the end of fiscal year 2000, even though at that time well over 30 percent of schools and libraries were already connected to the Internet. Further, FCC has not included annual performance goals in its performance reports since 2002.”<sup>141</sup>
- “FCC’s efforts to date in establishing performance goals and measures have progressed in a piecemeal manner, which indicates a lack of a coherent vision for the E-rate program.... This pattern indicates that FCC does not have a clear strategic vision for what it intends the E-rate program to accomplish within the broad statutory framework provided by Congress; for example, how can the E-Rate program best serve schools and libraries? A coherent strategic vision for the E-Rate program could lead to more effective performance goals and measures.”<sup>142</sup>
- “As the Office of Management and Budget (OMB) noted in a 2005 assessment of the E-Rate program, given the increase in schools’ and libraries’ level of Internet connectivity, it is no longer clear that the program serves an existing need. ...Similarly, it is difficult to determine whether the program’s funding structure—including the priority rules and the discount matrix, which contributes to the trends in funding—is the best way to distribute funding in a manner consistent with the program’s intent... The FCC does not have specific, outcome-oriented performance goals or long-term goals for the program...”<sup>143</sup>

Subsequently, the GAO provided a “Management 101” tutorial on goals and performance metrics. Its thrust was to provide managerial tools to demonstrate results, focusing on policy goals and providing actionable information for decision making. While the advice may have been sound, and the tools appropriate for the task at hand, the most notable aspect of this effort is that the tutorials were offered to an agency that, already in operation for more than a decade and having dispersed nearly \$30 billion in taxpayer funds, was still not convinced that managerial oversight had any relevance to its work.

Rather than establishing goals, evaluating performance, and providing transparent accounting for voters and taxpayers, the executors of the E-rate program have been busy making the funding application process as complicated as possible. Now, great expertise is needed to understand the forms, and a cottage industry of consultants has sprung to life to assist schools and libraries to score E-rate awards. One would have thought that the Internet-connected computers at the schools and libraries would have allowed local officials to access such knowledge without hiring expensive consultants. Yet, there appears to be enough business for

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<sup>141</sup> *Ibid.*, p. 44.

<sup>142</sup> *Ibid.*, pp. 45-46.

<sup>143</sup> *Ibid.*, p. 18.



multiple competitors in the consulting niche, and for group expenditures on lobbying. An online petition to the FCC recently requested more E-rate spending.

**DEAR FCC CHAIRMAN GENACHOWSKI:  
PLEASE PROVIDE MORE “E-RATE” FUNDING FOR SCHOOLS AND  
LIBRARIES**

***For Our Children to Succeed, They MUST Be Well-Connected***

I agree with you that “no area has greater potential to transform the lives of our children than education, and no technological innovation in our lifetime has greater potential to transform education than broadband Internet.” But too many parts of our country remain, as you know, either unconnected or under-connected to the Internet, which means that large numbers of children are not receiving equal opportunities to succeed. To make matters worse, federal and state funding for educational technology has turned to dust during these difficult economic times - except, thank goodness, for E-rate funding. Mr. Chairman, the FCC's E-rate program is all that our schools and libraries have left - it's their lifeblood! <sup>144</sup>

The campaign is sponsored by eight consulting firms, all of which offer to help institutions secure E-Rate funding for a fee.

Complex rules, shadowy goals, and fabulous amounts of funding. It leads directly to what government auditors politely call “noncompliance.” The 2004 findings of the FCC’s Office of the Inspector General (OIG) characterized its own oversight efforts as lax. Of 135 audits of E-rate grants, 36% were found non-compliant.<sup>145</sup> In 2008, the FCC’s OIG again examined operations, noting, “...noncompliance puts the E-rate program at risk of significant improper payments...”<sup>146</sup>

Many cases of outright fraud have come to light. A report in WIRED noted, as early as 2003, that “the [E-rate] program has also grown so much that deceitful contractors have squandered funds while other beneficiaries have made egregious accounting errors.”<sup>147</sup> In November 2010, Hewlett-Packard agreed to pay \$16.25 million to settle an investigation by the FCC and the U.S. Department of Justice.<sup>148</sup> The case, like many in the past, involved inappropriate gifts to public officials. The allegations were that HP and others had provided Dallas and Houston school personnel Super Bowl tickets, yacht excursions and meals to skirt a competitive bidding process to secure E-Rate contracts. In 2011, school officials in Pennsylvania and Iowa pleaded guilty to outright E-Rate fraud.<sup>149</sup> In early 2013, orthodox

<sup>144</sup> [Sign the FCC Petition](#), ErateManager.com; (emphasis original).

<sup>145</sup> As detailed in Hazlett (2006), p. 53.

<sup>146</sup> GAO-09-253 – “[Long-Term Strategic Vision Would Help Ensure Targeting of E-rate Funds to Highest-Priority Uses](#),” p. 37.

<sup>147</sup> Kendra Mayfield, [E-rate Fund Hit by Rampant Fraud](#), WIRED (January 13, 2003).

<sup>148</sup> Press Release, [U.S. Settles Lawsuits Against Hewlett-Packard and Intervenes Against its Business Partners for Violating FCC Competitive Bidding Rules in Texas](#), U.S. Department of Justice, Office of Public Affairs (November 10, 2010).

<sup>149</sup> [Former School Officials Plead Guilty to E-rate Fraud](#), FUNDS FOR LEARNING (May 26, 2011).



Jewish schools in New York City that eschew the Internet as it violates religious tenets were found to have collected E-rate subsidies. Reports reveal that “numerous schools (and libraries that in some cases aren't really libraries) are getting millions in E-Rate funds -- despite the fact they offer no Internet connectivity or computer use to students.”<sup>150</sup>

### Indoor Plumbing vs. Bright Shiny Objects

Providing telecommunications and Internet access to the school building is one thing. Paying for endless technology upgrades is another. And simply squandering billions in taxpayer dollars under the guise of helping school children is yet another.

In its highly critical assessment of the E-rate program in 2005, the Office of Management and Budget stated: “E-rate supports a host of other services, including basic telephone services. As these services become an integral part of the Nation's infrastructure (such as electricity and water, which are not subsidized for schools and libraries) and as competition and technology drive costs down, funding levels and eligible services should be reconsidered.”<sup>151</sup> This cuts to a standard economic problem. Arguably, faster Internet connections and better computers will improve educational outcomes. But, arguably, so would better-trained teachers, extra instructional days, higher-paid principals, enhanced extra-curricular activities and safer school busses.<sup>152</sup> By locking up lavish funding in a narrow program lacking goals, controls, or transparency, parents, teachers, principals, and school boards will not have a chance to evaluate their options. A *New York Times* article documents an “open revolt” by Idaho teachers in reaction to the state-mandated push for technology tools in their schools. They object to the one-size-fits-all approach of the mandate which requires all high school students to take some online classes to graduate and that the teachers and students be given laptops or tablets. “Teachers don’t object to the use of technology. They object to being given a resource with strings attached, and without the needed support to use it effectively to improve student learning.”<sup>153</sup>

There exists a lively debate about the appropriate role of technology in the classroom. School boards receiving E-Rate subsidies and companies selling computers or network access tend to favor the view that connected-classrooms make students smarter. But many technologists and education experts disagree.

Paul Thomas, a former teacher and an associate professor of education at Furman University, who has written 12 books about public educational methods [says] that “a spare approach to technology in the classroom will always benefit learning.”

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150 Karl Bode, [Yet Another Major FCC E-Rate Scandal Emerges; Millions Going to Orthodox Schools -- Where Nobody Can Use Internet](#), DSL REPORTS (Feb. 20, 2103) (emphasis original). See also Julie Wiener and Hella Winston, [Part I: Haredi Schools Reap Millions In Federal Tech Funds How does a community that rails against the Web pull in \\$30 million in one year for its schools from the E-rate program?](#) NEW YORK JEWISH WEEK (February 15, 2013).

<sup>151</sup> U.S. Office of Management and Budget, [Program Assessment: Universal Service Fund E-Rate](#), ExpectMore.gov (2005).

<sup>152</sup> It is not clear that more teachers improve educational outcomes, or even higher teacher salaries. See Jordan Weissmann, [Everything You Know About Education is Wrong](#), THEATLANTIC.COM (December 9, 2011).

<sup>153</sup> Matt Richtel, [Teachers Resist High Tech Push in Idaho Schools](#), N.Y. TIMES (January 3, 2012).

“Teaching is a human experience,” he said. “Technology is a distraction when we need literacy, numeracy and critical thinking.”<sup>154</sup>

The most important E-Rate question has to be: *does spending more money on computers and connectivity increase student learning?* No high-level evidence suggests a positive connection between the two.<sup>155</sup> Figure 18 shows the trend in fourth-grade and eighth-grade NAEP nationwide reading scores. Between 1992 and 2011, these scores remained essentially flat. Reading scores have barely been nudged, even with new infrastructure, ubiquitous Internet access, and network-connected computers in every classroom.

*Los Angeles Times* columnist Michael Hiltzik<sup>156</sup> notes that there’s little evidence that fancy technology helps children do better in school. “The media you use make no difference to learning,” [said] Richard E. Clark, director of the Center for Cognitive Technology at the University of Southern California... “Not one dang bit. And the evidence has been around for more than fifty years.”

Hiltzik cited a 1996 paper by Gavriel Solomon of the University of Haifa and David Perkins of Harvard that said that “computers, in and of themselves, do very little to aid learning” and that putting computers in the classroom “does not automatically inspire teachers to rethink their teaching or students to adopt new modes of learning.” He warned that recent efforts by Education Secretary Arne Duncan and FCC Chairman Julius Genachowski to demand that every American public school student have his own laptop “distracts from and sucks money away from the most important goal, which is maintaining good teaching practices and employing good teachers in the classroom.” Duncan and Genachowski, he argued, “have ‘bought snake oil’ through their efforts to massively subsidize technology in the classroom. ‘They’re simply trying to rebottle it for us as the elixir of the gods.’”<sup>157</sup>

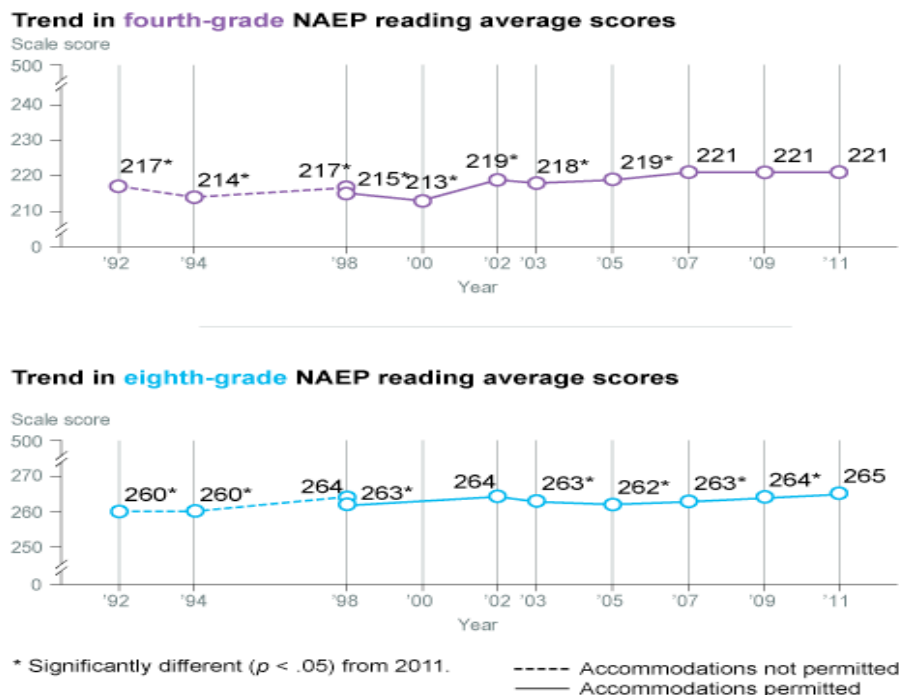
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<sup>154</sup> *Ibid.*

<sup>155</sup> Research in the U.S. and abroad evinces no evidence in favor of the utility of advanced ICTs (information and communications technologies) in education, whether in rural areas or developing countries. See Felipe Barrera-Osorio & Leigh Linden, *The Use and Misuse of Computers in Education: Evidence from a Randomized Controlled Trial of a Language Arts Program* [Working Paper](#) (2009); Joshua Angrist & Victor Lavy, *New Evidence on Classroom Computers and Pupil Learning*, 112 *THE ECONOMIC JOURNAL*, 735 (2002).

<sup>156</sup> Michael Hiltzik, *Who Really Benefits From Putting High-Tech Devices in Classrooms?* L.A. TIMES (February 4, 2012).

<sup>157</sup> *Ibid.*

FIG. 18. U.S. STUDENT READING SCORES<sup>158</sup>

A growing body of research indicates that Internet connectivity can actually impede learning.<sup>159</sup> In his book, *THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS*, *New York Times* correspondent Nicholas Carr discusses relevant discoveries in neuroscience including the work of Michael Merzenich, Eric Kandel and developmental scientist Maryanne Wolf. Carr discusses the human capacity for, and the importance of, “deep reading,” which has always required “sustained, unbroken attention to a single, static object.”<sup>160</sup> The Internet, he laments, does not foster or reward deep reading: “Dozens of studies by psychologists, neurobiologists, educators and Web designers point to the same conclusion: when we go online, we enter an environment that promotes cursory reading, hurried and distracted thinking, and superficial learning.”<sup>161</sup> Carr acknowledges the inconclusive state of play, as well as scientists who possess differing views. What is clear is that the question of whether yet more Internet access – even if we *did need* \$2.25 billion per year in subsidies to accomplish it – would actually improve our schools has yet to be answered.

<sup>158</sup> National Center for Educational Statistics. [National Assessment of Educational Progress – 2011 Report Card](#), U.S. Department of Education.

<sup>159</sup> This work is reviewed in books such as Mark Bauerlein, *THE DUMBEST GENERATION: HOW THE DIGITAL AGE STUPEFIES YOUNG AMERICANS AND JEOPARDIZES OUR FUTURE* (2008); Maggie Jackson, *DISTRACTED: THE EROSION OF ATTENTION AND THE COMING DARK AGE* (2008).

<sup>160</sup> Nicholas Carr, *THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS* (2010).

<sup>161</sup> *Ibid.*

## VII. CONCLUSION

Since 1996, U.S. consumers have contributed – through taxes on telephone service -- over \$88.5 billion in subsidies to the Universal Service Fund. Positive results are imperceptible. Whatever (weak) impact the USF has had in extending voice services has been offset by the tax burden placed on domestic and international long-distance phone calls and wireless voice services. The verdict that universal service policies have high costs and no demonstrated benefit has been a consensus rendered by economic analysis of the basic structure of the USF since even before taxes and subsidies were made explicit in the Telecommunications Act.

After years of “see no evil” oversight, U.S. regulators are now documenting some of the spectacular abuses of the system. But, trapped by interest group politics, the Federal Communications Commission is making only cosmetic reforms that promise to buttress, rather than resolve, systemic problems.

This continues a long history in USF of tweaking a poorly designed central structure, making things worse. For instance, when mobile operators began offering competitive coverage in areas where High Cost Fund subsidies were being distributed to wireline carriers to allegedly create a “carrier of last resort,” FCC reforms in the early 2000s extended the subsidies to the entrants, too. Over \$1 billion a year now goes to “competitive eligible telecommunications carriers.” That subsidies going to multiple operators in a given market makes a mockery of the rationale for the program – to extend networks where they would not otherwise go -- seems not to be noticed. So long as regulators can claim “universal service,” and carriers can collect subsidies, those parties sufficiently invested in the system so as to influence policies are happy with the outcome. It is only the taxpayer who loses.

The current reform program offers yet another set of incremental changes that while promoted as rationalizing the program in reality preserves it, pre-empting emergent technologies and punishing consumers. Subsidies will be switched from narrowband (voice) to broadband (data) services, yet this switch is superficial and non-binding. Broadband services are already ubiquitously available to U.S. households and businesses via telephone, cable, terrestrial wireless, and satellite networks constructed without federal tax dollars. That the FCC boldly proposes to cap HCF payments to carriers at the level of *\$3,000 per line per year* illustrate how slack are the FCC’s efforts at “economy.” U.S. satellite providers, again without government subsidies, deliver voice and data connections across virtually all the U.S. landmass, for just *\$600 per year*. This includes broadband service – 12 mbps downloads, 3 mpbs uploads with new satellites already coming online – that easily outperforms the FCC-defined product (4 down/1 up), provides voice as an Internet application, and includes service charges. The FCC subsidy, in contrast, goes to carriers, who then charge customers an additional \$400 a year, or so, for voice service alone.

Administrative failure, market competition, and technological evolution have rendered the USF system obsolete. Multiple communications networks now offer voice and broadband services all across the U.S., even in very remote regions. A strategy of subsidizing incremental build-outs, expanding service offerings into “study areas” not economic to serve without government funding, is no longer even a plausible textbook exercise. If regulators can locate the

geographically remote, unserved household, struggling to remain connected in a broadband world, the market has already supplied a solution far less expensively than the ill-designed High-Cost Fund. As a last market resort, satellites reach such homes and businesses without public cost, avoiding the distortions that the USF tax on long-distance telecommunications service revenues – a levy that reduces usage demand and, hence, destructively retards network growth.

“Reverse auctions” are tools for a specific task: identifying low-cost providers of government-subsidized network build-outs. The FCC’s USF reforms aim to employ reverse auctions, but they are unlikely to lead to efficient outcomes for two reasons. First, reforms give incumbents the right of first refusal to provide service in relevant areas, defeating the point of competitive bidding. Second, even ignoring the incumbent advantages built into the new rule, the FCC is too late to the party. The emergence of widespread broadband competition, including low-cost satellite broadband and voice-over-Internet, has leapfrogged the “universal service” structure created in the last century. Ubiquitous broadband service is already available—*without* subsidies.

Not that the subsidies ever achieved universal service. Evidence that voice networks expanded as per USF subsidies is extraordinarily thin; assuming the best for them, the cost per extra (voice) connected household exceeds \$100,000. Assuming the worst, the cost per extra connection is infinite; the USF tax burden discourages more build-out (via distorting usage patterns) than it funds. And, in any event, the distributional effects are highly regressive. USF taxes particularly burden low-income phone users who spend a relatively high proportion of income on international calls – first- and second-generation immigrants, for example—and also are more likely to have only wireless phone service. Equally perverse is the fact that the benefits of HCF subsidies go into the pockets of rural telephone company owners and landlords, ensuring that the poor-are taxed to subsidize the relatively affluent.

The \$2 billion-plus spent annually on E-Rate produces, likewise, little positive evidence. Virtually all U.S. schools have been Internet-connected, at broadband speeds, for a decade. No evidence suggests that this build-out project has improved educational outcomes, and no evidence is needed to understand that continuing to spend at the same level even after the project has reached completion will help our children learn to read, write, or take the square root of 204. Stacking more and more computers in classrooms, which seems to be the current enterprise of the E-Rate program, would make no sense even if notebooks, tablets and smartphones had not overtaken desktops, or if the market was now headed to cloud computing – where computing is done without the computers taxpayers are now buying and stacking. It is plain, even without reading the myriad government watchdog reports castigating E-Rate for its absence of coherence, oversight, or results, that while vendors and lobbyists are “well-connected” in this program, America’s elementary and secondary students are not.

Faced with the stark reality that the USF is failing to produce public benefits, the FCC seeks to rein it in. The most important initiative, perhaps, is to cap total spending. The E-Rate is already capped at \$2.25 billion per year by the FCC, but it relies wholly on mission creep to continue cranking out such subsidies year after year. The market long ago achieved what the E-Rate was designed to achieve. Meanwhile, supplying carriers’ subsidies via the High Cost Fund, consumes about twice as much. While the Commission proposes cost-saving measures,

and aims to limit future spending to \$4.5 billion, it actually designs this budget to be a floor as well as a ceiling. Hence, the curious exercise whereby the FCC “price controls” itself appears to result in an immediate spending increase of close to \$500 million.

The FCC’s reform model is fatally flawed. But this failing is ultimately not the FCC’s fault. The political pressure to maintain the flow of corporate subsidies is strong, and as a result there is only weak pressure pushing the agency to engage in zero-based budgeting. Hard spending constraints imposed by a third party, and a clean policy slate, are needed. The FCC itself cannot supply the necessary fiscal discipline. Indeed, we know from experience in telecommunications and other industries throughout the world that only hard budget constraints – spending limits supplied from the outside -- create the right incentives for efficiency. The World Bank acknowledged this problem years ago when studying reforms of state-owned enterprises:

Competition only pressures state-owned enterprises to improve performance if they face a hard budget constraint, that is, if they do not have access to subsidies, privileges, or other forms of soft capital that enable them to compete without improving efficiency. Hard budgets, therefore, are crucial to reforming SOEs in competitive markets.<sup>162</sup>

The practical solution, then, is for Congress to impose spending restraints on the USF. The job of the E-Rate has long been achieved; the job of the HCF is now – for voice and broadband – equally surpassed by market evolution. Yes, places exist that are exceptionally costly to serve with traditional terrestrial technologies. But that alone does not establish a “public interest” in funding a local telco to deliver a wire—or even a wireless signal—with IP connectivity. The case for such subsidies is even weaker when considering that satellites are already up and at ‘em. Let the \$4.5 billion annual HCF join the \$2.25 billion E-Rate in the Telecommunications Users’ Tax Reduction Act of 2013.

To the extent that direct subsidies to low-income consumers are continued, policy makers have a responsibility to carefully monitor expenditures. Only if the payments are shown to pass a rigorous cost-benefit test, which includes a causative impact in increasing broadband network penetration (regulators have themselves declared narrowband subsidies moot) should they continue. The FCC, which is too politically constrained and vested within the current system of taxes and subsidies to conduct a true evaluation, should not be responsible for determining whether the program is effective. Instead, the analysis should be conducted by an independent agency, such as the Government Accountability Office, the Congressional Budget Office, or the Office of Management and Budget.

Were objective third party audits to establish the dramatic expense and regressive consequences of the USF tax, perhaps a new political coalition might seize the moment presented by the hollow but expensive shell of the Universal Service Fund. If so, great social gains could well be produced, at a social cost near zero.

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<sup>162</sup> The World Bank, *BUREAUCRATS IN BUSINESS: THE ECONOMICS AND POLITICS OF GOVERNMENT OWNERSHIP* (New York: Oxford University Press, 1995), p.81.