



# **THE UNIVERSAL SERVICE PROGRAM: A REGULATORY SUBSIDY CASE STUDY**

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by

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<sup>1</sup> Note: This paper is based on 2007-2008 data, which was the most current available at the time of the analysis in 2010. It does not discuss the 2011 changes to the program.

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## **I. Introduction and Summary**

The Universal Service Fund (USF) currently distributes more than \$7 billion per year among participants in the telecommunication industry. It is a regulatory cross-subsidy system that is determined by the rules of the Federal Communications Commission (FCC) and the administration of those rules. The USF affects consumers through higher prices for subscribers to services that pay into the fund and lower prices for subscribers to services subsidized by the fund. Companies pay into the fund 14 percent of their revenue derived from interstate long-distance calls and 5.2 percent of their revenue derived from cellular service. The companies charge customers for the fees they are required to contribute to the USF; consequently, the USF increases consumer prices by about 14 percent for interstate long-distance calls and by about 5 percent for cellular service.

The USF subsidizes four categories of service. As of 2007 (the most recent year for which fully stabilized data are available), the largest portion (62 percent of the fund) subsidizes companies serving rural, high-cost areas. The companies with the highest cost per telephone line receive most of this subsidy money. Within the category of high-cost loop support payments made to incumbent local exchange carriers, about half of the subsidy goes to companies that provide the 1 percent of all telephone lines that have the highest cost.<sup>2</sup> The money goes to the telephone companies; however, they are expected to reduce their rates to customers because of the subsidy. The second-largest category of payments (25 percent of the fund) is used to subsidize communication and Internet services for schools and libraries. The third category (12

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<sup>2</sup> This calculation was conducted with information from the FCC, 2009 Monitoring Report, Tables 3.22 and 3.31.

percent of payments) subsidizes basic telephone service for low-income individuals. The final category (1 percent of the fund) subsidizes communication for rural health-care providers.

The universal service program provides a good example of how regulation can create subsidies because it has taken three forms over the past half century. At first, when the industry was monopolized, the program created the subsidies by regulating the prices of local service and long-distance service. As competition emerged, the mechanism to create the subsidies shifted to regulatory control over the terms and conditions by which companies interconnected their lines and transferred calls among themselves. Finally, the FCC changed the program to the current approach of explicit charges to specified service providers and payments to others. Each form of the program illustrates a way in which regulation can create subsidies.

## **II. Three Types of Regulatory Subsidy**

Economic regulation routinely creates cross-subsidies among various classes of users. Robert Horwitz has described the cross-subsidies as an intentional component of New Deal regulation designed to provide universal access to infrastructure industries: “New Deal ... regulatory agencies formulated complex rate structures to cross-subsidize certain types of routes and services. ... The economic consequence of this was to stabilize and universalize the infrastructure for commerce.”<sup>3</sup> The pattern he described for New Deal regulatory agencies in general applied to the FCC’s regulation of telephone service. The Communications Act of 1934 created the FCC, giving it jurisdiction over telephone service and broadcasting. Section 1 of that Act stated as its mission: “For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of

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<sup>3</sup> Robert Horwitz, *The Irony of Regulatory Reform: The Deregulation of American Telecommunications* (Oxford University Press, 1989), pp. 74, 75.

the United States, ... a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges.”<sup>4</sup> The emphasis on making service available “to all the people of the United States” provided statutory justification for FCC actions to promote widespread service, but the act did not provide details about how to accomplish that goal.

The first stage of universal service subsidies occurred through regulating the price structure for telephone services (local residential, local business, long-distance toll service, etc.). In an unregulated competitive market, the structure of prices will follow the structure of costs incurred in providing the various services. If the price structure is controlled by regulation or statute, political forces rather than costs will determine the price structure.

The Post Office provides an early example. Before 1845, postage was computed based on the mileage traveled, but after an 1851 law changed the rate structure, it was computed at a rate of three cents per letter to anywhere in the country. This created an implicit subsidy structure with those who sent letters to remote areas receiving service below cost and those who sent them short distances within major cities receiving service above cost. Similarly, within the regulated telephone industry, prices needed to be high enough to cover the cost of providing service (including depreciation and return on capital) as defined by the regulatory accounting system. Many combinations of prices for different telephone services could provide the target level of revenue, and cross-subsidies could be created or increased by changing the relative prices for services while keeping the total revenue constant.

Subsidies to promote universal service began with regulatory decisions in the 1950s to shift some of the burden of paying for the telephone network from local subscribers to those who made interstate toll calls. That shift reduced the price for basic local service and increased it for

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<sup>4</sup> 47 U.S.C. 151

interstate toll calls. At the time, the telephone industry consisted of the dominant integrated firm AT&T—which monopolized long-distance service and also provided local service to most subscribers in the country through its subsidiaries, known as the Bell Operating Companies—and many small, independent companies that provided service to rural areas and small towns. The FCC regulated AT&T’s interstate long-distance service, and each company providing local service monopolized a specified geographic area and was regulated by the relevant state public utility commission. Because of the multiple companies and regulatory authorities, the process of shifting the relative costs of local and long distance service was complex and required agreement between state and federal regulatory authorities.

As technological progress reduced the cost of providing long-distance service, regulatory actions kept those rates approximately constant. This created increasingly profitable long-distance service because of the growing disparity between a constant price and a declining cost of providing service. Regulatory action transferred the excess profits from long- distance service to the local companies (both AT&T-owned and independent). The formulas used to share interstate toll revenue with local companies were particularly generous to small, rural companies, and those payments covered a substantial portion of their cost. The subsidy payments from interstate toll revenue allowed the rural companies to charge low rates to their customers and still cover the high cost of serving them.<sup>5</sup>

When the telephone system was a regulated monopoly, any rate structure generating enough revenue to cover all costs was economically viable, but the growing disparity between

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<sup>5</sup>The essential structure of a traditional telephone network was connecting each customer location to a central switch with a pair of copper wires. Densely populated areas had many customers close to the central switch and could use relatively short wires to make the connection, while sparsely populated area required long wires. The long wires and other factors made the costs per customer increase as the population density decreased.

price and cost created incentives to challenge AT&T's monopoly on long-distance service.<sup>6</sup> In 1975, MCI created a service in which a subscriber could use a local phone call to reach an MCI location, where the call would be transmitted on the company's "specialized" communications facilities to an MCI location near the called party and then terminated by a local call from the MCI location to the final customer. This service directly threatened the established subsidy structure because it allowed MCI to provide a substitute for AT&T's long-distance service without paying part of its revenue in subsidies to the local companies.

The FCC initially prohibited MCI's version of long-distance service, but after an adverse court decision the agency allowed a modified version of the original service. The FCC, state regulatory commissions, AT&T, and the independent telephone companies all opposed long-distance competition. Those parties argued that MCI and other potential competitors were trying to profit from the regulatory policy that used a portion of AT&T's long-distance revenue to subsidize local companies. The Antitrust Division of the U.S. Department of Justice viewed AT&T's efforts to maintain its monopoly as illegal, anticompetitive behavior and filed an antitrust suit. This resulted in the 1984 separation of AT&T's long-distance service from the companies providing local service, a process known as divestiture.<sup>7</sup> The Justice Department's separation of AT&T into multiple companies was designed to promote competition in long-distance service, but it assumed that local companies would retain monopoly control of their assigned territories.

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<sup>6</sup> Even though many companies were involved, the telephone system was a regulated monopoly because each local service company had a monopoly of its defined geographic territory and AT&T provided the only long-distance service.

<sup>7</sup> The divestiture agreement created eight companies out of the old AT&T. The long-distance service and manufacturing company retained the name AT&T, and the previous AT&T local telephone subsidiaries were grouped into seven companies known generally as Regional Bell Operating Companies. Many later changes modified the divestiture structure, and now AT&T and Verizon both provide a full range of telecommunications services and together provide telephone service to most of the territory served by AT&T before 1984.

The 1984 breakup of AT&T ended the first stage of the universal service program. Cross-subsidies created by regulatory control of the rate structure could only exist in a monopoly environment. Many analysts then assumed increasing competition would end the subsidy structure, rather than only the form of subsidy used at that time.<sup>8</sup> The FCC initially proposed to phase out the subsidies, but the plan was vigorously opposed by small telephone companies, state regulators, and influential members of Congress. The result was a complex compromise plan that created the second stage of the universal service program (effective 1984-1997).

This program was based on creating a subsidy structure through regulating the terms and conditions for interconnection among the companies in the post-1984 telephone industry. Telephones are among several “network industries,” in which the value of service to a customer depends upon what other customers can be reached through the service. No one needs a telephone to talk to him or herself. A telephone system connecting only customers in one town is of some value, but the service is much more valuable when connected with other systems so that someone can reach a very large number of people. Network industries might be based on physical connections (as in telephones and railroads) or software connections (as in Facebook and other social media). In an unregulated network industry, the control of connections among participating providers is a critical, competitive issue and that control can be used to create a monopoly. In a regulated network industry, the regulators can require interconnection on terms chosen to meet regulatory objectives.

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<sup>8</sup> For example, FCC Commissioner Anne Jones wrote in 1983: “The days are numbered for regulators who believe they can mandate economically irrational behavior in the telephone industry. It is unrealistic to persist in the belief that dynamic telecommunications markets will adjust to a regulator’s transition timetable to preserve “equities” among affected market participants. . . . They are simply not viable in a dynamic growth industry such as telecommunications.” *Dissenting Statement of Commissioner Anne P. Jones*, CC Docket 80-286 (released September 26, 1983).

When long-distance providers and local telephone companies are distinct entities, as they were in the post-1984 industry structure, the connection between the two entities benefits both parties. The long-distance company gains value from access to the customers served by the local company, and the latter benefits from being connected to other local companies via the long-distance provider. There are many possibilities for dividing the benefits of interconnection: Payments could be made by either company to the other, or they could agree to exchange traffic without payments by either party to the other.<sup>9</sup> The second phase of the universal service program was created by mandating payments from long-distance providers to local companies for each minute of conversation originated by a local company or terminated by one. The revised program required the regulators to make a legal distinction between a local call connected to a long-distance provider and a local call that terminates with another local subscriber, even if the two calls are technically identical. If long-distance companies were allowed to connect their facilities with final customers through ordinary local calls (as in MCI's original Execunet Service and the later dial-up Internet service), the subsidies would have been eroded away. Instead, the FCC declared that a call to or from an interstate long-distance provider was an "interstate access call" and would be charged at a much higher rate than an ordinary local call, even if it was technically identical.

As long as local companies maintained monopoly control of access to the long-distance companies, access charges could be set far above the cost of providing service and thus provide a continuation of subsidies. The original access charges (in 1984) averaged just over \$.17 per long-distance conversation minute when the average revenue per interstate minute was \$.30;

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<sup>9</sup> For example, large Internet providers often exchange traffic on a "peering" basis; that is, both agree to accept traffic from the other without payments in either direction. For a review of types of interconnection payments used in telecommunication, see Gerald Brock, "Unifying the Intercarrier Compensation Regime," in Randolph May, ed. *New Directions in Communications Policy* (Carolina Academic Press, 2009).

thus, the long-distance companies paid about 57 percent of the toll revenue received back to local companies for access charges.<sup>10</sup> The FCC closely controlled the details of the access-charge plan in order to meet its political and economic objectives.<sup>11</sup> The access charge plan initially maintained most of the subsidy flows from the earlier system, but gradually reduced the subsidies paid to large local telephone companies while maintaining and increasing the subsidies paid to small local companies. Straightforward access charges would have directed most of the money to the large local companies that were earlier a part of AT&T, but a complex pooling and cost-allocation system increased the payments to small rural companies.<sup>12</sup>

Reducing subsidies to the large local companies during the first 10 years of the revised subsidy system (1984-1993) caused the price for long-distance service and access charges per minute of such service to decline steadily, but also increased the monthly price of local service for most customers. The Consumer Price Index (CPI) for local telephone service rose in each of those years, while the CPI for interstate toll service declined in eight of the 10 years. The largest changes in both price indices occurred in 1984-1987.<sup>13</sup> To prevent low-income consumers from discontinuing telephone service as subsidies to large local companies declined, the FCC created a subsidy program called Lifeline. An eligible low-income consumer received basic telephone service at a reduced rate and the company providing the service was compensated for the differential from the subsidy pool. The initial Lifeline program was a small part of the subsidy program, but it represented a significant improvement in targeting subsidies to meet the stated goal of universal service. Previous programs provided subsidies to local companies without

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<sup>10</sup> FCC, Wireline Competition Bureau, “Trends in Telephone Service” (September 2010), Tables 1.2 (access charges) and 13.4 (average revenue per minute).

<sup>11</sup> Although the access portion of a telephone call is physically within a single state, it is legally a portion of an interstate call and therefore subject to the FCC’s jurisdiction instead of the state public utility commission.

<sup>12</sup> The FCC rules regarding access charges are codified in 47 CFR 69. The political and economic issues in the access charge plan and its implementation are discussed in Gerald Brock, Telecommunication Policy for the Information Age: From Monopoly to Competition (Harvard University Press, 1994), chapters 10 and 11.

<sup>13</sup> Bureau of Labor Statistics, reported in FCC, 2009 Monitoring Report, Table 7.3.

regard to their subscribers' income level. A small company serving a wealthy resort in the mountains would receive the same subsidy as a company with similar costs serving low-income customers, even though the wealthy customers were unlikely to drop telephone service if their rates were not subsidized.

The second stage of the subsidy program (access charges) was only viable with monopoly local telephone companies because alternative methods of connecting the long-distance company and final customers would bypass the connection generating the subsidy. Even as it created the 1984 access-charge subsidy system, the FCC recognized that high access charges could not be sustained if competition developed in local telephone companies. The FCC's concern that the initial level of access charges would create incentives for entrepreneurs to develop alternative methods of connecting customers to long-distance companies was an important part of the justification for phasing down the general subsidy to large local companies. During the early 1990s, many small companies overcame the technical and regulatory obstacles to providing services for large customers in competition with the local telephone company.<sup>14</sup> At the request of the new companies, the regulatory commissions in Illinois, New York, and several other states relaxed their monopoly rules and developed a regulatory structure to accommodate competition in local exchange service. During that time, wireless cellular telephones were evolving from a specialty product to a part of everyday life.. Wireless phones were provided by both established companies and new firms, and they offered another source of potential competition to the incumbent telephone companies. In 1994, Congress began developing a federal statutory framework to accommodate competition and relax the antitrust restrictions placed on the

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<sup>14</sup> The first companies were Metropolitan Fiber Systems in Chicago (later incorporated into Verizon) and Teleport Communications in New York (later incorporated into AT&T). Both companies began operations in the late 1980's using high-capacity optical fiber systems to connect a small number of locations that had very dense traffic between them.

companies created by the break-up of AT&T. That effort resulted in the Telecommunications Act of 1996 (1996 Act), which used ideas developed by state regulatory commissions to create a federal framework for competition in all parts of the telecommunications industry.

The FCC's implementation of the 1996 Act created the third and current phase of the universal service program. The 1996 Act provided the first explicit statutory guidance for subsidies to promote universal service, but the FCC still had wide discretion to determine the structure of the subsidies. While promoting competition, the 1996 Act required the agency to create methods to prohibit the normal competitive adjustment of the prices of different services to the cost of those services. It is more expensive to provide telecommunication services in rural areas than in urban areas, but the law required that rates be essentially the same by providing that "Consumers in all regions of the Nation ... should have access to telecommunications and information services ... that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas," and that "rates charged by providers of interexchange telecommunications services to subscribers in rural and high-cost areas shall be no higher than the rate charged by each such provider to its subscribers in urban areas."<sup>15</sup> The FCC was instructed to fund the subsidies for equalizing rural and urban rates by requiring contributions from telecommunication service providers: "Every telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service."<sup>16</sup>

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<sup>15</sup> 47 USC 254(b)(3) and 254(g).

<sup>16</sup> 47 USC 254(d).

The FCC implemented the general statutory provisions regarding universal service with thousands of pages of orders, including more than 20 “orders on reconsideration” modifying parts of its earlier ones. The central characteristic of the previous system (a portion of long-distance toll revenue used to subsidize the costs of small rural companies) continued under the new system, but there were significant changes. In the first change, the subsidy flows were made explicit by creating the Universal Service Fund with identified contributions from long-distance providers into the fund and identified payments to beneficiaries out of the fund. Most of the information is publicly available, but some data on individual companies are considered confidential and protected from disclosure. That contrasted with the previous system, in which access-charge payments from long-distance providers to local companies were characterized as a fee for the service of originating and terminating long-distance calls and the subsidy component of that fee could not be easily identified.

The FCC also became responsible for administering the contributions and payments, and thus far more deeply involved in the details of the system. Under the previous system, the agency set the access-charge rules, but the parties involved managed the payments. The FCC lacked the administrative capacity to collect, disburse, and audit the billions of dollars of transfers among hundreds of companies necessary to implement the post-1996 subsidy structure. The FCC contracted the direct administration of the system to a private company formed for that purpose, the Universal Service Administrative Company (USAC).<sup>17</sup> All administrative actions, including collecting detailed data from the companies and evaluation of applications for

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<sup>17</sup> USAC is a subsidiary of a previously existing organization, the National Exchange Carrier Association, which had administered portions of the access-charge system.

payment, are handled by USAC under the direction of the FCC.<sup>18</sup> USAC decisions may be appealed to the FCC.

In the third change, the universal service program was expanded to subsidize Internet access for schools and libraries. Providing federal support for connecting schools to information sources had been a long-standing goal of the Clinton administration and was particularly promoted by Vice President Al Gore. The politics of the time prevented a straightforward federal budget appropriation to finance school Internet connections, but the universal service program could provide the financing without affecting the federal budget. With Clinton administration support, Senators John D. Rockefeller IV (D-WV) and Olympia Snowe (R-ME) inserted a vague provision authorizing the FCC to support “access to advanced telecommunications and information services” for schools and libraries through the universal service program. FCC Chairman Reed Hundt successfully sought the other commissioners’ support for an expansive interpretation of the schools program, and it became a major part of the universal service program.<sup>19</sup> The agency’s use of much of the USF to promote Internet usage in schools and libraries was challenged as beyond the Commission’s statutory authority, but an Appeals Court allowed the program to proceed.<sup>20</sup>

The three stages of the universal service program illustrate three general types of regulatory subsidies. The first stage (regulatory control of rate structures to meet political

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<sup>18</sup> In 2008, USAC reported \$202 million in administrative expense for managing the Universal Service Program. FCC, 2009 Monitoring Report, Table 1.10.

<sup>19</sup> The politics of adding Internet in schools to the Universal Service Program are discussed in detail in Reed E. Hundt’s [You Say You Want a Revolution: A Story of Information Age Politics](#) (Yale University Press, 2000). According to his account, the goal of connecting classrooms to the Internet was developed in a senior policy group chaired by Gore, and Hundt found an opportunity to implement a portion of that goal with financing from the Universal Service Fund. He described the expansion of the USF into funding schools as a central achievement of his time as chairman: “Our central effort, based on a vision articulated by Al Gore, was to have the federal government guarantee that new communications technology would be at the fingertips of every child in every classroom. Against vigorous political opposition, we fought from 1994 to 1997 to create the largest national program to benefit elementary and high school education in our country’s history.” (p. x).

<sup>20</sup> Texas Office of Public Utility Counsel, et. al. v. FCC and USA 183 F.3d 393 (5th Cir. 1999).

objectives) is routine in industries subject to economic regulation. From a customer perspective, regulating the rate structure shifts the burden of paying for the system among classes of users. From a supplier perspective, it changes the profitability of services. In the telephone case, the only reason that long-distance toll service was regarded as profitable while local residential service was regarded as unprofitable was that regulatory policies intentionally raised long-distance rates and reduced local rates. In a completely monopolized environment, such price controls only affect who pays but when there is the possibility of competition it affects the incentives to enter the market.

The second stage (access charges) illustrates how regulatory control of interconnection conditions can generate subsidies. Interconnection terms and conditions are critical to competitive viability in a network industry. Regulators can use control of interconnection terms to promote competition and to achieve other objectives. The FCC's objectives in creating the initial access-charge plan were strongly influenced by the political pressure to retain most of the subsidy from the previous system.

The third stage of the universal service program shows that regulatory subsidies can be generated by explicit charges to some companies and payments to others. This form creates more information about the amount and beneficiaries of the subsidy than the previous two. Explicit charges and payments are a less common type of regulatory subsidy than the other two because the charges resemble a tax. Regulatory agencies are not authorized to levy a tax and must be careful with the legal structure and justification to impose an explicit regulatory subsidy. The FCC's current program was challenged as an unconstitutional tax, but the agency successfully defended it to the reviewing courts.

### III. The Current Program

The FCC rules developed in response to the 1996 Act determined the basic structure of the current universal service program. This section will first describe how the program is funded and then describe the payments from the system. The system is funded by a prescribed “contribution” from companies that offer services classified as “interstate telecommunications.”<sup>21</sup> Each quarter, the program’s contract administrator, USAC, estimates the funding requirements for the programs in the Universal Service Fund for the next quarter. USAC also estimates expected interstate revenue for the next quarter using detailed data provided by the relevant companies. USAC divides its estimate of the total funding required for the quarter by its estimate of the total revenue subject to the contribution to get a contribution percentage factor.<sup>22</sup> It recommends that contribution factor to the FCC and, if the agency agrees, it requires companies to contribute that percentage of interstate revenue to the USF.

The initial source of funds for the current program was the same as in the previous versions; the large, and then increasing, pool of interstate toll revenue. However, as the rates charged for toll calls declined and as long-distance calls increasingly were initiated from wireless phones with distance-insensitive rate plans, interstate toll revenue decreased. Continued reliance on contributions from these revenues alone would have threatened the USF’s viability. The FCC preserved the USF funding by requiring contributions from wireless carriers, even if they do not assess a fee for interstate calls separate from their charge for local calls.<sup>23</sup> Pricing plans that charge the same rate for local and long-distance calls blur the distinction between interstate and

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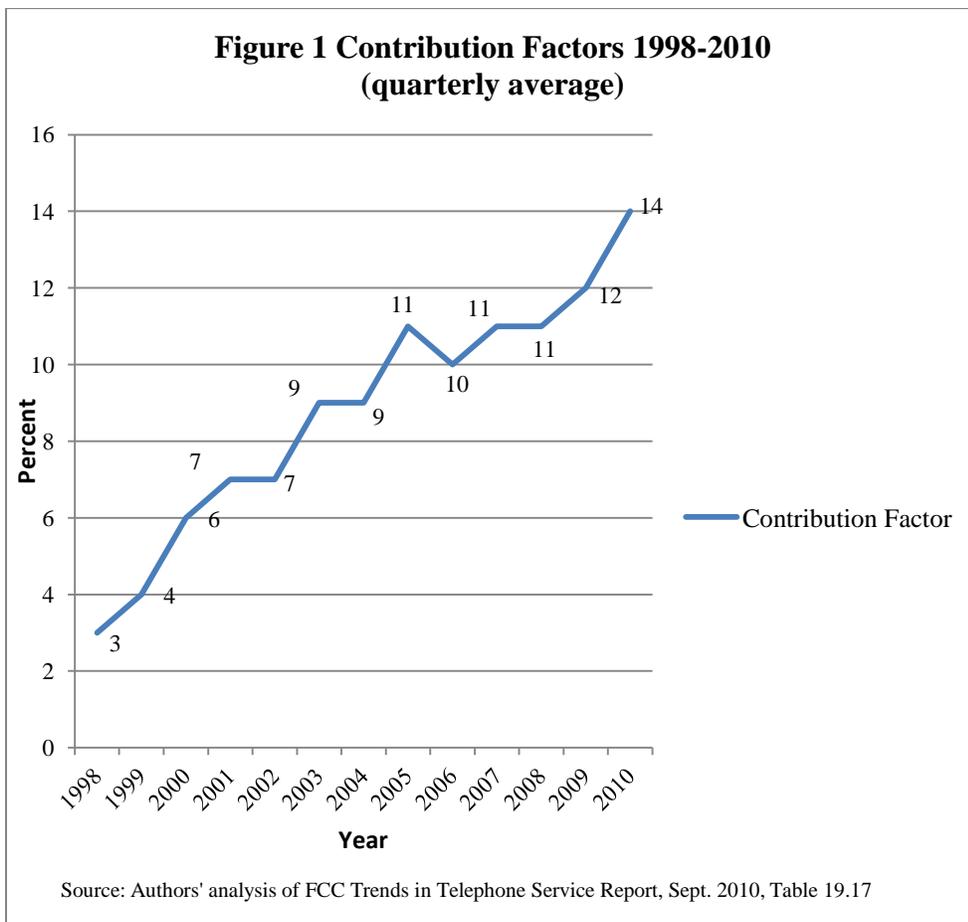
<sup>21</sup> More precisely, telecommunication carriers are required to contribute a portion of their projected collected end user interstate and international revenue after making prescribed adjustments to their revenue forecasts. But interstate revenue is the dominant component, and that term will be used to designate the revenue subject to contribution.

<sup>22</sup> Trends in Telephone Service, Sept. 2010, Table 19.17

<sup>23</sup> Telecommunications Industry Revenues Report, Sept. 2010, Table 12; Universal Service Monitoring Report, 2005-2009, Tables 1.10

intrastate revenue, but the FCC deems 37.1 percent of the revenue of wireless carriers as “interstate telecommunications” and assesses the USF contribution on that fraction of revenue.<sup>24</sup>

Funding requirements for the USF programs have risen faster than the revenue subject to the assessment, including both interstate toll revenue and the fraction of wireless revenue deemed interstate. Consequently, the contribution factor (the percentage of interstate telecommunications revenue that must be paid into the fund) has risen steadily and reached 14 percent in 2010. The contribution factors for 1998 to 2010 are shown in Figure 1.



<sup>24</sup>The FCC adopted the 37.1 percent allocation of wireless revenue to interstate in 2006, after earlier using 15 percent and then 28.5 percent. The allocation was based on the highest fraction of interstate minutes observed in a traffic study of several wireless carriers. The FCC also gave carriers the opportunity to report a lower fraction if they could provide adequate justification. Universal Service Contribution Methodology, FCC 06-94, 21 FCC Record 7518 (2006).

From a consumer perspective, the 2010 contribution factor is equivalent to a 14 percent sales tax on interstate toll calls that are charged for separately from monthly local telephone service, and a 5.2 percent sales tax on wireless bills.<sup>25</sup> Many service providers show the universal service charge as a separate line item on their bills.

The current USF supports four programs: support for high-cost telephone companies, reduced rates for low-income individuals, subsidized communication services for schools and libraries, and subsidized communication services for rural health care. The dominant program (62 percent of funding) provides subsidies to telephone companies that have high costs per subscriber, with most of the money going to those that serve rural areas.<sup>26</sup> This is the successor to earlier programs that subsidized high-cost companies through AT&T's toll revenue-sharing program and the access-charge system. Complex formulas are used to compute payments to individual companies, but the process generally favors the smallest telephone firms in rural areas. As of 2007, almost half of the high-cost payments go to small incumbent companies (those with fewer than 50,000 connections or “loops”).<sup>27</sup> The remainder is split between larger incumbent companies and the competitors to the high-cost firms that use wireless technology and receive the same subsidy per line as the incumbent with which they compete. These payments subsidize both the subscribers of small rural companies that get service at less than the cost of providing it, and the owners of small rural companies who are freed from marketplace constraints on their expense levels and earn higher profits on their invested capital than they would without the subsidy.

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<sup>25</sup> The 14 percent assessment is applied to the 37.1 percent of the wireless bill that is deemed interstate revenue for plans with no distinction between local and long-distance minutes, and therefore the assessment on the entire bill is 5.2 percent.

<sup>26</sup> Universal Service Monitoring Report, 2009, Tables 3.14, 3.31, 2.4, 4.2, & 5.2

<sup>27</sup> Ibid.

The schools and libraries program provides discounts of 20 to 90 percent on telecommunications services, Internet access, and internal connections for schools, school districts and libraries.<sup>28</sup> The discount level is determined by the poverty level of the school or area in which a library is located, as measured by the fraction of students eligible for the free lunch program. Because the program funds services available from many suppliers, such as internal connections to make Internet access available in classrooms, public notice, competitive bidding and other administrative requirements were imposed to limit the opportunities for abuse of the subsidies. However, those requirements also complicate the process and many approved proposals are not fully carried out, causing disbursed funds for the program to be well below the level of funding commitments. In 2007, for example, \$2.4 billion was committed for funding the discounts in approved plans, but only \$1.7 billion was disbursed.<sup>29</sup>

The schools and libraries program grew rapidly in the early years, with funding commitments rising from \$1.7 billion in 1998 to \$2.7 billion in 2003, but a cap of \$2.25 billion per year was imposed to limit its size.<sup>30</sup> Schools and libraries seeking discounts file the required information with USAC. It makes the initial decisions on eligibility, and its decisions may be appealed to the FCC. Requests for discounts on telecommunications services and Internet access are given priority, and the remaining money is applied to requests for internal connections, beginning with the most disadvantaged schools (90 percent discount level).

The low-income program is a successor to the Lifeline program that began in 1984.<sup>31</sup> It was expanded after the 1996 Act, and more benefits for those living on tribal lands were added in 2000. A household is eligible if its income is not greater than 135 percent of the poverty level, or

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<sup>28</sup> [2009 Monitoring Report, Table 4.1](#)

<sup>29</sup> Ibid.

<sup>30</sup> [2009 Monitoring Report](#); Table 4.1 and page 4-1

<sup>31</sup> Universal Service Monitoring Report, 2009, Tables 3.1, 2.2, 4.1, and 5.1

if it participates in one or more means-tested programs, such as Medicaid, food stamps, or free lunches.<sup>32</sup> Eligible subscribers receive a discount on their monthly telephone bill of approximately \$7.50.<sup>33</sup> Those in states that have established their own low-income program may receive an additional discount, with the costs shared between the state and the USF. Eligible subscribers living on tribal lands receive a discount of up to \$25 in addition to the basic discount, subject to the requirement that they must pay at least \$1 per month for telephone service.<sup>34</sup> A separate part of the low-income program known as Link Up provides discounts on initial connection charges.

In 2007, 6.6 million non-tribal subscribers received \$710.3 million in discounts from the low-income program, for an average benefit of \$8.96 per month for each participant. That year, 329,000 tribal subscribers received \$73.3 million in discounts, for an average benefit of \$18.54 per month for each tribal participant.<sup>35</sup> Although tribal benefits are only about 10 percent of non-tribal benefits, they are growing rapidly while the non-tribal benefits are approximately constant.

The rural health-care initiative is the smallest of the four programs, to the point of being relatively insignificant.<sup>36</sup> It provides discounts on telecommunications and Internet services utilized by rural health-care providers. In 2007, the program disbursed \$50.2 million, of which \$28.7 million (58 percent) went to Alaska and small amounts to a number of other states.<sup>37</sup>

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<sup>32</sup> 47 C.F.R. 54.409

<sup>33</sup> This amount is based on typical SLC amounts (which vary by state and are incorporated into Tier 1 support) plus \$1.75 (Tier 2 support which is not automatic but currently all states have qualified for Tier 2).

<sup>34</sup> 47 C.F.R. 54.403

<sup>35</sup> 2009 Monitoring Report, Tables 2.1 and 2.2

<sup>36</sup> Universal Service Monitoring Report, 2009, Table 5.2

<sup>37</sup> Ibid.

Figure 2 summarizes the revenue flows to and from the USF in 2007.<sup>38</sup> A total of \$7.28 billion was paid into the fund, of which 40 percent came from wireless service providers—the largest single source of funds.

**Figure 2 Universal Service Fund Contributions and Payments 2007**



Source: Universal Service Monitoring Report, 2009, Tables 2.2, 3.1, 4.1, and 5.1

A total of \$7.24 billion was paid out of the fund to support the four programs. The amount paid out is routinely less than the amount paid in because the administrative expense of the program is greater than the interest earned on the balance of funds held for later disbursement.

<sup>38</sup> 2007 is the latest year for which fully stabilized data currently are available for the entire program. More recent data is available for portions of the program, including the contribution factor for the end of 2010 and other data for 2008 and 2009. The longest lag occurs for the schools and libraries program because funds are recorded as committed when a plan is approved for funding, but it often requires significant time to implement the program, receive payment, and correct any discrepancies between planned and actual expenditures.

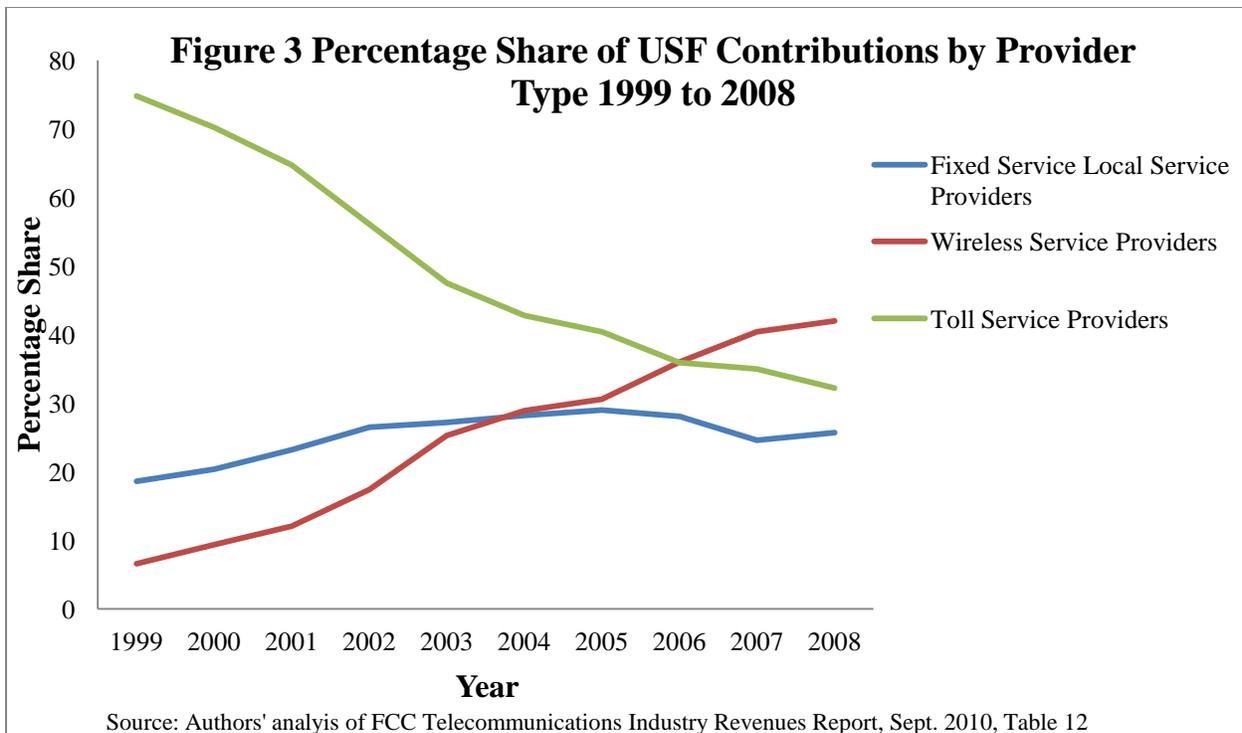
## **IV. Analysis of the Universal Service Program**

### **A. Contributions on a national level**

As discussed, since 1998 the USF subsidies have been funded by a required contribution from interstate telecommunication revenue that has risen from 5.7 percent in 2000 to 14 percent in 2010. In the early years of the current funding mechanism, contributions were dominated by toll service providers and the system continued the long-standing subsidy of high-cost local services from toll revenue. A very small amount of revenue came from wireless providers and a modest amount from the interstate services of local service providers. However, as wireless phones with distance-insensitive pricing plans became routine, many people began making long-distance calls from cell phones instead of traditional phones with separate toll charges; by 2006, wireless carriers slightly surpassed toll providers in contributions to USF, with the gap increasing annually thereafter. If the current funding mechanisms remain, this trend seems likely to continue. Wireless thus would become the dominant source of funds, while traditional toll revenue becomes smaller.<sup>39</sup> Figure 3 shows how the revenue contributed by providers has changed over time.

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<sup>39</sup> FCC Telecommunications Industry Revenues Report, Sept. 2010, Table 12



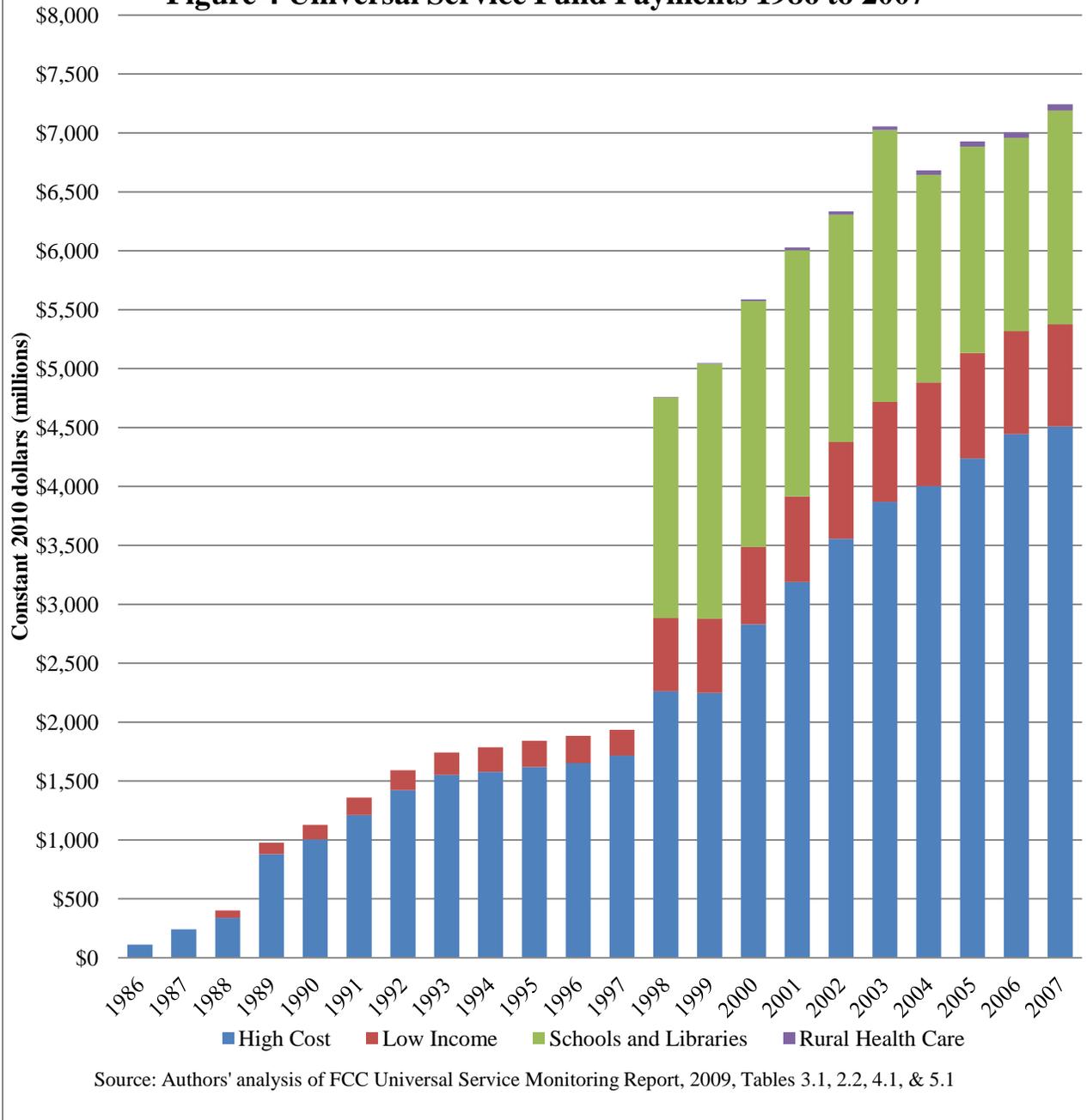
## B. Payments on a national level

Payments out of the USF have increased, sometimes dramatically, since its inception in 1986.<sup>40</sup> For the decade after 1986, companies still received substantial subsidy flows from access charges, and the high-cost expenditures rose as the subsidies were gradually shifted from access charges to the high-cost fund. USF expenditures increased markedly in 1998 with the beginning of the schools and libraries program. Meanwhile, increasingly generous provisions for the low-income and high-cost programs kept both growing.<sup>41</sup> Figure 4 illustrates the expenditures on the fund's four components from 1986 to 2007.

<sup>40</sup> Universal Service Monitoring Report, 2009, Tables 3.1, 2.2, 4.1, and 5.1

<sup>41</sup> The subsidy rules and the changes made to them are technical and complex. For a brief description of the evolution of the low-income and high-cost program rules with references to the relevant FCC orders and sections of the Code of Federal regulations, see FCC, 2009 Monitoring Report, pp. 2-1 to 2-4 for low-income and pp. 3-1 to 3-9 for high-cost.

**Figure 4 Universal Service Fund Payments 1986 to 2007**



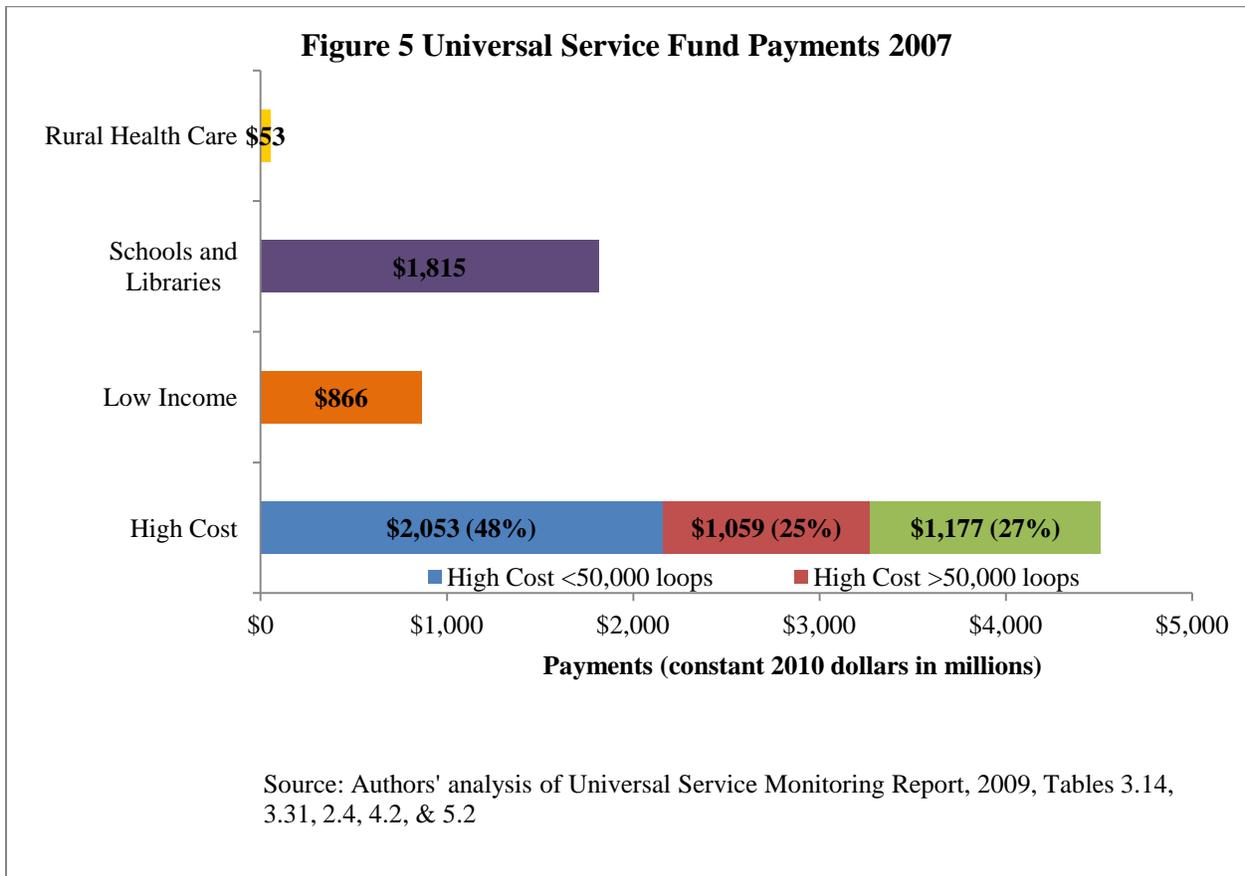
Overall, payments for all four programs continued to grow after the sharp jump in 1998 from less than \$5 billion to more than \$7 billion (in constant dollars) during 1998-2007. Table 1 shows the same data as Figure 4, only in numerical form, and includes the rate of growth for each year.

<b>Table 1 Total Payments &amp; Annual Growth in the Universal Service Fund 1986-2008</b>						
<b>(constant 2010 dollars in millions)</b>						<b>Annual</b>
<b>Year</b>	<b>High Cost</b>	<b>Low Income</b>	<b>Schools &amp; Libraries</b>	<b>Rural HC</b>	<b>Total Fund</b>	<b>Growth in Total Fund (%)</b>
1986	111	0	0	0	111	---
1987	241	0	0	0	241	<b>118</b>
1988	338	63	0	0	400	<b>66</b>
1989	880	97	0	0	977	<b>144</b>
1990	1004	123	0	0	1127	<b>15</b>
1991	1211	149	0	0	1360	<b>21</b>
1992	1422	170	0	0	1592	<b>17</b>
1993	1551	190	0	0	1741	<b>9</b>
1994	1577	209	0	0	1786	<b>3</b>
1995	1619	223	0	0	1842	<b>3</b>
1996	1651	231	0	0	1882	<b>2</b>
1997	1716	219	0	0	1935	<b>3</b>
1998	2261	621	1872	5	4759	<b>146</b>
1999	2248	628	2165	6	5047	<b>6</b>
2000	2829	657	2088	13	5587	<b>11</b>
2001	3190	726	2088	23	6027	<b>8</b>
2002	3557	819	1931	26	6334	<b>5</b>
2003	3869	849	2307	31	7055	<b>11</b>
2004	4003	881	1762	36	6681	<b>-5</b>
2005	4238	895	1752	44	6929	<b>4</b>
2006	4444	873	1640	47	7005	<b>1</b>
2007	4510	866	1815	53	7243	<b>3</b>
2008	4534	833	1082	23	6471	<b>19</b>

Source: Authors' analysis of FCC Universal Service Monitoring Report, 2009, Table 3.1, 2.2, 4.1, and 5.1

Over time, concerns have been expressed about the unsustainable growth in USF payments and the associated increases in the fraction of interstate revenue paid into the fund to keep it solvent. The FCC has responded to those concerns by freezing or capping various components of the programs while it considers more substantial reforms, but the temporary arrangements have remained in place because a politically feasible path for reform has not been found.

The bar chart in Figure 5 and the associated numbers provide further insight into the expenditures of the high-cost fund.



Almost half of the high-cost payments go to small incumbent telephone companies (those with fewer than 50,000 loops), while the remainder is split between larger incumbent companies and the competitors to the high-cost companies that use wireless technology and receive the same subsidy per line as the incumbent with which they compete.<sup>42</sup>

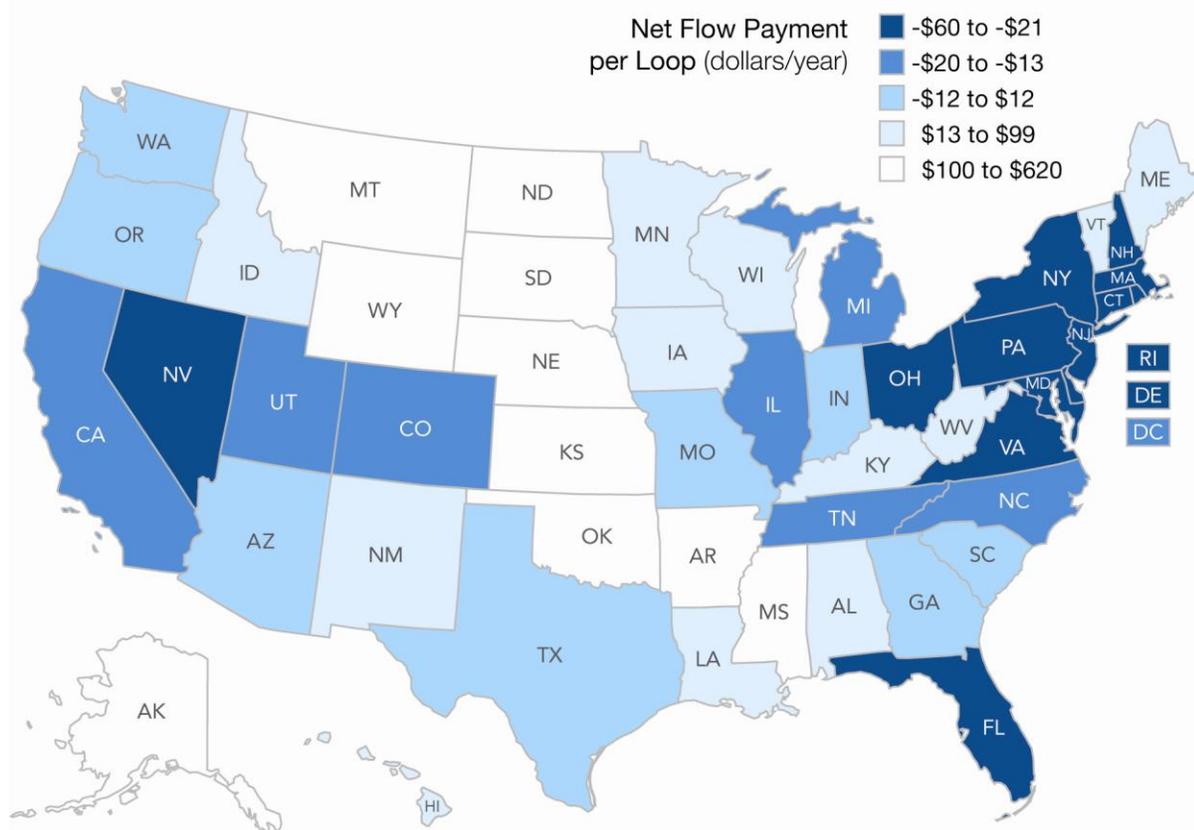
### C. Payments and Contributions by individual states

Based on detailed industry data collected in FCC databases and agency staff estimates of the contributions by state, it is possible to estimate the net flow of funds to or from the USF for

<sup>42</sup> Universal Service Monitoring Report, 2009, Tables 3.14, 3.31, 2.4, 4.2, & 5.2

each state.<sup>43</sup> In general, USF subsidies flow from urban to rural areas because most of the contributions to the fund come from urban areas and a large share of the payments go to rural areas. It is not surprising, therefore, that comparing the net flow of funding between states shows subsidies flowing from predominantly urban to predominantly rural states (see Figure 6). The largest net contributors are the densely populated Northeastern states, and the largest net recipients are the sparsely populated Midwestern and Mountain States, along with Alaska.<sup>44</sup>

**Figure 6: Net Flow Payments per Loop, 2008**



Source: Authors' analysis of FCC Universal Service Monitoring Report, December 2009, Tables 3.17 and 1.12

<sup>43</sup> Universal Service Monitoring Report, 2009, Table 3.17 and 1.12. The methodology used in the staff estimates is explained in the 2009 Monitoring Report, pp. 1-9 to 1-12, and the estimated contributions by state are contained in Table 1.12 on that report.

<sup>44</sup> Universal Service Monitoring Report, 2009, Table 3.14. Nevada is unusual because it is sparsely populated and still makes a net contribution to the fund. Nevada's population is concentrated in the Las Vegas and Reno metropolitan areas, with very few people in the remainder of the state and, therefore, it participates in the USF more like an urban state than a rural state.

Examining the net flows in more detail, the largest net contributor is Delaware, at \$55 per line, indicating that telephone bills in the state are about \$4.60 per month higher than they would be if Delaware subscribers only contributed enough money to pay the benefits provided to state residents (see Table 2). Alaska is by far the largest net recipient at \$620 per year per line, suggesting that telephone bills there would be \$51.70 per month higher than at present with no net subsidy.<sup>45</sup> Although the net contributors are relatively close together, there is a large gap in the net recipients between Alaska and the second-highest recipient, South Dakota, at \$309 per year per line or \$25.75 average increase in the phone bill without subsidies if everything else stayed the same.

<b>Table 2 USF Payments: Net Flow Losses/Gains for 2008</b>		
	<b>State</b>	<b>Net Payment Flow per Loop (dollars/yr)</b>
<b>Top USF Net Contributors</b>	Delaware	-\$55.27
	Rhode Island	-\$46.28
	Maryland	-\$45.92
	Massachusetts	-\$42.87
	New Jersey	-\$41.74
<b>Top USF Net Recipients</b>	Alaska	\$619.80
	South Dakota	\$309.07
	North Dakota	\$303.39
	Mississippi	\$230.87
	Wyoming	\$200.22

Source: Authors' analysis of the Universal Service Monitoring Report, 2009, Tables 3.17 and 1.12

## **V. Conclusion**

The universal service program illustrates several characteristics of regulatory subsidies.

The program's evolution through three forms of managing the subsidies (control of the rate

<sup>45</sup> That computation assumes that everything else remains the same and Alaska telephone subscribers simply pay the extra cost. With that large of an increase, multiple responses should be expected: some subscribers would give up phone service or switch to satellite phones, some telephone companies would find cheaper ways of providing service without the federal payments that are dependent upon showing high costs, etc.

structure, control of the interconnection conditions, and explicit charges and payments) shows alternative ways in which regulation can create subsidies. The persistence of the program even when threatened by changing technology and industry structure is observed in other industries: Once subsidies are granted, the beneficiaries generate political pressure to continue them.

The evolution in the methods by which the subsidies were managed was accompanied by an evolution in their substantive nature. The early phase of the program (pre-1984) provided a flow of subsidy funds from the users of interstate long-distance service to the providers of local service. During the second phase (1984-1996), the source of subsidy funds continued to be the users of interstate long-distance service, but the subsidy funds were more narrowly targeted to the providers of local service in rural areas, with particularly generous provisions for the smallest companies. The long-distance-to-local-service subsidy for the large companies in urban areas was phased out and replaced by a subsidy for low-income subscribers designed to prevent them from dropping service as local rates rose. During the third phase (1997-present), the funding source shifted toward users of cellular telephones (in addition to earlier sources of subsidy funds) in order to continue generating the revenue to support the growing program. Subsidy payments for high-cost companies and low-income individuals were increased over the earlier program and new subsidies for Internet service to schools and libraries were added.

The program creates a flow of funds from urban to rural areas. The largest source of funds is generated by raising the price of cellular service by approximately 5 percent (the percentage of cellular revenue paid into the fund) and cellular users are concentrated in urban areas. Most of the funds go to small rural companies. On a state-wide basis, Delaware's residents are the largest net contributors to the fund and Alaskans are the leading recipients.

The urban-to-rural flow of funds also occurs within states. Most states have small rural telephone companies that receive payments from the fund, even if the state is a net contributor to the fund on a state-wide basis. In a state with both urban and rural areas, such as Ohio, urban residents are net contributors to the fund and rural companies and their customers are net recipients. Detailed data on payments to individual telephone companies within each state are available,<sup>46</sup> but data on net intrastate flows comparable to the data on net interstate flows are not.

Because the USF is an explicit subsidy system with extensive publicly available data, the costs and benefits in an accounting sense are clear. The cost is the required contribution into the fund by telephone companies and normally assessed to corresponding customer services that was approximately 14 percent of interstate long-distance revenue and 5 percent of cellular revenue in 2010. The benefits are the subsidies provided for high-cost companies, for communication and Internet services for schools and libraries, for basic telephone service for low-income individuals, and for communication services for rural health-care providers.

However, in an economic sense, the costs and benefits of the subsidy system are difficult to determine because they depend on the assumed counterfactual situation that would have occurred without the USF. If one assumes that currently subsidized telephone subscribers would give up service in the absence of the USF, the subsidy program creates large social benefits. If one assumes that unsubsidized wireless services would be widely used in rural areas in the absence of the USF, the program limits incentives for technological change and creates few social benefits. If one assumes that currently subsidized telephone subscribers would choose their services but pay higher prices without the USF, the program simply transfers money from urban to rural areas. It is beyond the scope of this paper to specify a plausible counterfactual

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<sup>46</sup> FCC Monitoring Report, Table 3.30

situation and to estimate the fund's economic costs and benefits. The future of the universal service program is uncertain. The legal basis for collecting the funds for the subsidies depends on the distinction between "interstate" and "intrastate" service, and on the distinction between "telecommunication service" and "information service." Those four terms have specific legal meanings and are used to designate the boundaries of the FCC's regulatory authority and of its authority to compel contributions into the USF. Changing technology and pricing practices have muddled the older legal distinctions and created uncertainty about how to continue funding the system.<sup>47</sup> Furthermore, the FCC has announced plans to shift a portion of the subsidies into efforts to promote broadband Internet service in rural areas, but has not specified how that will be done and how the existing subsidies would be affected.<sup>48</sup> However, the past adaptation of the program to new circumstances suggests that a way will be found to continue the program, with many of the same characteristics and beneficiaries as in the current program.

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<sup>47</sup> For example, Internet services are currently classified as "information services" and are exempt from contributions into the USF. If Internet communication displaces traditional communication (a computer to computer call instead of an ordinary telephone call), that displacement reduces funding for the USF. Similarly, the FCC only can assess contributions from interstate services, but distance-insensitive pricing plans limit the ability to clearly separate interstate and intrastate revenue.

<sup>48</sup> "Connecting America: The National Broadband Plan", Federal Communications Commission, March 2010, Chapter 8. Available at [www.broadband.gov](http://www.broadband.gov).

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