TAB B

"UNIVERSAL SERVICE" TELEPHONE SUBSIDIES:

WHAT DOES $7 BILLION BUY?

Thomas W. Hazlett*

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The "universal service" regime ostensibly extends local phone service to consumers who could not otherwise afford it. To achieve this goal, some $7 billion annually is raised – up from less than $4 billion in 1998 – by taxing telecommunications users. Yet, benefits are largely distributed to shareholders of rural telephone companies, not consumers, and fail – on net – to extend network access. Rather, the incentives created by these subsidies encourage widespread inefficiency and block adoption of advanced technologies – such as wireless, satellite, and Internet-based services – that could provide superior voice and data links at a fraction of the cost of traditional fixed-line networks. Ironically, subsidy payments are rising even as fixed-line phone subscribership falls, and as the emergence of competitive wireless and broadband networks make traditional universal service concepts obsolete. Unless policies are reformed to reflect current market realities, tax increases will continue to undermine the very goals "universal service" is said to advance.

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* Professor of Law & Economics and Director, Information Economy Project, George Mason University; and Senior Advisor to the Analysis Group. This study has been undertaken on behalf of the Seniors Coalition. Coleman Bazelon of the Analysis Group provided excellent research support. The views expressed herein are solely those of the author, who retains liability for conclusions, errors or omissions.

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EXECUTIVE SUMMARY

Universal Service Fund (USF) expenditures – now nearly $7 billion annually, up from less than $4 billion in 1998 – are driving telecommunications taxes ever higher. Growth in the USF stems primarily from rising payments to rural phone carriers labeled "High-Cost support," where annual payments mushroomed from $1.7 billion in 1998 to $3.7 billion in 2005. These rising expenditures, in turn, are driven by increasingly expensive (per-line) payments to high cost rural phone carriers and by new payments to wireless phone carriers now qualifying as recipients of such funds.

High-Cost Fund (HCF) payments are distributed in a manner that encourages rural phone carriers (RLECs) to be inefficiently small. RLECs tend, as a result, to be extremely expensive to operate, even as they are highly profitable. HCF subsidies are as much as *$13,000 per year per line*, a remarkable outcome given that retail satellite phone service is available nationwide for about $800 annually. Corporate overhead is vastly inflated under this system, where taxpayers fund cost overruns. Scores of RLECs incur over *$500 per line in annual administrative expense* (costs unrelated to the higher capital expenditures often required in sparsely populated areas), more than what a typical U.S. mobile phone customer pays in *total annual charges*.

Uneconomic operations are a predictable outcome of taxpayer financing on a "cost-plus" basis. In fact, *only 27% of RLEC revenues come directly from customers paying for local access*, less than that contributed by USF monies. Using standard mobile and satellite phone subscriptions to provide service to residents in outlying areas could be achieved far less expensively than what is currently purchased wholesale with taxpayers' money. Annual savings of at least $1 billion are easily achievable.

Current annual payments of nearly four billion HCF dollars to rural telephone companies increase RLEC shareholder wealth, but do not help consumers, low income or otherwise. To the extent that local telephone service in high-cost areas is offered to customers at reduced retail prices, other costs – most notably, residential rents – rise by an offsetting amount. Property owners may gain, but consumers are excluded.

That telephone networks are improved via subsidies for traditional fixed-line coverage is an idea eclipsed by history. Competitive alternatives, including wireless and broadband, are today available to more than 95% of U.S. households – the threshold level of coverage achieved by decades of universal service subsidies. Targeting universal service subsidies to those few households lacking access to communications networks would produce substantial social savings, as would be expected from a system that spends more than *an estimated $5,000 per year for each incremental phone connection*.

The E-Rate program generously funds computers and computer network connections in educational institutions, using about $2.2 billion of the USF annually. Much of this spending would likely take place without the program, especially in higher income areas, and lax oversight results in gold-plated systems and fraud. More generally, research on student achievement suggests that E-Rate program benefits are illusory.

High Cost Fund payments flow, in the main, to shareholders of telephone companies serving relatively few customers in rural areas. These carriers, heavy recipients of taxpayer dollars, maintain a keen interest in supporting current policies. Moreover, subsidies are concentrated in a few sparsely populated states that exercise disproportionate political influence. The result is that universal service policies diverge, more and more, from the interests of the general public.

To pay for the Universal Service Fund, the tax rate applied to long distance revenues has skyrocketed from 3.2% in 1998 to its recent level of 10.9%. This has prompted widespread interest in restructuring the USF tax, expanding the base to cover additional sources of telecommunications spending. But there are no free lunches. Moving to a monthly fee on telephone numbers, for instance, would dramatically raise the tax burden on persons or institutions currently using little or no interstate long distance services such as prepaid wireless customers and colleges and universities. This would limit access to telephone service – a perverse outcome for "universal service" policy.

Reforms that accommodate further spending increases in the USF are recipes for disaster. Raising telecommunications taxes is precisely the reverse of what policy makers should be doing, as this dynamic sector supplies crucial infrastructure enabling productivity growth economy-wide.

Rather than extracting ever-greater taxes to fund failed regulatory models, a pro-consumer approach would cap and then reduce USF subsidy payments. Owing to the stark ineffectiveness of current payment schemes, this option could be smartly executed without any loss in universal service outcomes. New technologies and emerging networks allow customers in what were once high-cost areas to be served by modern telecommunications systems at a fraction of the cost of the current regime. An encouraging sign is that FCC Chairman Kevin Martin has floated the idea of competitive bidding for universal service obligations. Through such market mechanisms, inefficiencies could be slashed – a superior alternative to tax increases for telecommunications users.

I. INTRODUCTION

Alaska is a beautiful state, and its salmon fishing unsurpassed. But many Americans would be surprised to learn that they pay taxes on their telephone service to fund phone networks in the 49th state. These subsidies total over $175 per Alaskan per year.[1] Curiosity might be further piqued when informed that those same Alaskan citizens receive annual checks for over $1,000 per man, woman, and child, pay-outs from the State's crude oil royalties.[2]

Rural phone carriers are subsidized across the country, but U.S. payments average about $12 per person,[3] or 1/15 the level in Alaska. Notwithstanding the fairness of oil-rich Alaska extracting $100 million annually from U.S. taxpayers to fund phone service while distributing some $663 million in petrol windfalls,[4] the scheme might not generate much controversy were the funds well spent.

The "universal service" program ostensibly extends telephone networks to additional users, particularly in high-cost rural areas. Yet, Universal Service Fund (USF) subsidies expand phone usage *less* than the taxes they require *reduce* it. This is because virtually all phone users are heavily taxed through long distance and wireless phone charges to pay for the program, discouraging many, especially low-income, families from

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1 See TABLE 9.

2 "In 2003, each of the nearly 600,000 Alaska US citizens (residents of Alaska for at least one year) received a check for $1,107 from the APF [Alaska Permanent Fund]. The total amount dispersed was $663.2 million. The $25 billion investment fund's core experienced stock market losses which led to the dividend's decline this past year compared to the several previous years. The amount was $433 less, a 28 percent drop from the 2002 pay out of $1,540, and a 44 percent decrease from the all-time high of $1,964 in year 2000." Alanna Hartzok, *Citizen Dividends And Oil Resource Rents, A Focus on Alaska, Norway and Nigeria*, Paper delivered at the Eastern Economic Association meetings (Feb. 2004) ["Hartzok 2004"]; http://www.earthrights.net/docs/oilrent.html.

3 See TABLE 9.

4 Hartzok 2004.

using phone service and driving still others to disconnect entirely. These taxes, $3.9 billion in 1998, are now about $6.8 billion and (obviously) rising rapidly.[5]

Federally subsidized phone service costs taxpayers a large multiple of what the most efficient network solutions would. That is because "high-cost" subsidies are delivered not to low-income customers, but to rural phone companies, typically on a "cost-plus" basis. The more service costs, the more money the phone carrier receives – a clear incentive to *avoid* cost savings. This not only bloats administrative expenses, it undercuts market forces that would naturally lead consumers to abandon traditional fixed lines in favor of newer, cheaper, and functionally superior technologies.

Today, satellite telephone networks are available in Alaska, with retail subscriptions costing $120 per month that include 500 minutes of airtime.[6] That is quite expensive compared to nationwide cellular calling plans, or even lower-cost satellite subscriptions, but it is a bargain compared to what is often spent in federal "universal service" programs. Traditional fixed-line service is provided to outlying areas, courtesy of federal taxpayers, with monthly per-line *subsidies* often exceeding $120 a month[7] – customer charges additional. We could provide residents in such areas *free* phone service while reducing government expenditures, simply by buying satellite phones for households.

While Alaska features the highest level of per-capita federal subsidies, other states – such as Wyoming, North Dakota, South Dakota, Montana and Mississippi – also collect

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[5] See APPENDIX 1. These numbers represent the commitments of the fund for a given year. Actual taxes collected year-to-year tend to vary from the level of commitments, but ultimately all commitments are funded from USF taxes.

[6] See TABLE 5.

[7] See TABLE 4.

subsidies several times the national average.[8] And phone carriers in wealthy enclaves such as Jackson Hole, Wyoming, where the boast that "the billionaires are pushing out the millionaires" applies, garner extremely high – and highly inefficient – payments. With both income and net worth above the national averages, telephone carriers in Jackson Hole received over $282 per subscriber in subsidies from the High-Cost Fund in 2005.[9]

Perhaps the most sensational example lies in the 50th state, where the Sandwich Isles Telephone Company collects some $13,345 a year per telephone line[10] – almost *ten times* the high-cost satellite solution.

As a rule, poor people do not benefit from these lavish expenditures. To the extent that landline telephone rates are reduced below other alternatives, the price of land (as reflected in home prices and apartment rents) will rise by an offsetting amount, eliminating the gain to consumers. Money that would be spent on phone service is instead spent on rent.

But given the evolution of new competition, subsidies are less and less able to affect even this cost-shifting outcome. In rural markets, over 5% of households have already given up fixed lines to go all-wireless, just about the same proportion as in non-rural markets.[11] This trend is unmistakable, as the fixed-to-wireless transition is well under way. Already, there are more wireless phone subscriptions in the U.S. than fixed

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[8] See TABLE 9.

[9] See APPENDIX 10. Jackson, WY median household income was $47,757 in the 2000 census, with the national average $41,994. U.S Census Bureau; http://quickfacts.census.gov/qfd/.

[10] See TABLE 4.

[11] Wireline Competition Bureau, *Trends in Telephone Service*, FEDERAL COMMUNICATIONS COMMISSION (Apr. 2005) ["*Trends in Telephone Service* 2005"], Table 16.5.

lines (at least 38 million more[12]), and most minutes of phone use are – in the average household – via wireless.[13] In other countries, the transition is even more advanced. In Finland, a country with much rugged, rural terrain, only 64% of households maintained POTS (plain old telephone service) connections in 2004, down from about 93% in the early 1990s.[14]

And fixed line competitors are also on the march. Some analysts estimate that cable TV systems offer broadband service to as many as 98% of U.S. homes.[15] This option yields the great majority of customers, including those in rural areas, a competitive alternative to POTS via voice-over-Internet (VoIP) service. Many phone users are actually abandoning the subsidized system of "universal service," taking advantage of superior alternatives. Residents in Westhope, North Dakota, a town of 533 just six miles from the Canadian border witnessed this first hand.[16] "[S]even months ago, Cassidy Sivertson, a 27-year-old who runs a computer business out of his home here, bailed out of the subsidized plan, which was costing him about $165 a month. Instead, he signed up

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[12] As of April 23, 2006, there were 212,842,289 U.S. wireless phone subscribers; http://www.ctia.org/ (visited April 23, 2006). The FCC reported 174.7 million local exchange carrier loops in 2005. Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report*, CC Docket No. 98-202 (2005) ["2005 Monitoring Report"] Table 3.22 and 3.29, backup file "05t3-22to30.xls"; http://www.fcc.gov/wcb/iatd/monitor.html. The fixed line total is declining, while the wireless subscriber base is growing rapidly.

[13] "[T]he Yankee Group … 'reports that by the end of 2002, average cell phone minutes used had surpassed the average per-person household wireline minutes of use.'" Randolph J. May, *Paring FCC Sharing Rules*, THE WASHINGTON TIMES (Dec. 14, 2004), p. A14.

[14] Thomas W. Hazlett, *Rivalrous Telecommunications Networks With and Without Mandatory Sharing*, AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES, Working Paper No. 05-07 (Mar. 2005), Table 1.

[15] Research Notes 1Q 2006, LEICHTMAN RESEARCH GROUP, INC. ["Leichtman 2006"], p. 7; http://www.leichtmanresearch.com/research/notes03_2006.pdf. Others sources estimate lower levels of cable modem availability. See, for example, Wireline Competition Bureau, *High-Speed Services for Internet Access: Status as of June 30, 2005, Federal Communications Commission* (Apr. 2006), Table 14; National Cable & Telecommunications Association, *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Comments of NCTA*, MB Docket No. 05-255 (Sept. 19, 2005), p. 33.

[16] Anne Marie Squeo, *Universal Battle: In Tiny Towns, New Call Options Shake Up an Old Phone System — Rivals, Technology Threaten Program Bringing Service to Remote Parts of U.S — Mr. Smith's $10 Lifelines*, THE WALL STREET JOURNAL (Feb. 22, 2005) ["Squeo 2005"], p. A1.

for a new Internet-based service from Vonage… [A] high-speed Internet connection and an additional toll-free line cost just $60 a month. 'It surprises me we can have this type of service out here,' says Mr. Sivertson, who says several of his friends have made a similar change thanks to him."[17]

Yet owners of rural telephone companies continue to reap the financial rewards of taxpayers' largesse. They are guaranteed profits via federal payments, even if they waste money on overhead and squander opportunities to save. Several rural co-ops have paid their members annual dividends in excess of what they pay in local phone charges.[18] Hence, courtesy of the Universal Service system, the owners of these rural telephone companies enjoyed free phone service, and a tip.

The obsolescence of traditional phone service is becoming apparent in rural areas, where wireless technologies – including terrestrial and satellite, fixed and mobile – are displacing wireline systems. With lower costs in low density markets, greater utility for users who prefer untethered phones, and national calling plans that price long distance minutes cheaply, this is a consumer pleasing, economy enhancing transition. However, the current Universal Service system resists this tide of efficiency, levying taxes on productive networks to reward those threatened with obsolescence.

This paper examines the trends in USF expenditures and the means by which such funds are extracted from taxpayers. Despite the fact that fixed telephone penetration is now declining, subsidies are rising – reaching nearly $7 billion in 2005. The analysis demonstrates that:

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[17] Squeo 2005.

[18] Paul Davidson, *Fees Paid By All Phone Customers Help Rural Phone Firms Prosper*, USA TODAY (Nov. 17, 2004) ["Davidson 2004"]; http://www.usatoday.com/money/industries/telecom/2004-11-15-phone-fees_x.htm.

- "High-cost" support is largely distributed to rural telephone companies serving a relatively small number of customers.
- Of these companies, a small number receive a high proportion of the funds; these firms, in turn, are concentrated in a small number of largely rural states.
- Many subsidized companies incur annual *corporate overhead costs* greater than $500 per line,[19] exceeding the *total subscriber cost* of a mobile phone subscription with unlimited off-peak nationwide calling offered by a *rural* wireless carrier.[20]
- Subsidized phone service results in extremely high costs, with lines costing taxpayers at much as $13,000 per year – an order of magnitude higher than giving away premium satellite phone subscriptions, free of charge.
- While "universal service" has failed to expand phone network access, it now taxes new competitive alternatives, threatening the very options for consumers it ostensibly aims to produce.
- The tax that funds "universal service" has mushroomed from 3.2% of long distance revenues in 1998 to 10.9% in 2006.[21]
- Alternative telecommunications taxes, such as monthly fees on phone numbers, would continue to punish a key sector driving economic growth and damage the interests of various phone users, including institutions of higher learning and low-income pre-paid wireless consumers.

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[19] See TABLE 3.

[20] For instance, Cellular One plan prices for Bear Lake, MN (zip code 55723) are as low as $35 per month; https://www.celloneusa.com/ECellPortal/ECell.portal. Unicel plan prices for Alango, MN (zip code 55703) are as low as $32.95 per month; http://www.rccwireless.com/shop/plans/.

[21] Data for 1998-2005 Q1 are from *Trends in Telephone Service* 2005, Table 19.6; data for Q2-Q3 2005 are from the 2005 Monitoring Report, Table 1.10, and data for 2005 Q4 – 2006 Q2 are from http://www.fcc.gov/wcb/universal_service/quarter.html.

- Policies constraining the mushrooming growth of USF spending offer a pro-consumer alternative to tax increases.
- Spending restraint can be achieved without sacrificing the objectives of Universal Service, with policy makers capping and then reducing subsidies – an outcome achievable through the use of competitive bidding for universal service obligations, an idea used elsewhere and recently floated in the U.S. by FCC Chairman Kevin Martin.

This paper offers an overview in Section II and then, in Section III, examines the trend in spending patterns of the Universal Service Fund, fleshing out the factors driving recent spending increases. In Section IV the distribution of funds is explained, showing how dollars flow largely to rural telephone networks serving small clusters of customers in a highly inefficient manner. The generous payments do not generally lower costs for consumers, but protect obsolete technologies. Further, they waste taxpayers' dollars and distort economic activity by reducing consumer purchases in telecommunications markets, reducing network formation.

Section V considers opportunities for technological substitution, making use of wireless, satellite, and Internet-based communications to supply telecommunications service in rural areas. Given that multiple networks, including cable TV and mobile wireless, cover more than 95% of U.S. households – the level of "universal service" actually achieved under the existing system – shifting to reliance on alternative technologies could easily save most payments made to carriers in the $3.7 billion per year High-Cost Fund (the lion's share of the Universal Service Fund). This reveals the magnitude of inefficiency embedded in the cost-plus subsidies now in place. Section VI

reviews the waste and corruption endemic in the E-Rate program, a $2 billion per year program[22] to subsidize information technology in schools and libraries.

Section VII offers an explanation of why the distribution of benefits under the USF – primarily, high returns for owners of rural telephone companies – offers political support for the current system. Not only are benefits highly concentrated on shareholders in rural phone carriers (RLECs) while costs are diffused across consumer and business phone users, but subsidy payments are skewed in favor of small states with relatively large clout in the U.S. Senate. Section VIII evaluates the means by which subsidy fund dollars are extracted from telephone users. Not only has the current system proven highly inefficient, but alternative tax schemes currently under consideration would also distort markets. In particular, a flat monthly fee per telephone number would impose sharply asymmetric burdens. Finally, Section IX offers a summary and conclusion.

II. OVERVIEW OF UNIVERSAL SERVICE IN TELECOMS

Americans now send nearly $7 billion annually to the Universal Service Fund, which ostensibly distributes these monies to extend phone service to all Americans. While few people quibble with the goal, virtually none of the promised benefits materialize. As a standard telecommunications policy textbook puts it: "[T]he term 'universal service' is commonly used to denote various subsidy programs that have very little to do, even as a conceptual matter, with keeping people on the network."[23]

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[22] 2005 Monitoring Report, p. 4-1.

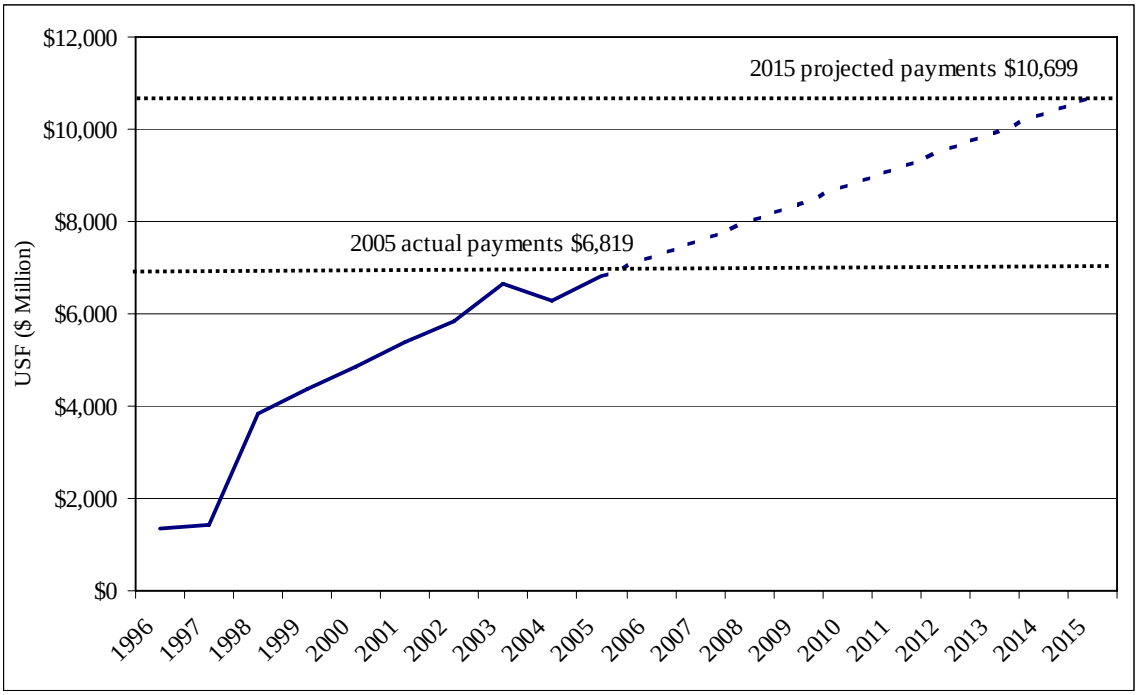
[23] Jonathan E. Nuechterlein and Philip J. Weiser, DIGITAL CROSSROADS: AMERICAN TELECOMMUNICATIONS POLICY IN THE INTERNET AGE (MIT Press 2005) ["Nuechterlein and Weiser 2005"], p. 333.

In fact, the complex system of taxes and subsidies undermines the goal it is designed to achieve. The "universal service" system connects few, if any, additional people to telephone networks. Indeed, just the reverse obtains: because USF dollars are raised by taxing various telephone services, many low-income consumers are discouraged from making calls, *priced off* the phone network by the very charges instituted to bring them on board.[24]

This perverse outcome is due to the way the USF system works. Taxes are imposed on phone usage, including wireless, and are increasing rapidly. Set at $3.9 billion in 1998, the USF is now over $6.8 billion, and will rise still further unless the system is reformed. These taxes discourage Americans from subscribing or using telephones – undermining universal service.

[24] Robert W. Crandall and Leonard Waverman, WHO PAYS FOR UNIVERSAL SERVICE? WHEN TELEPHONE SUBSIDIES BECOME TRANSPARENT (Brookings Institution Press 2000) ["Crandall and Waverman 2000"], pp. 114-121; and Joseph S. Kraemer, Richard O. Levine, and Randolph J. May, THE MYTHS AND REALITIES OF UNIVERSAL SERVICE: REVISITING THE JUSTIFICATION FOR THE CURRENT SUBSIDY STRUCTURE (The Progress and Freedom Foundation 2005) ["Kraemer et al 2005"], p. 29.

FIGURE 1
TOTAL USF SPENDING



Sources: 1998-2005 yearly USF expenditures are taken from APPENDIX 1. 2006-2015 expenditures are linearly extrapolated using the average yearly change in HC and LI expenditures (1998-2005) to predict growth (which assumes the Schools and Libraries and Rural Health Care funds are constant at 2005 levels).

The tax is rising because USF spending is exploding, which is curious given that the percentage of U.S. households subscribing to standard telephone service is *declining*. With an overall (fixed and mobile) penetration rate for the nation of about 94% through the 1990s[25] and recorded at 94.9% in 2004,[26] fixed-line penetration is now decreasing primarily due to wireless substitution. In February 2004, only 88.9% of households had wireline service. At least six percent of U.S. households reported that they subscribed to at least one wireless phone service, but had no fixed line connection.[27]

If increased tax dollars do not result in an extension of phone service, where does the money go? It goes to phone companies serving very few customers. For example, of

[25] *Trends in Telephone Service* 2005, Table 16.1.
[26] *Trends in Telephone Service* 2005, Table 16.5.
[27] *Trends in Telephone Service* 2005, Table 16.5.

the funds distributed to incumbent local exchange carriers (ILECs) to alleviate the burdens of serving high cost areas, phone operators supplying just 5% of lines receive over 60% of funds; companies providing just 10% of lines receive nearly 80% of subsidies.[28] This study evaluates the path of universal service subsidies, charting expenditures and examining alternative mechanisms to provide equal or superior service to telephone users while saving billions of tax dollars. The results are striking:

- A high proportion of universal service subsidies go to a relatively small group of rural telephone carriers;
- These telephone systems often collect over $900 per line per year[29] – or about what it would cost to provide free service to each customer via satellite phone networks accessed at retail prices;[30]
- A small fraction of monies dispensed benefit low-income consumers;
- The large fraction of monies dispensed to rural phone carriers do not increase affordability for low-income consumers, as benefits of lower priced phone service are capitalized in land values and reflected in housing rents;
- The actual beneficiaries of the universal service system are relatively wealthy landowners and shareholders in rural telephone companies, which realize as much as 95% of total revenues from federal subsidies.[31]

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[28] Analysis Group calculations based on data from 2005 Monitoring Report from file 05t3-22to30.xls; http://www.fcc.gov/wcb/iatd/monitor.html. Universal Service payments from Spreadsheet "Total" and Loops (lines) from spreadsheets "HCLS" and "LSS." When the number of loops (lines) indicated in "HCLS" and "LSS" differed, the larger number was used.

[29] See APPENDIX 10.

[30] See TABLE 5.

[31] Davidson 2004.

III. UNIVERSAL SERVICE FUND GROWTH

***Summary**: Increasing USF expenditures are driving telecommunications taxes ever higher. The primary cause of USF increases stem from rising payments to rural phone carriers, labeled "High-Cost support," where annual payments mushroomed from $1.7 billion in 1998 to $3.7 billion in 2005. These rising expenditures are, in turn, driven by increasingly expensive (per-line) payments to high cost rural phone carriers and by new payments to wireless phone carriers now qualifying as recipients of such funds.*

1. Competition Forces Subsidies to be Made Explicit

The federal Universal Service Fund is a creation of the 1996 Telecommunications Act (96TA), which sought to permit competition in local phone markets. Instead of having just one telecommunications provider serve each area on a monopoly basis, the 96TA set down rules allowing rival networks to offer traditional fixed-line voice services. While the established systems, the ILECs, were obligated to provide "universal service," extending networks to all customers in their service territories, the new entrants did not have such requirements. If they had, competition would have been stifled from the start, as the obligation to serve every business or household is an expensive requirement, particularly for competitive entrants.

A conflict was evident. The existing system of universal service obligations was premised on monopoly market structure. Franchised phone operators were mandated to provide a given level of service, at regulated retail rates, to all customers in their service territories regardless of the cost of serving them. Telephone users living in remote, sparsely populated areas where the average cost of service was $100 per line per month paid exactly the same rates as subscribers living in urban areas where costs were $15. Since there were many more in the latter category than in the former, the company's overall average cost might be $20 per line per month; by charging everyone this rate, the

company covered its costs (including the cost of capital). Universal service was effectively provided by a system of hidden cross-subsidies. Relative to the cost of their service, urban customers paid their phone carrier a premium to fund the discount extended to rural dwellers. Internal transfers within the phone monopoly achieved the goals of the regulatory system without any explicit accounting.

When Congress enacted the 96TA, however, the idea was that monopolies would be swept aside. The natural effect of competition is to drive prices towards costs, threatening to eliminate the mark-ups on some services that make possible below-cost pricing for others. In addition to the premia obtained from urban residential users, business lines and long distance services were priced (according to rate regulation schedules) well above costs. All these sources of profit were to potentially disappear with competitive entry. While good for the majority of consumers, who would enjoy lower prices, the prospect was that ILECs would no longer be able to internally subsidize users in high cost areas.

Hence, reforms in the 96TA moved away from internal ILEC transfers towards explicit subsidies. The USF expenditures were to finance telecommunications connections to extend network usage as competition drove prices toward costs.

Low Income support dollars, predating the 96TA, were folded into the USF, along with portions of the High-Cost funds. Funding for Schools and Libraries (E-Rate), and for Rural Health Care support, was initiated by the TA96, which also designated a Joint Federal-State Universal Service Board to determine the structure of the universal service

system with the task of making subsidies explicit.[32] The system is managed by the Universal Service Administration Company (USAC), an independent non-profit.[33]

2. Deconstructing USF Increases

As FIGURE 2 indicates, the USF more than doubled when 96TA changes took effect in 1998, and has been on a steady upward trend since. E-Rate spending, while substantial, does not contribute to this rise.[34] (Schools and Libraries spending is capped by federal statute at $2.25 billion annually,[35] and spending in 1999 had already hit $2.15 billion.) Rural Health Care fund expenditures, on the other hand, grew rapidly from 1998, but constitute a trivial fraction of the USF ($41 million of a 2005 total of about $6.8 billion, or 0.6%).

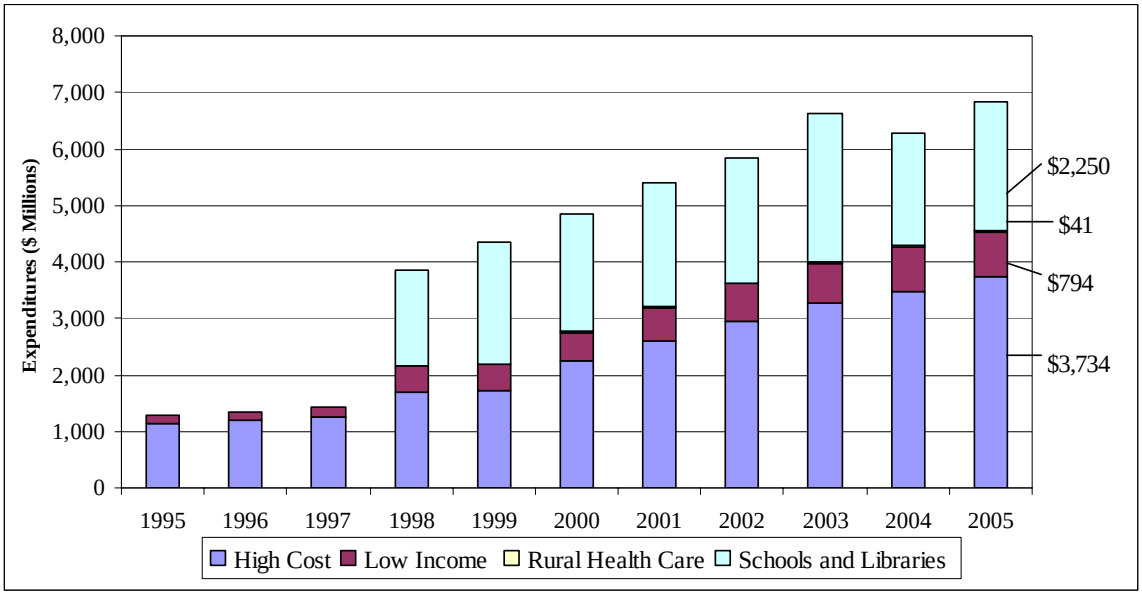
[32] Federal Communications Commission, *Federal-State Joint Board on Universal Service*; http://www.fcc.gov/wcb/universal_service/JointBoard/welcome.html.

[33] Universal Service Administrative Company, *About USAC*; http://www.universalservice.org/about/.

[34] There is a lag between when funds are committed and when they are actually spent. All commitments and spending are credited to the year in which they were authorized. The School and Libraries payments and additional commitments decreased by 11% from 1999 to 2005, adjusted for inflation. Payments data from APPENDIX 1 and inflation data from all-items annual CPI, Bureau of Labor Statistics; http://data.bls.gov/cgi-bin/surveymost?cu.

[35] 2005 Monitoring Report, p. 4-1.

FIGURE 2
TOTAL UNIVERSAL SERVICE EXPENDITURES



Source: See APPENDIX 1.

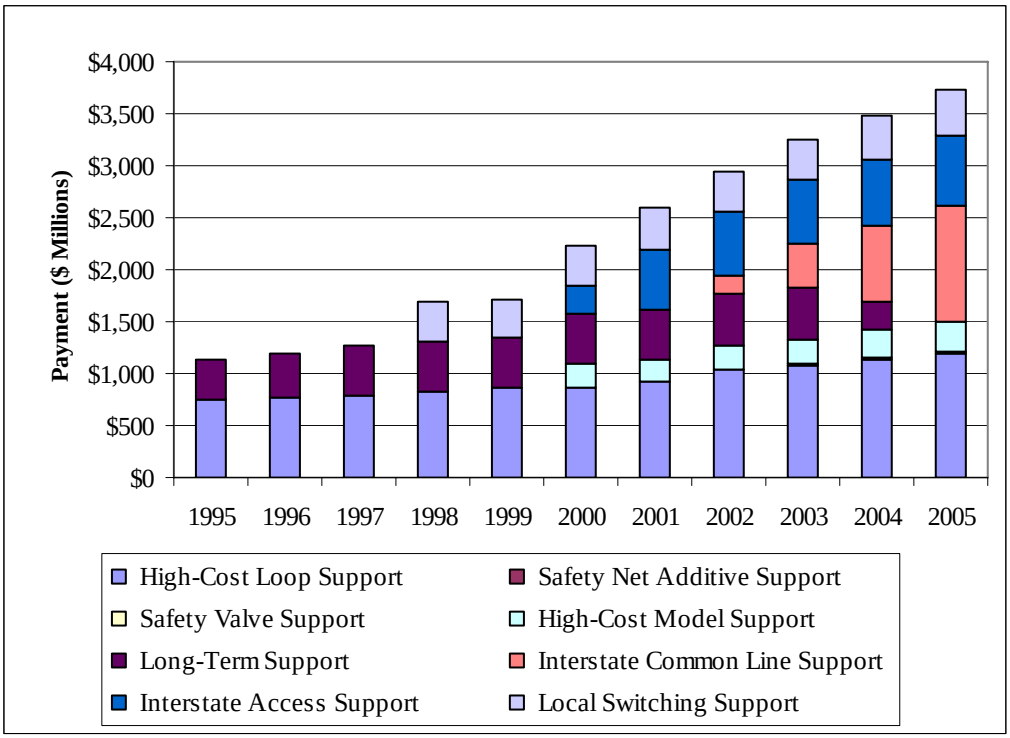
The growth in USF flows are accounted for by High-Cost Fund spending, which rose from $1.7 billion in 1998 to $3.7 billion in 2005, a nominal gain of 118%; and Low Income payments, which increased from $464 million in 1998 to $804 million in 2005, a nominal increase of 73%. Given their higher magnitude, High-Cost fund increases dominate the growth, accounting for about 85% of total USF expenditures increases, 1999-2005. Hence, when asking about the trend in USF flows, the answer must focus on the size and composition of High-Cost Support Payments.

3. Deconstructing High-Cost Fund Increases

The High-Cost Fund (HCF) grew from about $1.7 billion in 1998 to $3.7 billion in 2005. This collection of subsidies is extremely complex, composed of many disparate funding mechanisms, each with its own rules for calculating payments. The basic thrust

is that phone carriers, largely privately-held rural telephone companies, are annually given billions of tax dollars. The theory is that such payments compensate for the high cost of doing business in rural telephone markets, but the true (efficient) costs of service provision may have no bearing on subsidy levels, while the payments themselves encourage operators to increase operating and capital costs by avoiding potential efficiencies.

FIGURE 3
HIGH-COST SUPPORT FUND PAYMENTS



Source: See APPENDIX 2.

As FIGURE 3 indicates, much of the HCF growth has come from the introduction and growth of Interstate Access Support (IAS) and Interstate Common Line Support (ICLS). The IAS was created on May 31, 2000 and replaced previous subsidies that were

recovered through access charges,[36] fees long distance carriers pay ILECs to complete calls to their (ILEC) customers. Access charges have historically been set well above the incremental cost of locally delivering long distance calls (i.e., the actual costs to ILECs), but have been lowered in recent years as part of the transition to competition. From an average of 2.85¢ per minute in 2000, access charges in 2005 averaged just 1.53¢.[37] In 2005, IAS support was $675 million and accounted for 18% of the HCF.[38]

Since July 1, 2002, ICLS payments have gone to ILECs that are determined to recover insufficient funds from Subscriber Line Charges (SLCs), monthly fees that local phone subscribers pay.[39] (SLCs have also been increased as access charges have been reduced; set at $3.50 per residential line from 1993 to 2000, the SLC rose to an average of $5.92 per residential line in 2005.[40]) As of July 1, 2004, ICLS payments replaced what was previously Long-Term Support (LTS) funding.[41] Together, LTS and ICLS payments rose from $473 million in 1998 to $1,107 million in 2005.[42]

The final high-growth HCF component is High-Cost Loop Support (HCLS), a spending category which rose from $827 million in 1998 to $1,196 million in 2005.[43] In 1993, HCLS payments to rural ILECs were capped and since then total payments are indexed to the national total rural ILEC phone lines times GDP growth.[44] HCLS

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36 2005 Monitoring Report p. 3-7.
37 *Trends in Telephone Service* 2005, Table 1.2.
38 See APPENDIX 2.
39 2005 Monitoring Report, p. 3-7.
40 *Trends in Telephone Service* 2005, Table 1.1.
41 2005 Monitoring Report, p. 3-7.
42 See APPENDIX 2.
43 See APPENDIX 2.
44 2005 Monitoring Report, p. 3-4.

payments are targeted to rural carriers with higher costs, typically above 115% of the national average.[45]

Subsidies are also collected by Competitive Eligible Telecommunications Carriers (CETCs) in addition to incumbent ETCs (aka, ILECs). See TABLE 1. This means that some households subscribe to two services (fixed and wireless) provided by different networks, *both of which receive universal service subsidies*. Because the FCC is forbidden by Congress from limiting the amount of support triggered by a household or subscriber that subscribes to more than one carrier, HCLS payments to CETCs do not fall under the cap for rural ILECs.[46] Furthermore, the support per subscriber made to CETCs – generally mobile phone carriers – is set by the rates paid to the incumbent ETC, even if that rate is completely unrelated to the competitive provider's actual costs. As FIGURES 4 and 5 indicate, CETCs account for more than all the growth in HCLS subsidies, and for almost all the growth in the overall HCF, since 2003.

TABLE 1
HIGH COST LOOP SUPPORT

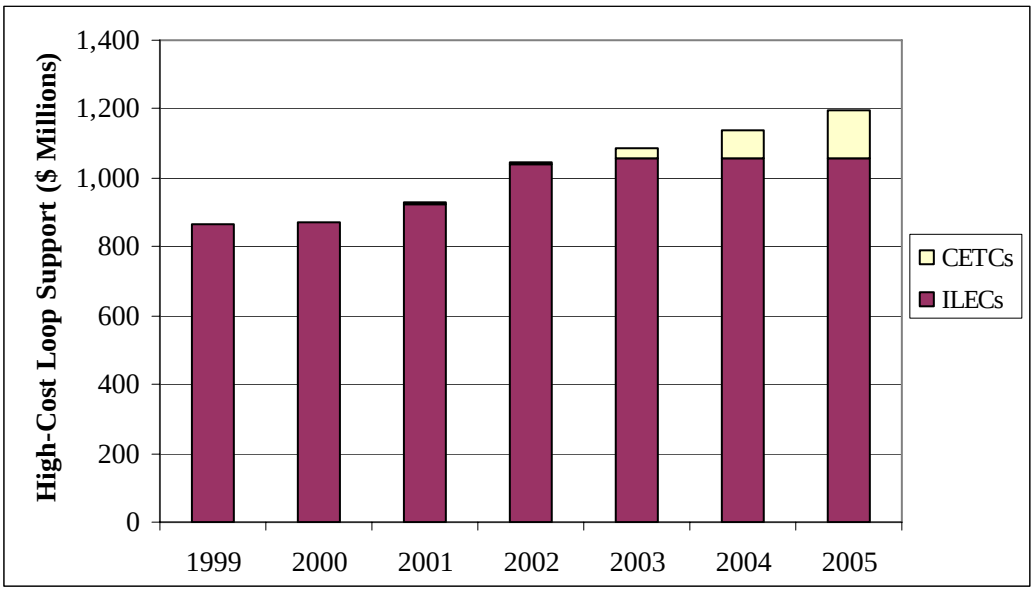
	1998	1999	2000	2001	2002	2003	2004	2005
Total Payments (millions)	$827	$864	$874	$927	$1,045	$1,085	$1,137	$1,196
Total Lines	NA	31,163,746	23,472,881	23,728,799	14,780,582	12,184,654	12,727,136	12,634,524
ILEC Reported Lines	NA	31,163,746	23,472,881	23,677,570	14,265,127	11,152,521	10,567,956	9,805,463
CETC Reported Lines	NA	0	0	51,229	515,455	1,032,133	2,159,180	2,829,061
Total Dollars per Line	NA	$27.73	$37.24	$39.07	$70.69	$89.01	$89.31	$94.69

Source: Total payments from 2005 Monitoring Report, Table 3.1. Total Lines, ILEC Reported Lines, and CETC Reported Lines from USAC FCC filings, available at http://www.universalservice.org/ about/governance/fcc-filings/ . 1999 data from 1999 fourth quarter appendix file, "append1.xls"; 2000 data from fourth quarter appendix file "appendixhc1.xls"; 2001 data from 2001 fourth quarter appendix file "Appendix HC01.xls"; 2002 data from 2002 fourth quarter appendix file "HC04 - High Cost Loop Support by State by Study Area.xls"; 2003 data from 2003 fourth quarter appendix file "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2003.xls"; 2004 data from 2004 fourth quarter appendix file "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2004.xls"; 2005 data from 2005 fourth quarter appendix file "HC05 - High Cost Loop Support Projected by State by Study Area - 4Q2005.xls." Only the lines from carriers that are specified as either an ILEC or a CETC and received HCLS in a given year are reported.

[45] 2005 Monitoring Report, pp. 3-2 – 3-3.

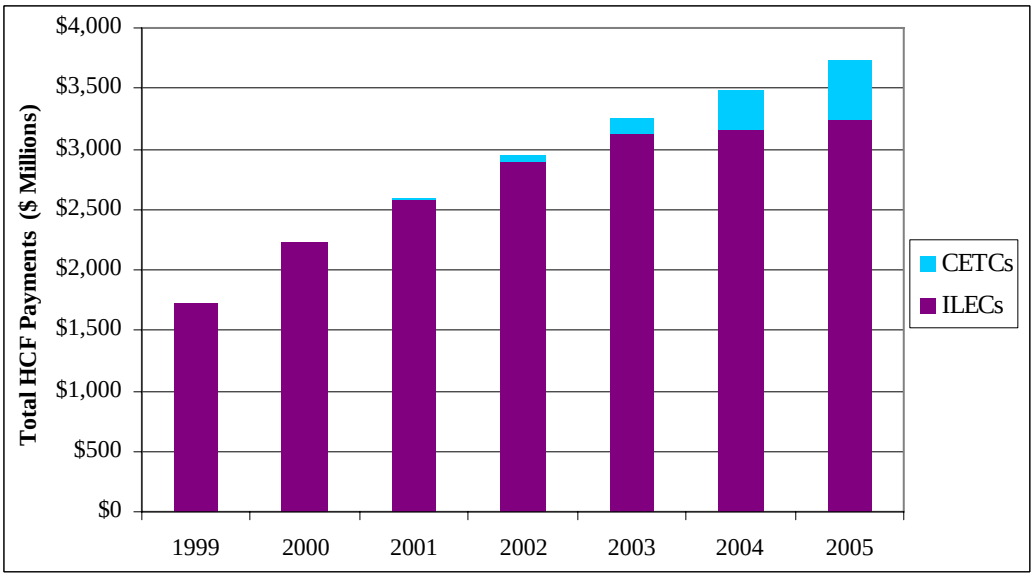
[46] Federal Communications Commission, *In the Matter of Federal-State Joint Board on Universal Service, Report and Order*, CC Docket No. 96-45 (Rel. Mar. 17, 2005), ¶5 ["Joint Board 2005"].

FIGURE 4
HIGH-COST LOOP SUPPORT EXPENDITURES BY CARRIER TYPE



Source: 2005 Monitoring Report, Table 3.2.

FIGURE 5
TOTAL HIGH-COST FUND SUPPORT EXPENDITURES BY CARRIER TYPE



Source: APPENDIX 9.

The danger posed by this incremental change opening HCF payments to additional operators is apparent. Portability of the subsidy *could be* a very positive policy

reform; if the per-line subsidy flowed with the subscriber, then firms would compete to enlist subscribers and claim subsidies. Alternatively, payments could be reduced were the entire universal service obligation auctioned to the service provider offering to provide basic services for the lowest dollar cost.[47]

But the plan now in place *adds* subsidies. The Joint Federal-State Universal Service Board recommended a single connection subsidy, but Congress tied the FCC's hands on implementation of so-called number portability.[48] Incumbent service providers continue to receive subsidies to cover their costs even when subscribers flee to wireless. Hence, payments made to CETCs duplicate subsidies and expand total spending. The outcome is that incumbents are subsidized at original levels, or higher on a per-line basis (given a loss of customers), while wireless operators cash in on the subsidies ostensibly initiated to establish a *first telecommunications network*, which they are now *competing* with. To take a stark example, consider the nation's most expensive per-loop HCF subsidy, which goes to the Sandwich Isles Communications Company in Hawaii. This system serves 1,238 customers at *$13,345 annually per line*,[49] while Nextel provides wireless service in the same area to 717 subscribers, collecting the same "per-line" fees.[50]

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[47] See, for example, the remarks of FCC Chairman Kevin Martin at a Bank of America Conference on March 19, 2006. *Martin Likes 'Reverse Auction' Idea for Universal Service*, COMMUNICATIONS DAILY (Mar. 30, 2006), p. 6 ["COMM DAILY (Mar. 30, 2006)"].

[48] Federal-State Joint Board on Universal Service, *In the Matter of Federal-State Joint Board on Universal Service, Recommended Decision*, CC Docket No. 96-45 (Rel. Feb. 27, 2004), ¶3. In that Recommended Decision, the Federal-State Joint Board on Universal Service proposed both permissive rules on CETC designation and support for only a single connection. Congress prohibited consideration of the latter, leaving only permissive CETC designation, an outcome ballooning HCF payments. See Joint Board 2005, ¶16.

[49] See TABLE 4.

[50] Hao Sean, *Firms reap telcom bonanza*, THE HONOLULU ADVERTISER (June 19, 2005).

4. Other (non-HCF) Sources of Increase in the USF

a. Low Income

Low Income support (via Lifeline and Link-up programs) increased significantly after the 1996 Act was implemented. In 1998, the first year the 96TA changes began taking effect, total payments were $464 million, up from $161 million the previous year.[51] See FIGURE 6. Most Low Income support is funneled through Lifeline, in which USF money pays a portion of the phone bills of low-income subscribers. Payments per beneficiary for the Lifeline program grew from $28.88 in 1996, to $79.11 in 1998, and to $104.85 in 2003. States have some latitude in setting eligibility requirements, but federal default eligibility requirements exist in which one of the following must apply:

- Household income at or below 135% of the federal poverty level;
- Subscriber participates in Medicaid;
- Subscriber participates in Food Stamps;
- Subscriber participates in Supplemental Security Income (SSI);
- Subscriber participates in Federal Public Housing Assistance (Section 8);
- Subscriber participates in Low-Income Home Energy Assistance Program (LIHEAP);
- Subscriber participates in National School Lunch Program's free lunch program;
- Subscriber participates in Temporary Assistance for Needy Families (TANF);
- Subscriber participates in Bureau of Indian Affairs General Assistance (GA);
- Subscriber participates in Tribally-administered Temporary Assistance for Needy Families (Tribal TANF); or
- Subscriber meets the Head Start income-qualifying standard and lives on tribal lands.[52]

Lifeline support pays the Subscriber Line Charge and in some cases some additional portions of the subscriber's bill.[53] Low Income support payments, only about 12% of the USF, have a distinctive characteristic: they actually reduce costs for eligible residents.

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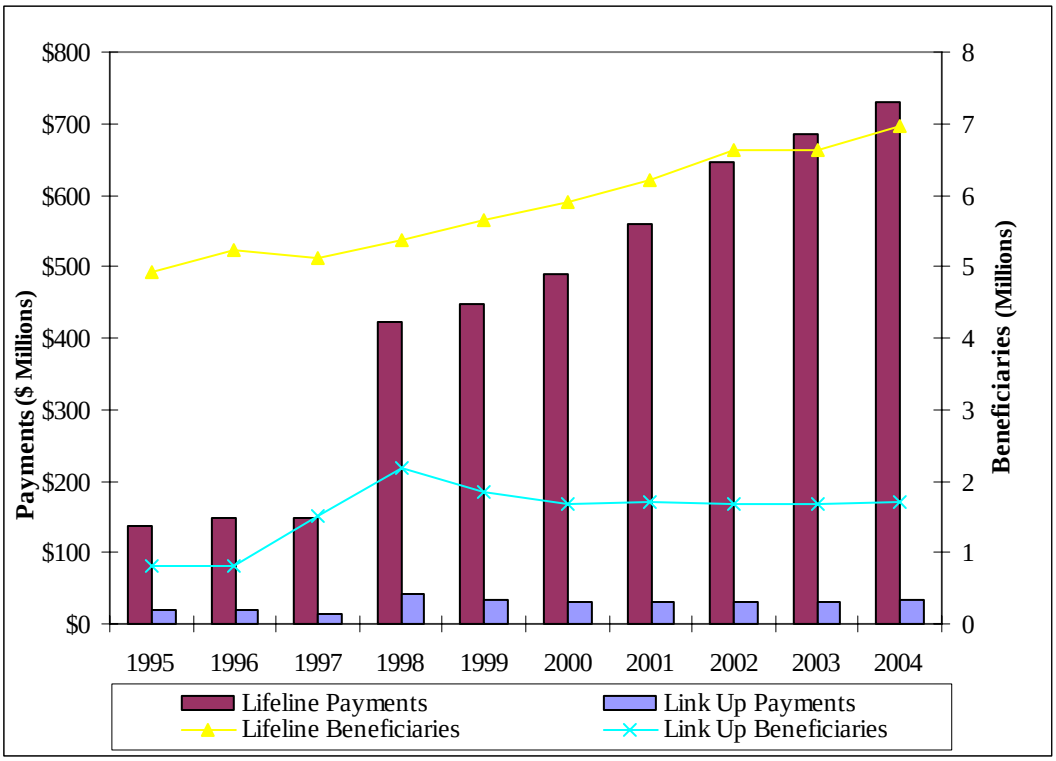
[51] See APPENDIX 1.
[52] 2005 Monitoring Report, p. 2-3 (footnotes omitted).
[53] 2005 Monitoring Report, p. 2-3 – 2-4.

FIGURE 6
LOW INCOME SUPPORT PAYMENTS, BENEFICIARIES



Sources: See APPENDIX 3.

b. Schools and Libraries

Schools and Libraries Support is described in federal documents thusly:

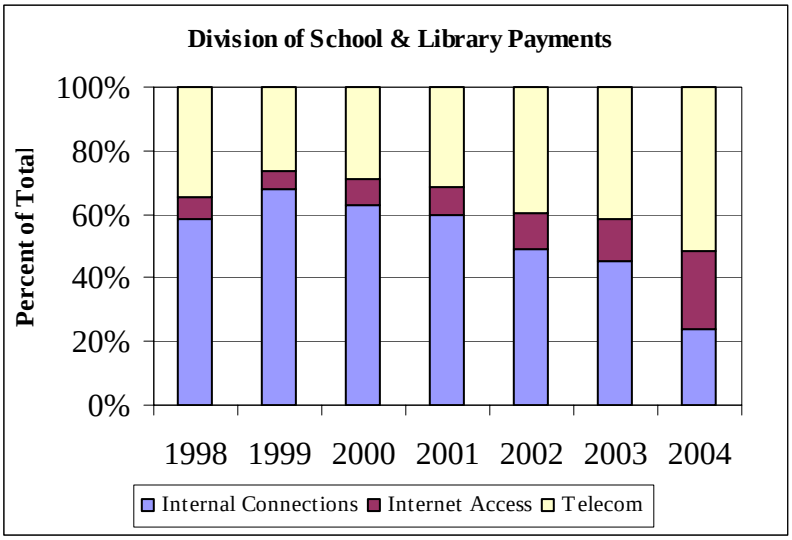
> Eligible schools, school districts, libraries, and consortia that include schools and libraries, may receive discounts for eligible telecommunications services, voicemail, Internet access, and internal connections under the schools and libraries universal service support mechanism. The discounts range from 20 percent to 90 percent. The level of the discount is based on the percentage of students in the school or school district that are eligible for the national school lunch program (or a federally-approved alternative mechanism), and location in a rural area. By Commission rule, the Schools and Libraries mechanism is capped at $2.25 billion annually.[54]

Budgeted outlays have stayed near the statutory limit since 1999.[55] Actual spending falls short of this level, however, due to the time lag between project approval

[54] 2005 Monitoring Report, p. 4-1 (footnotes omitted).
[55] See Appendix 1.

and project completion. Disbursements in 2003, for example, were just under $1.4 billion, with an additional $1.2 billion in pending commitments. The monies spent were primarily devoted to internal connections for schools and libraries in 1998-2001, but more than ¾ of all 2004 funds spent to date were for telecom services and Internet access. See FIGURE 7.

FIGURE 7
DIVISION OF SCHOOL & LIBRARY PAYMENTS



Source: APPENDIX 4.

C. Rural Health Care

Funds are also provided to supply telecommunications services "to any public or non-profit health care provider… at rates that are reasonably comparable to rates charged for similar services in urban areas in that state."[56] This program was expanded to include certain for-profit health care providers in 2003, effective during the 2004-2005 funding cycle, and to fund additional Internet services.[57] Rules were also loosened to allow payments for satellite communications in instances where terrestrial network services are

[56] 2005 Monitoring Report, p. 5-1 (footnotes omitted).
[57] 2005 Monitoring Report, p. 5-1.

available.[58] The Rural Health Care Fund is capped at $400 million per year,[59] yet expenditures have been substantially less. See TABLE 2.

TABLE 2
RURAL HEALTH CARE FUND EXPENDITURES BY TYPE OF SERVICE

Funding Year	Narrowband	Broadband		Other Service or Speed Unknown	Total Expenditures
	56K to 199K	200k to 1.49Mb	1.5Mb and faster		
1998	$202,778	$880,375	$2,292,252	$0	$3,375,405
1999	$452,992	$1,073,816	$2,719,619	$58,132	$4,304,559
2000	$613,595	$3,015,004	$6,685,573	$0	$10,314,172
2001	$319,539	$8,110,537	$10,125,267	$0	$18,555,343
2002	$423,522	$10,614,090	$10,342,844	$0	$21,380,456
2003	$415,461	$7,878,340	$10,455,720	$2,200	$18,751,722
2004	$83,859	$534,105	$1,491,558	$16,300	$2,125,823

Source: 2005 Monitoring Report, Table 5.1.

5. Summary

Explicit subsidies to phone carriers have more than doubled since 1998, yet their consumer benefits are illusory. Low-income phone users are subsidized directly with separate funds, and those payments total less than one-quarter of those sent to phone companies.[60] While the rationale is that such carrier subsidies help extend network coverage by lowering costs for phone users, particularly rural residents in high-cost areas, the argument is dubious.

First, while the HCF payments may enable some operators to offer prices as low as those paid by urban and suburban residents for service that is much less costly to supply, the lower prices are offered to all residents, rich and poor alike. This has led

[58] 2005 Monitoring Report, pp. 5-1 – 5-2 (footnotes omitted).
[59] 2005 Monitoring Report, p. 5-3.
[60] See APPENDIX 1.

many commentators to opine that it makes little sense to tax low-income telephone users to reward billionaires in Jackson Hole, Wyoming with lower-priced network services.[61]

Second, competition – which should offer new economies in providing universal service – is twisted into a *problem*, as subsidy payments balloon on twin fronts. On the one hand, new competitive wireless firms that offer nationwide service (internally or through roaming agreements) without subsidies are eligible to collect new payments. These firms often feature lower costs than carriers providing fixed line service, but are paid at the rate established by the higher cost firms. The loss of customers by the fixed line networks, which are ceding market share to mobile firms, means that accounting losses are increasing for high-cost networks. This raises subsidy levels, for both incumbents and *entrants*. Instead of competition increasing network access by reducing the cost of service, the regulatory system squanders the opportunities generated by technology and markets.

Third, the announced goals of the universal service system are unmet by these rising payments to carriers. Those goals are (a) extending networks to make connections available to more users; and, (b) helping low-income consumers pay for network services. By increasing taxes on phone users to fund the subsidies, lower prices for local access are more than offset by higher customer costs elsewhere, as has been noted in many economic studies.[62] The evidence is strong that universal service taxes and subsidies, on net, *reduce* network usage.

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[61] See, for example, Johna Till Johnson, *Universal Service Fraud: Bailouts for Billionaires*, NETWORK WORLD; http://www.networkworld.com/columnists/2005/030705johnson.html.

[62] Crandall and Waverman 2000, pp. 114-121; Kraemer et al 2005, pp. 125-128; Michael H. Riordan, *Universal Residential Telephone Service*, in Martin E. Cave, et al., eds., 1 THE HANDBOOK OF TELECOMMUNICATIONS ECONOMICS (Elsevier 2002) ["Riordan 2002"].

As for making telephone service more affordable for low-income households, the mechanism used – rate reductions across an entire 'high cost' area – is destined to fail. Because virtually every household desires and, in fact, subscribes to some telephone service, the benefits of lower prices are priced into housing costs. That is to say, where telephone rates in a rural area are reduced by $50 per household per month, rents will simply increase by an offsetting $50 per household per month by virtue of the in-kind subsidy. Houses will cost more to buy, apartments more to rent, and farms more to lease. On average, the cost savings in phone service will be wiped out by increased costs elsewhere. When the phone rate reductions were put into place (or, more precisely, when they were anticipated by investors), the owners of land benefited from this scheme, but today's low-income consumers do not. This is analogous to the situation with respect to agricultural price supports, known to accrue to owners of farmland.[63]

IV. THE HIGH COST OF THE HIGH-COST FUND

Summary*: High-Cost Fund payments to phone carriers assure profits, and are distributed in a manner that encourages phone carriers to be inefficiently small. The results are predictable. Rural phone operators are, in general, extremely expensive to operate, yet highly profitable. Subsidies from the HCF are as much as $13,000 per year per line, and corporate overhead is vastly inflated. Inefficiencies are funded by taxpayers; only 27% of RLEC revenues come directly from customers paying for local access – less than that contributed by USF monies. RLEC equities are capitalized at relatively generous multiples of cash flow, reflecting the high value placed on government-guaranteed profits.*

[63] See, for example, Robbin Shoemaker, *Agricultural Land Values and Rents Under the Conservation Reserve Program*, LAND ECONOMICS, Vol. 65 No. 2, (May 1989) pp. 131-137; Charles B. Moss and Andrew Schmitz, *Government Policy and Farmland Markets: Implications of the New Economy – Part 2*, UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES (Oct. 2002); http://edis.ifas.ufl.edu/fe358.

1. "Bad Business Models"

At a recent Aspen Institute conference, Professor Heather Hudson of the University of San Francisco opined that universal service policies should be made to "focus directly on rural consumers." Another Aspen participant, Michael McKeehan, director of Verizon's internet and technology policy, noted that "protecting Aunt Tillie [the proverbial small town telephone user advertised as the beneficiary of universal service policies] does not require us to protect bad business models."[64]

There is widespread consensus that the effect of the subsidy regime currently in place is an extremely inefficient mechanism for protecting low-income consumers and residents in high-cost rural areas.[65] This consensus is generally correct – but does not go far enough. The standard view is that large subsidies to small rural fixed-line phone carriers waste most of the funds delivered, but yet reduce costs for phone subscribers in high-cost areas. The central issue in the standard analysis is that the benefits are very expensive to deliver, not only because they encourage waste and inefficiency on the supply side of the market, but also because they are not well targeted. To wit, a 2005 report from the Progress and Freedom Foundation criticizes universal service policies by saying that "High-Cost Support subsidizes high-income households, as well as low-income households." It goes on to note that a subsidized rural carrier in Eagle County, Colorado receives HCF monies amounting to $29 per line per month, while the service

[64] Robert M. Entman, The Aspen Institute, *Reforming Telecommunications Regulation, A Report of the Nineteenth Annual Aspen Institute Conference on Telecommunications Policy*, (2005), p. 16.

[65] See, for example, Jerry Hausman, *Taxation by Telecommunications Regulation*, NBER Working Paper 6260 (Nov. 1997) ["Hausman 1997"].

area "has a median household income of $61,706 with 18.9% of households having incomes over $100,000."[66]

Yet, as discussed in the previous section, when economic benefits are generally available to those living in a particular area, they raise the cost of living there. By paying rural phone companies to keep retail prices low, the issue is not whether the benefits are too generously distributed to middle class and affluent households, but whether consumers receive *any benefits at all*. As a general proposition, they will not: land prices and housing rents will be bid up to reflect the benefit of lower phone rates. On net, consumers are no better off. Landowners have experienced capital gains, but these gains have long since been imputed into land prices. Those purchasing real estate under the current policies expect to simply break even.

Over time, the potential for HCF subsidies to lower retail prices has dissipated, however. Because wireless phone networks, cable TV systems offering fixed phone service, and satellite links have become near-ubiquitous options for customers, subsidies passed to RLECs have a much reduced impact on the affordability of telecommunications services. The $100 per month fixed line phone bill, which (through carrier subsidies) costs Aunt Tillie just $50, may no longer represent a net gain of $600 per year to be capitalized in her home price. Rather, she may disconnect next year altogether, relying on a $40-per-month nationwide calling plan provided by a wireless carrier. While the amenities associated with rural occupancy remain, the effect of the universal phone service subsidies on land prices and housing rents evaporates.

Aunt Tillie is highly likely to have a phone with or without universal service programs. Whether or not she gains from subsidies to high cost carriers is, on the other

[66] Kraemer et al 2005, pp. 111-12.

hand, a function of whether she owns shares in a rural telephone company. Phone company subsidies are not ill-targeted between rich and poor consumers, they miss *consumers as a class*. They are aimed at landlords and capitalists, not at residential users. The campaign to save sweet Aunt Tillie is, to be gentle, misleading.

2. High Costs Result from High-Cost Subsidies

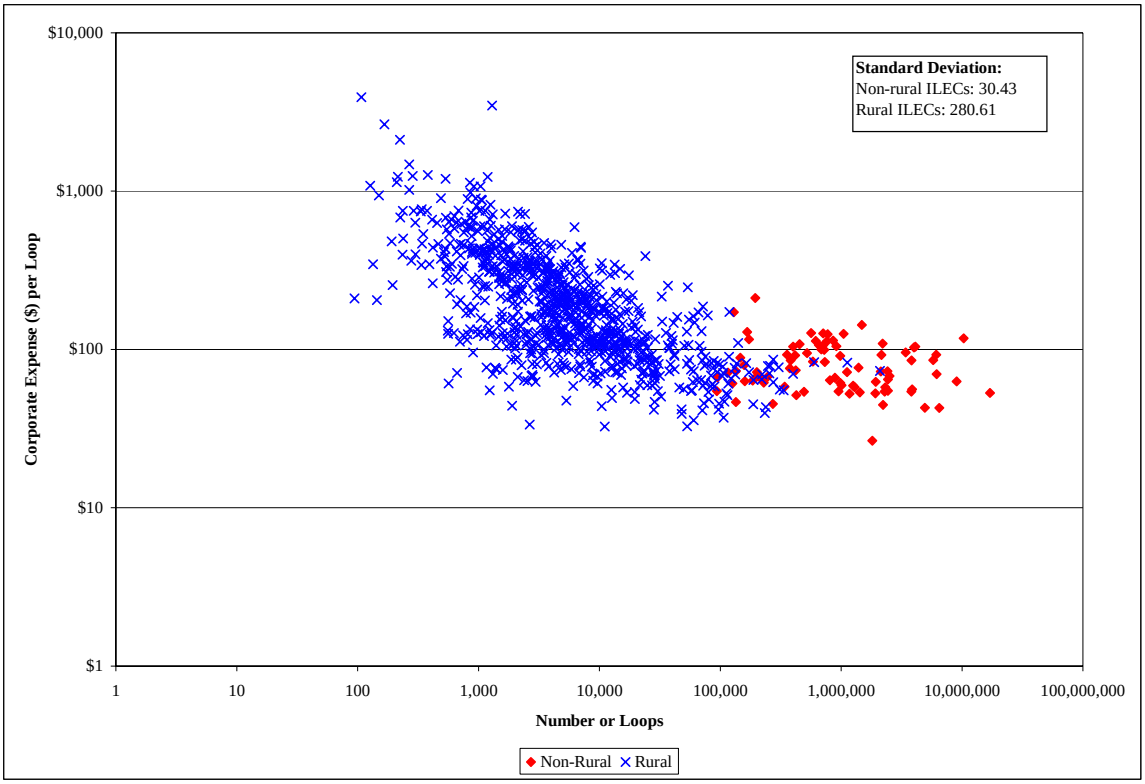
The stated rationale for distributing HCF dollars is to compensate for the expense of serving sparsely populated areas. As one rural telephone trade association puts it, "[a]lthough urban and suburban areas typically have in excess of 40 customers per route mile, rural states have to support systems that can average less than two customers per mile. Even in states such as Pennsylvania, … you'll find rural providers averaging only 10 customers per mile."[67] With densities varying widely, so do costs of capital infrastructure per subscriber.

But management costs need not vary so widely. The low density that reduces the ability to share infrastructure costs does not impact corporate overhead expenses because managing networks in less densely populated markets should not be more expensive. Indeed, telecommunications service operators manage a wide variety of distinct operations, across highly variable markets and diverse physical conditions, all the while leveraging economies of scale and scope. But the universal service regime has encouraged just the opposite: efficiency-destroying fragmentation. This can be seen in the distribution of costs in general, which may in part be explained by the low densities in

[67] Rob West, *Rural Carriers Should Strive to Profitably Broaden Revenue Mix for Continued Success*, OPASTCO ADVOCATE (Sept. 2004), p. 2.

the service territories of the RLECs, and in the distribution of corporate overhead costs, which cannot.

FIGURE 8
RURAL AND NON-RURAL CARRIERS CORPORATE EXPENSE PER LINE AND NUMBER OF LINES (LOGARITHMIC SCALE) (2004)



Source: Data from NECA file USF2005LC05.xls; http://www.fcc.gov/wcb/iatd/neca.html.

Displayed in FIGURE 8 are data showing average corporate costs per line, against the number of lines served by the company.[68] The scale is logarithmic on both axes. Non-rural carriers (diamonds) have costs in the range of $26 and $211, averaging about $75 per line per year. There does not appear to be a trend, meaning that larger carriers (serving more lines) do not have appreciably lower costs than smaller carriers. Markets tend to eliminate inefficiencies, so we are not surprised to see this result.

[68] See APPENDIX 6 for a more detailed summary of these data.

TABLE 3
HIGHEST ANNUAL CORPORATE EXPENSE PER LINE (2004)

System Name	State	Corporate Expense $/Loop
BORDER TO BORDER	TX	$3,926
SANDWICH ISLES COMM.	HI	$3,473
BEEHIVE TEL CO - NV	NV	$2,640
ACCIPITER COMM.	AZ	$2,113
SUMMIT TEL & TEL -AK	AK	$1,473
GEORGETOWN TEL CO	MS	$1,267
TERRAL TEL CO	OK	$1,246
ZENDA TEL COMPANY	KS	$1,231
RIVIERA TEL CO INC	TX	$1,230
DELL TEL CO-OP - NM	NM	$1,195
SOUTH PARK TEL. CO.	CO	$1,138
DELL TEL. CO-OP - TX	TX	$1,130
SCOTT COUNTY TEL CO	AR	$1,082
BEEHIVE TEL CO - UT	UT	$1,075
HEMINGFORD COOP TEL	NE	$1,071
CHUGWATER TEL CO	WY	$1,018

Source: Data from NECA file USF2005LC05.xls; http://www.fcc.gov/wcb/iatd/neca.html.

Among rural telephone carriers (Xs), however, a different picture emerges. While many RLECs feature costs in the $26 - $211 range, many are higher. Scores exceed the upper bound of the non-rural systems, and many spend extraordinary amounts – as much as *$3,900 per year per line on corporate overhead*. A list of the sixteen costliest (overhead) systems is shown in TABLE 3. Each of them generates corporate expenses exceeding $1,000 per line per year.

The average RLEC corporate overhead expense is almost $99, *or a third more* than the non-rural ILEC level. Moreover, over one-third of rural telcos (301 of 892 total) have corporate expenses greater than $250 per line per year. To put the dollar magnitude into perspective, the average residential telecommunications subscriber spends less than $250 per year on local access.[69] Thus, more than one third of the rural telcos eat up as

[69] Bank of America Securities, Wireline Service Pricing (Sept. 22, 2003), p. 10.

much in corporate overhead expense, per line, as the average household spends for service. And this is prior to accounting for the costs of actually connecting customers to the network. Given the prevalence of extraordinarily high cost operations, there appears to be no mechanism in place to assure a wise use of taxpayer resources or to rein in even the most egregious inefficiencies. These data suggest that HCF subsidies reward high-cost carriers in rural markets.[70]

The expansion of the HCF only encourages such inefficiency, of course. And it results in subsidies per telephone line that are stunningly high, as seen in TABLE 4.

TABLE 4
TOP DOZEN HIGH-COST SUPPORT PER LINES RECIPIENTS BY STUDY AREA (2005)

	Study Area	State	$/Lines	Lines
1	SANDWICH ISLES COMMUNICATIONS, INC.	Hawaii	13,345	1,238
2	NPCR, INC.	Hawaii	13,065	891
3	BORDER TO BORDER COMMUNICATIONS	Texas	10,592	108
4	ACCIPITER COMMUNICATIONS, INC.	Arizona	6,927	219
5	TERRAL TEL. CO.	Oklahoma	6,515	282
6	SOUTH PARK TELEPHONE COMPANY	Colorado	3,958	201
7	CENTENNIAL CELLULAR TRI-STATE O.P.	Mississippi	3,929	166
8	SADDLEBACK COMMUNICATIONS COMPANY	Arizona	3,419	768
9	BEEHIVE TELEPHONE COMPANY, INC., NV	Nevada	3,229	140
10	ELSIE COMMUNICATIONS, INC.	Nebraska	3,063	232
11	SUMMIT TEL & TEL CO OF ALASKA	Alaska	3,039	250
12	DELL TELEPHONE CO-OP. INC. - TX	Texas	2,911	781

Source: Data from 2005 Monitoring Report from file 05t3-22to30.xls; http://www.fcc.gov/wcb/iatd/monitor.html. Universal Service payments from Spreadsheet "Total" and Loops from spreadsheets "HCLS" and "LSS." When the number of loops indicated in "HCLS" and "LSS" differed, the larger number was used.

[70] The structure of High Cost payments encourages RLECs to be inefficiently small. The larger the geographic coverage of a LEC, the more profits from lower cost areas are available to pay for higher cost areas. By isolating the high cost service areas, profits from low cost areas can be realized while subsidies ensure the profitability of high cost areas. The FCC recognizes this and is reluctant to create smaller "study areas" (over which HCF payments are determined, based on specific cost characteristics) from larger study areas. "The Commission froze all study area boundaries effective November 15, 1984. The Commission took this action to prevent the establishment of high-cost exchanges within existing service territories as separate study areas merely to maximize high-cost support." Federal Communications Commission, *In the Matter of Sandwich Isles Communications, Inc. Petition for Waiver of the Definition of "Study Area" Contained in Part 36, Appendix-Glossary and Sections 36.611, and 69.2(hh) of the Commission's Rules, Order*, CC Docket No. 96-45 (Rel. May 16, 2005), ¶6 (footnotes omitted).

The Federal Communications Commission has justified subsidies and favorable regulatory treatment for rural telephone companies due to their "higher operating and equipment costs, which are attributable to lower subscriber density, small exchanges, and a lack of economies of scale."[71] But, as Professor Milton Mueller of Syracuse University pointed out over a decade ago, "under a subsidy mechanism, there is no way to distinguish between 'high costs' and obsolete or inefficient ways of doing things."[72] Rural telephone companies have, in fact, gained a reputation among economists as the highly inefficient creatures of regulatory design.[73] News reports suggest that this expert view is increasingly gaining currency with others. As USA TODAY recently noted:

> [C]ritics say the [universal service] system is laced with waste and inefficiency. They point to some rural phone companies' high overhead, sumptuous earnings, rich dividends and, at least in one case, fraud. Oversight has been lax: Prosecutors say the Gambino crime family was able to fraudulently draw millions from the universal service fund from 1996 to 2003 by controlling a Missouri rural phone firm….
>
> Regulators are paying closer scrutiny, launching a probe and expanding audits. They're also preparing to revise the fee system. Those steps could erode the decades-old pillars of rural phone service.[74]

3. Being Inefficient Does Not Mean Being Unprofitable

From the vantage point of a subsidized rural carrier, federal payments provide at least two sources of benefit. First, high costs are compensated with HCF payments.

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[71] Federal Communications Commission, *Report and Order, Federal-State Joint Board on Universal Service, Multi-Association Group (MAG) Plan for Regulation of Interstate Services of Non-Price Cap Incumbent Local Exchange Carriers and Interexchange Carriers*, 16 FCC Rcd 11, 244 (2001) ,¶¶ 8-10, cited in Nuechterlein and Weiser 2005, p. 345.

[72] Milton Mueller, *Universal Service as an Appropriability Problem: A New Framework for Analysis*, in TOWARD A COMPETITIVE TELECOMMUNICATION INDUSTRY: SELECTED PAPERS FROM THE 1994 TELECOMMUNICATIONS POLICY RESEARCH CONFERENCE, Gerald Brock, ed. (1994), p. 227.

[73] Robert Litan and Roger Noll, *The Uncertain Future of the Telecommunications Industry*, BROOKINGS INSTITUTION, Policy Brief #129 (Jan. 2004).

[74] Davidson 2004.

Second, profits are not as variable as in the normal marketplace situation, reducing risk and increasing the market value of corporate shares. As Consolidated Communications (CCI), an RLEC issuing an Initial Public Offering, told investors in January 2004:

> Favorable Regulatory Environment…
> - CCI rate of return ("ROR") (11.25%) regulatory option supports recovery of investments utilized in the provision of interstate network services
> - CCI receives Federal USF in support of high cost areas.[75]

Investors place a higher value on RLEC earnings than on other ILEC earnings. In today's market, the larger ILECs, which do not generate much of their revenues from federal subsidies, are valued much less highly per dollar of profit. APPENDIX 5 suggests that the ratio of Enterprise Value (the sum of equity and debt, at market prices for stocks and bonds) to EBITA (earnings before interest, taxes and amortization) is roughly 30% higher for RLECs than for large ILECs (9.43 v. 7.24). Likewise, the Price/Earnings ratio for RLECs exceeds the large ILEC P/E by about 25%. Other financial metrics such as the Price to Book Ratio, EBITDA Margin, and Dividend Yield show the same pattern.

While there are various factors in play, one would expect this result to obtain in a situation where risks were effectively lowered by virtue of profit guarantees. If so, this is reasonable evidence that – even assuming that every dollar expended on costs is efficiently spent – the government is paying far too much for the "universal service" it is buying. By guaranteeing compensation of costs, USF payments reduce risk and, consequently, increase valuation. Millions of dollars in extra wealth end up in the hands of private investors, courtesy of U.S. taxpayers.

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[75] Steve Childers, Consolidated Communications, Deutsche Bank High Yield Conference (Sept. 29, 2005), Slide 12.

This leads to perverse outcomes. First, the intended beneficiaries of universal service subsidies, low income rural dwellers, receive little or no benefit from retail price discounts, which are either rendered irrelevant by the availability of substitutes in the marketplace or (when they do offer preferred solutions) are bid into housing prices. Second, taxes imposed on telecommunications users to pay for the USF tend to discourage use of communications networks,[76] thus defeating the purpose of "universal service."

Third, by massively overpaying established networks, the system discriminates against the emergence of more efficient technologies and providers. A fundamental rationale of high-cost support payments is that rural carriers would face financial difficulties without them, possibly abandoning certain markets or failing to expand into others. This is framed as an unmitigated problem, when in fact it forms part of an opportunity, raising the returns to wireless entrepreneurs, cable TV operators offering fixed-line phone service over VoIP, and satellite systems. By paying to keep century-old networks in place, we actively discriminate against the spread of emerging applications.

As former FCC policy maker Robert Pepper told the 2005 Aspen Telecommunications Conference, "[l]et's make this explicit: You *don't* need a wire. To be technology-neutral is to stop being wed to wires."[77] The current system, which allows HCF subsidy payments to competitive carriers but continues to expend the same, or even higher payments, on incumbents, yields virtually the worst of two worlds: It expands subsidies, and so raises tax burdens, while leaving the incumbent operator with whatever funding is needed to cover costs and achieve a regulation-protected rate of return.

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[76] See, e.g., Kraemer et al 2005, pp. 4, 18.
[77] Aspen 2005, pp. 18-19.

Fourth, the economic gains that are produced go almost entirely to shareholders of rural telephone companies, thereby creating a constituency with an intense economic interest in favor of retaining the system's distributional features, inefficiencies and all. XIT, a rural telephone co-op, serves fixed-line telephone service to its 1,500 customer-owners in and around Dalhart, Texas. In 2003, it collected some $2.6 million in HCF revenues, another $650,000 in state universal service subsidies, and some $2.9 million in access charges paid by long distance companies to reach XIT customers with their traffic.[78] These payment streams were set up to help companies like XIT break-even when faced with the high costs of building-out a network in remote areas.

Not only did XIT break even, it paid its members a dividend averaging $375 – substantially more than the $206 the typical member paid for local voice access.[79] What is more, XIT also markets wireless service, which is available throughout the area, obviating the basic rationale of support payments.[80] But with returns this generous at stake, it is predictable that shareholder-beneficiaries will act strategically to protect their interests.[81]

V. COMPETITIVE EFFICIENCIES SACRIFICED

Summary*: Competitive alternatives to traditional fixed-line phone service are today available to more than 95% of U.S. households – the threshold level of coverage actually achieved by decades of universal service subsidies. Targeting universal service subsidies to those relatively few households lacking access to traditional or rival technologies*

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[78] Davidson 2004.

[79] XIT is one of at least four Texas co-ops that have paid dividends equal to, or exceeding, their members' local phone bills since 1999, while receiving in excess of $1 million annually in HCF subsidies. Davidson 2004.

[80] XIT Wireless; http://www.xit.net/wireless/index.html.

[81] "Some doubt that a plan to sharply restrict rural funding could be enacted. 'There's a very strong rural lobby in America, and to bet against them historically has been a pretty bad bet,' says analyst Tavis McCourt of Morgan Keegan." Davidson 2004.

produces substantial social savings, as would be expected from a system that spends more than $5,000 per year for each incremental phone connection.

Perhaps the most damaging aspect of the universal service subsidy system is that it protects incumbent fixed line phone networks – embedding century old technologies – from "gales of creative destruction." In the famous phrase of the late economist Joseph A. Schumpeter, economic progress inherently involves displacement. When new technologies upset existing markets, established systems give way to more advanced forms of market organization. Or, as in this case, they are rescued by public policies that block social advance.

Because the current regime lavishly funds existing operators and technologies, it thwarts the process of "creative destruction." Obsolete communications solutions, which would naturally be eclipsed, are propped up with tax funds. Moreover, the formula on which such funds are awarded does not reward, but punishes efficiencies prompting firms to operate at an uneconomically small scale. They pay generous management fees and salaries, gold-plate systems, and still capture supra-competitive profits.

Disentangling the complex system of subsidies and taxes constituting our "universal service" policy is no trivial matter. One way to approach this task, however, is to consider the competitive options that exist in today's marketplace, estimating cost savings that are easily achievable via a technology-neutral approach to universal telephone service.

It is important here to note three vital facts. First, not all U.S. citizens live in areas where they currently have access to wireline phone service.[82] It has proven too

[82] "If you want to get in touch with Mokha Laget at her home near Madrid, 30 miles south of Santa Fe, you can try her cell phone or send her an e-mail, but you can't call her on a land line. Laget's household is among the 5.7 percent in New Mexico that do not have phone service. Only Mississippi – with 6.5 percent

expensive – even after the expenditure of tens of billions of dollars (including cross subsidies[83]) – to run wires to every business or residential location nationwide. This implies that alternative policies cannot be rejected solely on the grounds that there may, potentially, be a household that does not receive service.

Second, no more than about 95% of U.S. households have ever subscribed to fixed-line phone service at a given time. This calibrates the meaning of *universal service* in a real-world context, offering a tidy empirical definition: as an operational matter, and by revealed preference of policy makers, *95% = 100%*. This is crucial for understanding how much coverage is enough to qualify as "universal."

Third, household fixed line penetration is now down to approximately 89%, and *falling*.[84] About 6% of U.S. households have a wireless phone but no fixed-line connection, a ratio that is about the same in rural and non-rural areas.[85] Consumers are demonstrating, through their economic behavior, that they no longer consider fixed-line service a necessity, as they switch to wireless, broadband, or satellite links. Given the assumptions of the traditional system, this should change everything. It has not. The current regime responds to these realities by spending more tax funds and distributing a slice to CETCs, *increasing* burdens on taxpayers.

– has a higher percentage, according to the 2000 census." Wendy Brown, *Rural New Mexico Remains Unserviced*, THE SANTA FE NEW MEXICAN (Apr. 2, 2006).

[83] These include access charges paid by long distance carriers to local exchange carriers, and rate averaging, where low cost customers are charged prices above the cost of their service such that high cost customers can be charged prices below the cost of their service.

[84] *Trends in Telephone Service* 2005, Table 16.5.

[85] *Trends in Telephone Service* 2005, Table 16.5.

1. Competitive "Universal Service" Networks Have Emerged

The U.S. marketplace has already evolved far beyond the "One System, One Policy, Universal Service" policy advertised by AT&T's Theodore Vail in 1908 – some 98 years ago.[86] Today, multiple networks serve the nationwide U.S. market. In addition to the fixed-line phone system, competitive options have emerged.

Cable TV operators now pass about 99% of U.S. households with video distribution plant, according to National Cable & Telecommunications Association data.[87] This wired infrastructure can be used to deliver voice phone service, as well. Leichtman Research reports that virtually the entire universe of homes passed by cable – 98% – can purchase broadband service.[88] Combined with a voice-over-Internet application, this service is a substitute for POTS. Indeed, the leading applications vendor, Vonage, now has 1.4 million U.S. subscribers.[89] Other services, such as eBay's Skype, offer non-subscription service for just about one penny per minute to phones worldwide (and free peer-to-peer voice service). A cable modem subscription, combined with a low cost VoIP application, delivers a voice/data service package to the great majority of rural households comparable to what is available to urban or suburban consumers. This package is increasingly displacing POTS subscriptions in either setting.

Wireless phone networks now compete vigorously to provide nationwide service and calling plans, and wireless is fast becoming the dominant form of voice

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[86] AT&T, *Milestones in AT&T History*; http://www.att.com/history/milestones.html.

[87] National Cable & Telecommunications Association, *Industry Overview;* http://www.ncta.com/Docs/PageContent.cfm?pageID=86.

[88] Leichtman 2006, p. 7.

[89] James Gaskin, *Some Vonage Thoughts,* O'REILLY EMERGING TELEPHONY; http://www.oreillynet.com/etel/blog/2006/02/some_vonage_thoughts.html.

communications in the United States.[90] The World Bank charted 2004 wireless coverage as 95% of U.S. population.[91] The International Telecommunications Union estimates mobile telephony as available to 97%.[92] According to the mobile carriers' trade association, wireless coverage in 2005 extended to about 295 million, nearly 100% of U.S. population.[93] And satellite phone service – much improved in quality from its early days[94] – is available virtually everywhere.

Not only do wireless coverage projections match or exceed the "universal" standard of 95%, networks are still expanding, increasing quality of service, and enhancing available applications (to include wireless broadband, for example). Moreover, wireless reception can be improved in specific locations by the construction of additional cell sites or customer-premises antennae, targeting network-extending solutions generally far more cost-effectively than the current system of cost-plus subsidies.

Satellite television services now account for some 27 million subscribers, and have proven highly profitable.[95] Satellite telephone services have been less successful in mass-market applications. Yet, for remote locations and mission critical functions,

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[90] As noted, wireless subscribers now number in excess of 212 million, as against about 175 million fixed lines. Wireless minutes of use, for the typical household, are now about twice that for wired service. See footnote 12.

[91] World Bank, *ICT At a Glance: United States*; http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20459133~menuPK:1192714~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html.

[92] International Telecommunications Union, *Digital Opportunity Index: DOI Ranking*; http://www.itu.int/osg/spu/statistics/DOI/results.phtml.

[93] Robert Roche, *What's Up With Wireless?* Presentation to NARUC, Michigan State University (Aug. 8, 2005), Slide 24. Census estimate of 2004 U.S. population = 285,691,501; http://factfinder.census.gov/servlet/ACSSAFFFacts?_event=&geo_id=01000US&_geoContext=01000US&_street=&_county=&_cityTown=&_state=&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010&_submenuId=factsheet_0&ds_name=DEC_2000_SAFF&_ci_nbr=null&qr_name=null&reg=&_keyword=&_industry=.

[94] With the advent of Low Earth Orbit satellite systems, deployed by Iridium and Globalstar, reception delays are greatly reduced.

[95] Leichtman 2006, p. 7.

satellite voice services are relatively effective, and are provided by multiple networks. They are a viable alternative to wireless or fixed-line communications in high-cost situations.

Part of the difficulty encountered by satellite voice services in serving the consumer market stem from the universal service subsidy system. High-cost fund payments to wireline networks reduce demand for rival technologies, particularly those that are relatively useful where local infrastructure is expensive to construct. This, of course, defines many situations where satellite technology is the efficient option.

The emergence of these multiple rival networks allows us to plausibly consider capping, reducing, or even abolishing the $3.7 billion per year high-cost fund. Given that phone users as a class do not benefit from subsidies, financial impacts would primarily fall on shareholders of subsidized rural telephone companies. Some landowners might also be adversely impacted, but given the array of competitive alternatives, the magnitude of loss is likely to be modest. Consumers as a whole would gain, as telephone taxes could be reduced commensurately with the fall in the size of the USF.

Focusing only on alternative technologies, and ignoring the fact that existing fixed line systems would continue to serve millions of rural telephone users, a number of efficient options reveal themselves. In general, there are many promising reform measures that have been proposed, including auctioning the "provider of last resort" duty to the low-cost bidder,[96] or distributing subsidies not to carriers (encouraging cost

[96] COMM DAILY (Mar. 30, 2006).

inflation) but to consumers in the form of phone service vouchers (thus encouraging smart shopping).[97] Possible reform measures are unlimited.

It is not the purpose here to craft the ultimate policy solution, but to offer three "thought experiments" that illustrate the magnitude of the gains available from eliminating the economic inefficiency of the current regime. Collectively, they suggest that a well designed regulatory reform which opened the market to efficient technologies could save taxpayers billions of dollars in annual HCF payments.

2. Technological Substitution: Three Scenarios

Scenario 1. Suppose we consider the largest per-line subsidies, and constrain the service provider to use a high-cost substitute technology, which we assume to consist of a stand-alone satellite phone (with solar power energy source). This constitutes a near ubiquitous solution in virtually any location.[98]

Satellite pay phones are now being installed by World Communication Center, an Iridium satellite service provider, for a cost of $3,000 each. "The phone booth is solar-powered and entirely self-sustaining," and used to connect remote locations like "lodges, campgrounds and state transportation offices."[99]

It is important to note that phone users in high-cost areas are not delivered free telephone service, but generally pay at least $200 per year for local access.[100] Long

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[97] *Digital Age Communications Act: Proposal of the Universal Service Working Group* (The Progress & Freedom Foundation Dec. 2005) ["*Digital Age Communications Act* 2005"], pp. 23-24.

[98] The solution literally can be made ubiquitous by attaching an antenna in (the rare) situations where satellite reception is constrained.

[99] COMMUNICATIONS DAILY (Feb. 22, 2006), p. 12.

[100] Union Telephone, a telephone company serving Jackson, WY, charges $40.95/month for local residential phone service. Union Telephone; http://www.unionwireless.com/?page=telephone&subpage=2. Border to Border Communications, a telephone company serving Zapata and Webb counties in Texas, charges $19 per month for a residential line. Border to Border Communications; http://www.border2border.com/services.htm.

distance charges are additional. What is remarkable about the possibility of purchasing $3,000 satellite pay phones is that this *one-time capital expense* is substantially less than what some rural carriers now receive in *annual subsidies* – which run as much as $13,345 (see TABLE 4). This suggests that this *highest-cost* non-subsidized, private sector, retail-priced solution for remote area access is cheaper, by far, than what the current regulatory structure expends in many instances. This functions as a reality check, which the current system fails. The outcome underscores the lack of a rational feedback loop to constrain costs or, equivalently, to reduce burdens on taxpayers.

Scenario 2. Extending this concept, it is possible that the government could, instead of subsidizing rural fixed-line telephone carriers, help provide satellite phones to those citizens residing in areas where POTS, cable TV, or wireless phone networks are unavailable. This is unlikely to involve a large number of households. In a few instances, an antenna will be needed to provide adequate reception, but this involves a modest, one-time expenditure.

Satellite phone service is available, at retail prices, starting around $864 per year. This includes handset rental, 600 minutes of domestic calling, and unlimited messaging service.[101] Remembering that local phone service typically costs at least $200 per annum, a subsidy of $664 per household per year would suffice to reduce household costs in remote areas (not reached by any other telecommunications network) to this threshold level.

[101] See TABLE 5.

TABLE 5
GLOBALSTAR SATELLITE PHONE PLANS

	Sales Price	Monthly Lease Price
Globalstar GSP-1600 Handheld Phone	$749	$26
FAU 200 Fixed Phone	$625	$22
GSP-2900 Fixed Phone	$2,495	$87

PLANS					
	Home Minutes	**Monthly Service Fee**	**US/Canada (Long distance)**	**Short Messaging Service**	**Email/Internet Express Data Compression**
Monthly Freedom Plans	50	$50	Free	Free	$9.95
	150	$65	Free	Free	Free
	500	$120	Free	Free	Free
	1,400	$275	Free	Free	Free
	4,000	$550	Free	Free	Free
	Home Minutes	**Annual Service Fee**	**US/Canada Long Distance**	**Short Messaging Service**	**Email/Internet Express Data Compression**
Liberty Annual Minute Plans	600	$600	Free	Free	$119.40
	1,800	$780	Free	Free	Free
	6,000	$1,440	Free	Free	Free
	16,800	$3,300	Free	Free	Free
	48,000	$6,600	Free	Free	Free

Sources: http://www.globalstarusa.com/en/content.php?cid=105; http://www.globalstarusa.com/en/airtime/voicepricing/.

It is then straightforward to calculate the cost of annual subsidies given assumptions about how many unserved households are located in remote areas. There are about 5% households (a little more than 5 million of the 110 million occupied housing units in the U.S in 2004[102]) that are not covered by wireless networks, as suggested by 2004 World Bank data, 3% using International Telecommunications Union data, and less

[102] See http://factfinder.census.gov/servlet/ACSSAFFFacts?_event=&geo_id=01000US&_geoContext=01000US&_street=&_county=&_cityTown=&_state=&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&useEV=&pctxt=fph&pgsl=010&_submenuId=factsheet_0&ds_name=DEC_2000_SAFF&_ci_nbr=null&qr_name=null&reg=&_keyword=&_industry=.

than 1% using 2005 Cellular Telecommunications & Internet Association data. I make the strong assumption that none of the households outside the range of wireless networks can be served by fixed phone or cable TV networks, and then calculate the cost of satellite service subsidies for each estimated level of national coverage. I also ignore any economies that could be obtained by purchasing such services in bulk, as the calculations here are based on advertised retail prices.

After calculating the cost of satellite phone subsidies, at $664 per household per year, I then calculate cost savings by replacing the High-Cost Fund with this alternative program. Almost all U.S. households are in areas that can obtain phone service from wireless, cable TV, or local phone companies without subsidies. But for those few remaining households, assumed here to number from one to five million, satellite service will be subsidized so as to make the net cost to subscribers "reasonably comparable" to that of the service obtained by urban and suburban consumers.[103] The HCF, now equal to approximately $3.7 billion annually, is then dissolved. Estimated cost savings are from $400 million to $3 billion annually. See TABLE 6.

TABLE 6
HCF SAVINGS FROM SATELLITE PHONE SUBSIDIES TO UNSERVED HOUSEHOLDS

Unserved Households	Subsidy Cost	Dollar Savings	% of Current HCF
1 million	$664 million	$3.070 billion	82
2 million	$1.328 billion	$2.406 billion	64
3 million	$1.992 billion	$1.742 billion	47
4 million	$2.656 billion	$1.078 billion	29
5 million	$3.320 billion	$414 million	11

[103] Such benefits would be capitalized into land prices, as with current subsidies.

Very large savings are possible by moving to high-cost satellite service for "high-cost" phone subscribers. The approach described is itself a clumsy and inefficient plan, but it nonetheless economizes on the subsidy scheme now in place. Because wireless networks likely already serve at least 97% of U.S. "pops,"[104] and because such networks are yet expanding their coverage areas, it seems clear that this crude alternative is far more cost effective – another indication of just how uneconomic the High-Cost Fund is.

Scenario 3. This approach focuses solely on improving coverage of wireless phone networks. Since competition among mobile carriers has pushed the monthly cost of subscriptions down to as low as $20 per month, extending wireless reception to "high cost areas" would have the effect of eliminating the need for the High-Cost Fund. What is the cost of improving cellular reception to achieve this?

Again we start with the assumption that, currently, somewhere between 1 and 5 million households are located in areas where wireless phone service is unavailable. I further assume, however, that the great majority of these households could be served via wireless networks were investments in antennas, amplifiers, or signal boosters to improve reception in their homes. How much would such equipment cost?

One product used to boost household reception of wireless phones, produced by JDTECK, is a cellular repeater with an external antenna that improves signal reception for a handset inside (or outside) a home. The product costs $365 per unit.[105] Other technological fixes are available. For purposes of this exercise, however, I will assume

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[104] The Federal Communications Commission finds that 99.8% of U.S. residents live in counties served by digital wireless networks. Federal Communications Commission, *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket No. 05-71, *Tenth Report*, FCC 05-173 (Rel. Sept. 30, 2005), ¶117. This does not mean that a like percentage can actually obtain residential cell-phone reception, however.

[105] Sam Schechner, *How to Kill a Dead Zone: My Quest for Perfect Cell-Phone Reception*, SLATE (June 13, 2005).

that 80% of homes currently unserved by wireless networks could be served with the installation of a JDTECK cellular repeater, and that the remaining 20% are too distant from cell towers to obtain decent signal quality even with such a device. These homes, presumably in remote areas, will be served by the $3,000 self-contained satellite phone booth described in Scenario 1.

The upshot is that the entire system of annual HCF payments could be replaced with a one-time allocation for cellular repeaters and satellite phone units, distributed to households where no other local phone service is available. As seen in TABLE 7, replacing the entire HCF subsidy scheme in this manner is likely to cost only about the *annual costs* of the HCF – or substantially less. With one year's worth of payments, the savings to telephone users would then total almost $4 billion annually, or more, as future HCF increases now projected by trend would not occur.

TABLE 7
HCF SAVINGS FROM CELLULAR REPEATER/SATELLITE PHONE UNITS DONATED TO UNSERVED HOUSEHOLDS

Number of Unserved Households	Cellular Repeaters	S.C. Satellite Phone Units	Total Cost to Replace HCF
1 million	$292 million	$600 million	$892 million
2 million	$584 million	$1.2 billion	$1.784 billion
3 million	$876 million	$1.8 billion	$2.676 billion
4 million	$1.168 billion	$2.4 billion	$3.568 billion
5 million	$1.460 billion	$3.0 billion	$4.460 billion

Such social savings are available across any reasonable alternative scenario because the current system is so intensely inefficient. These examples, offered as thought experiments, suggest the magnitudes involved. Actual alternatives would be efficiently

crafted by market processes, such as by assigning universal service obligations via competitive bidding.

3. The Cost of Each Marginal Phone Subscriber via the HCF

The universal service system is traditionally justified as a means of expanding the scope of telephone networks. When additional users are connected, the value to all users increases – a "network effect." Social gains, however, come with costs. Here I attempt to gauge the level of costs, asking: What would be the adverse impact on U.S. telephone penetration should the HCF disappear?

In that event, prices would be adjusted so that customer revenues paid the full economic cost of supplying phone services.[106] Customers in high cost areas (with carriers currently subsidized) might pay more than they do now, depending on competitive conditions,[107] as their local phone carriers attempted to recoup at least a portion of the lost support via higher phone charges.[108]

Assuming that such price increases were instituted, and effective, they would reduce phone penetration. The question is, by how much? The price-quantity relationship is summarized in the elasticity of demand for phone service – the percentage change in quantity induced by a given percentage change in price. With a given price

[106] Even if carriers were freed from rate regulation, it would not imply that every household would have an individualized price based on its specific cost of service. More likely, telephone companies would find it economical to set prices across customer segments as do many other businesses. National wireless plans exhibit standardized pricing, for instance.

[107] Such increases in telecom service costs would be offset by reductions in housing costs.

[108] I assume that regulators allow rate increases in response to the reduction in subsidies.

elasticity of demand for phone (access) service, the percentage change in subscribers for a given percentage change in price can be calculated.[109]

Assumptions in the calculations to follow are:

1. Price pass through. The price of phone service increases by the $/loop average of High-Cost Fund support received by the phone company in a study area. This could be a market result or it could be a regulatory mandate in the form of an increase in the SLC.
2. Study area averaging. Price increases are uniform across a study area.
3. Average subscriber cost of basic service. The average revenue per line by state for 2002 as reported in Billy Jack Gregg, *A Survey of Unbundled Network Element Prices in the United States*, is used.[110]
4. Price elasticity of demand. Demand elasticity for local telephone access is assumed to equal -0.1.[111]
5. Alternative phone service price. The alternative to land line phone service is a satellite phone at an annual cost equal to $864 (see TABLE 5).

Scenario 1. For each of the 1,430 ILECs in the U.S., I assume that the cost of basic phone service increases by the amount of the HCF $/loop payments to the ILEC. The ILEC does not recover all lost revenues because the increased price induces some line loss. If the line loss is not too severe, the reduced revenues can be accommodated; if it is severe, it will result in the ILEC ceasing operations (causing service to their costumers to be discontinued). Assume that any ILEC that loses 33% or more of its lines ceases operations. Results:

Nationwide Line Loss:	790,328
% of U.S. Fixed Lines:	0.46
HCF per Line Loss:	$4,725

[109] This analysis makes assumptions about how much prices would increase and how phone companies and consumers would respond, but ignores the effect of the policy change on long distance telephone demand or on land values.

[110] Table 2; http://www.cad.state.wv.us/Intro%20to%20Matrix.htm. Monthly revenue in Alaska, Puerto Rico, Virgin Islands, Northern Mariana Islands, Guam, and American Samoa is assumed to be $45.

[111] See Kenneth Gordon and John Haring, *The Effects of Higher Telephone Prices on Universal Service*, (Mar. 1984), pp. 15, 17; and Hausman 1997, p. 11. In fact, most estimates are well below 0.1 (in absolute value). Note that this elasticity measure implies that there is little competitive constraint. To the extent that this is incorrect, the purpose of the universal service subsidies is undermined, as alternative networks are serving customers at terms competitive to those offered by the subsidized provider of last resort.

The purpose of this exercise is to derive the bottom line, implying that nearly $5,000 is spent each year, on average, to increase U.S. phone subscribership by one household. The costs are expended via the HCF; line losses accrue via customers dropping their phone subscriptions when forced to pay the full cost of service, and from other subscribers losing service due to their (small, rural) phone carrier exiting the market. The calculation is conservative in several respects, including the assumption that subsidized rural carriers would not significantly increase operating efficiencies were subsidies to cease.

Scenario 2. Here I modify *Scenario 1*, limiting the price an ILEC can charge to $864 per year. At a price greater than this, customers switch to satellite service. The customers that switch are not included in the line loss numbers, which thereby decline:

Nationwide Line Loss:	661,538
% of U.S. Fixed Lines:	0.38
HCF per Line Loss:	$5,645

Under plausible assumptions, the cost per incremental line is enormous – estimated to be between about *$4,500 and $5,500 per year in HCF subsidies*. As demonstrated with the brief, three-scenario review of alternative methods for high-cost telephone access, far cheaper methods exist for expanding access to the network.

VI. THE E-RATE PROBLEM

Summary*: The E-Rate program generously funds computers and computer network connections in educational institutions. Much of this spending would likely take place without the E-Rate program, especially in higher income areas, while lax oversight results in gold-plated systems and fraud. More generally, research on student achievement suggests that E-Rate program benefits are unproven.*

The E-Rate program, administered as the Schools and Libraries Fund, was created by the TA96. Any non-profit elementary or secondary institution with an endowment of less than $50 million and any library with an independent budget is eligible for E-Rate funds. Federal funds pay for 20% to 90% of the cost of connectivity, such that schools are encouraged to buy Internet links at steeply discounted rates. The fund is capped at $2.25 billion per year.[112]

Like other USF programs, E-Rate uses money that heavily taxes productive activities. In 1997, as the program was being developed, Prof. Jerry Hausman of MIT estimated that every dollar of USF funding cost the economy an additional $1.05 to $1.25 in lost economic output. While the costs of the program are high, the benefits of E-Rate spending are elusive. Problematic issues include: (1) crowding out spending that would have taken place without E-Rate funding; (2) lax oversight, resulting in gold-plating and fraud; (3) lack of scientific evidence for the proposition that diverting school budgets to investments in information technology actual improves student learning. These are discussed in turn.

1. Crowding Out

It is highly likely that a significant portion of the goods and services purchased by the E-Rate program would be purchased without the E-Rate program. TABLE 8 presents a sample of high-income areas that receive funds from the E-Rate program that could likely afford any educationally worthwhile program without additional federal grants. It is not likely that schools (public or private) in those areas would go without valuable

[112] 2005 Monitoring Report, p. 4-1.

technology infrastructure. In such instances, the net effect of the E-Rate program is a dollar transfer from poor to rich, leaving educational opportunities unchanged.

TABLE 8
SELECT HIGH INCOME AREAS THAT RECEIVE E-RATE FUNDING

	Median Household Income (1999)	Per Capita Money Income (1999)	Persons Below Poverty (1999)
Beverly Hills, CA	$70,945	$65,507	9.10%
Fairfax County, VA	$81,050	$36,888	4.50%
Howard County, MD	$74,167	$32,402	3.90%
United States	*$41,994*	*$21,587*	*12.40%*

Source: Data from the U.S. Census Bureau; http://quickfacts.census.gov/qfd/.

Some portion of the E-Rate program also duplicates and potentially displaces private corporate donations, wasting taxpayer dollars. In particular, technology firms have a history of providing goods and services to schools. One analysis from 1998 notes the following corporate programs:

- Continental Cable Systems. Committed to provide free cable modems to schools in areas it serves.
- Microsoft. More than 5,000 schools accepted its offer to provide free internet equipment.
- America Online. Offered free internet equipment to schools.
- Apple. Donated computers to schools.[113]

It is also true that other government programs would likely provide additional grants for telecommunications and internet connectivity in the absence of the E-Rate program.[114]

[113] Lawrence Gasman, *Universal Service: The New Telecommunications Entitlements and Taxes*, POLICY ANALYSIS, Cato Policy Analysis No. 310 (June 25, 1998) ["Gasman 1998"]; http://www.cato.org/pubs/pas/pa-310.html.

[114] See, for example, California's Enhancing Education Through Technology program; http://www.cde.ca.gov/ls/et/ft/eett.asp.

2. Lax Oversight Leads to Gold-Plating and Fraud

The E-Rate program has disbursed over $13 billion with surprisingly little in the way of accounting controls. As the government's external review found:

> [The] FCC has not developed useful performance goals and measures for assessing and managing the E-Rate program….
>
> [The] FCC's oversight mechanisms contain weaknesses that limit [the] FCC's management of the program and its ability to understand the scope of any fraud, waste, and abuse within the program.[115]

The FCC's Office of the Inspector General (OIG), the agency watchdog, has characterized its own oversight efforts as inadequate.[116] In other words, *the oversight of the oversight is lax.* Nevertheless, the Inspector General has found abuses. Of 135 audits of E-Rate grants, 36% were found non-compliant, accounting for $17 million in recommended recoveries.[117]

An endemic problem has emerged in padding the costs of goods and services purchased, a predictable outcome when funds are loosely dispersed on a cost-plus basis.[118] The higher the expense a school, library, or school district claims, the more money it receives. The following story, from a project in San Francisco, illustrates:

> In October 2000 the FCC's management firm approved a $50 million grant to finance a massive school[-]networking project in the city. (The school district was on tap for another $18 million, making the total cost come to $68 million.) Months later, to everyone's surprise, the district turned the $50 million grant down. After examining the contract, district

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[115] *Government Accountability Office, Telecommunications: Concerns Regarding the Structure and FCC's Management of the E-Rate Program*, Statement of Mark L. Goldstein, Director, Physical Infrastructure Issues, GAO-05-439T, (Mar. 16, 2005).

[116] *Federal Communications Commission, Office of the Inspector General Semiannual Report to Congress*, April 1, 2004 – September 30, 2004 ["FCC, *OIG Report* 2004"], p. 12.

[117] FCC, *OIG Report* 2004, p. 12.

[118] See, Harvey Averch and Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, AMERICAN ECONOMIC REVIEW (Dec. 1962), pp. 1052-1069.

> technicians had discovered they could build the system themselves for less than their meager share of the costs—that is, for less than $18 million.[119]

The author concludes, "[t]his is the educational equivalent of the $640 toilet seats famously sold to the Pentagon by military contractors..."[120]

Outright fraud is also a serious problem, although the limited degree of program oversight implies that its full magnitude is yet unknown. The 36% non-compliance rate found by the FCC's OIG is not derived from a completely random sample, as some of the audit targets were brought to the auditors' attention. However, many sensational instances of outright criminality have also been uncovered. Ten individuals and companies have been suspended from participating in the E-Rate program and eight of them have been permanently banned.[121] In all ten cases, the individuals were convicted of serious crimes, including bid rigging, kick-backs, inflated pricing, and billing for eligible services while delivering ineligible services (such as video).

3. Efficacy of Information Technology in Education

Putting aside whether funds are spent wisely and whether or not they displace other spending, it is still an open question as to whether students benefit from the services that E-Rate funding buys. In general, unrestricted funds are worth more to schools or libraries than product-specific subsidies, because then monies can be used for whatever needs are deemed most pressing by educators. Currently, the system lavishes funding for telecommunications and Internet applications on schools that may be desperate for textbooks or additional classroom space.

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[119] Todd Oppenheimer, *The Internet School Scam*, THE NATION (Feb. 16, 2004) ["Oppenheimer 2004")]; http://www.thenation.com/doc/20040216/oppenheimer.

[120] Oppenheimer 2004.

[121] See USAC Suspensions and Debarments; http://www.universalservice.org/sl/about/suspensions-debarments.aspx.

Assuming that the communications options paid for by E-Rate do not, in this instance, simply displace other spending, the question arises as to whether or not the additional purchases actually improve education.[122] David Shaw, who chaired President Clinton's Committee of Advisers on Science and Technology, conceded: "The reality is we haven't the faintest idea what really works in a classroom."[123] Nevertheless, the Committee recommended funding E-Rate.[124] Indeed, academic research has yet to establish that computers in the classroom benefit learning outcomes. Rather, excellence in traditional study areas continues to be crucial, and highly valued by employers:

> [W]hen business leaders talk about what they need from new recruits, they hardly mention computer skills, which they find they can teach employees relatively easily on their own. Most employers say their priority is what are sometimes called "soft" skills: a deep knowledge base; the ability to listen and communicate; to think critically and imaginatively; to read, write and figure; and many other capabilities that schools are increasingly neglecting. A report from the Information Technology Association of America, which represents a range of companies that use technology, put it this way: "Want to get a job using information technology to solve problems? Know something about the problems that need to be solved."[125]

IT technology may even become a distraction, hurting more pressing instructional needs.

> In Harlem, for example, teachers in overcrowded classrooms now have to spend much of their time managing technical hassles the schools can't afford to fix, and watching for cheating, instant-messaging tricks and illicit material on screens that teachers cannot control or even see.[126]

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[122] One survey of graduates of the 1997-98 school year – prior to the influx of E-Rate funding – raised questions about how effectively IT was used in schools. "In general, the technology infrastructure of education has increased more quickly than the incorporation of IT tools into teaching and learning." *Will New Teachers be Prepared to Teach in a Digital Age? A National Survey on Information Technology in Teacher Education* (Milken Family Foundation 1999), p. 2.

[123] Gasman 1998.

[124] Gasman 1998.

[125] Oppenheimer 2004.

[126] Oppenheimer 2004.

In this light, the E-Rate ought to be reconsidered. While politically popular as a "mom and apple pie" bromide, it restricts funding to particular purchases, which have not been shown to enhance student performance above and beyond their opportunity costs. Moreover, the structure of the funding process is itself broken, as federal investigations have repeatedly found.

VII. THE DISTRIBUTION OF SUBSIDIES

***Summary**: High Cost Fund payments flow, in the main, to telephone companies serving very few customers in rural areas. These carriers, heavily subsidized, maintain a keen interest in supporting current policies. Moreover, benefits are concentrated in a few sparsely populated states that exercise disproportionate political influence.*

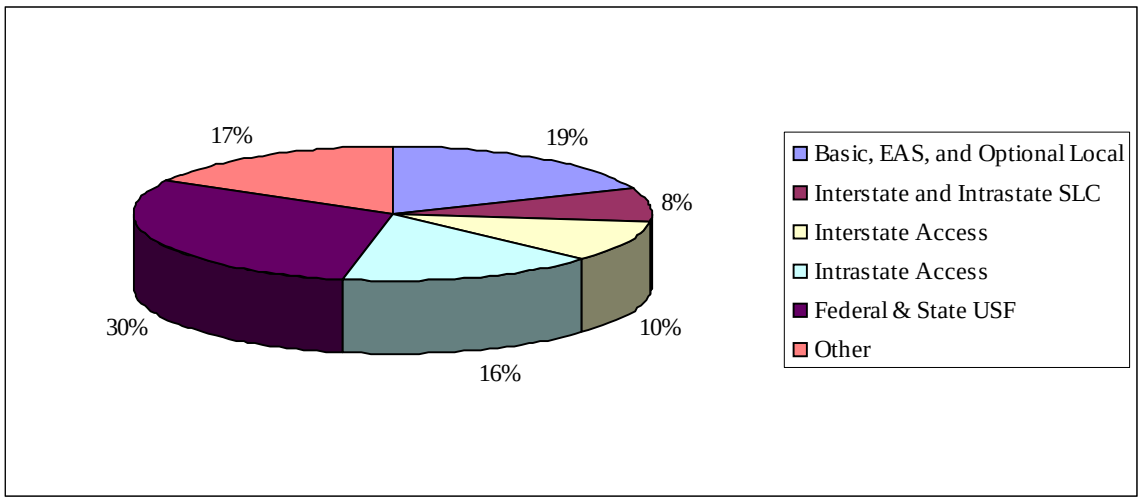
A standard proposition in public choice, the economic analysis of political institutions, is that special interest control of public policy tends to be strong when the benefits of a program are concentrated on a small number of beneficiaries while the costs are widely diffused.[127] This situation helps those who gain to successfully organize and to influence government policy; each beneficiary having a large stake in the outcome makes lobbying activity worth their while. Meanwhile, those who lose do not suffer sufficient losses to offset the costs, to them, of engaging in collective action.

The Universal Service High-Cost Fund is a textbook example of such a program. Subsidies flow to owners of small rural telephone companies, each of which possesses an intense interest in maintaining or expanding the program. This is seen in the remarkably large proportion of revenues that RLECs capture from government payments. As seen in FIGURE 9, 30% of the average RLEC revenue stream is from federal and state subsidies,

[127] James Buchanan and Gordon Tullock, THE CALCULUS OF CONSENT: LOGICAL FOUNDATIONS OF CONSTITUTIONAL DEMOCRACY (University of Michigan Press 1962); Mancur Olson, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (Harvard University Press 1965).

with another 26% contributed by access charges (set by regulators so as to subsidize local phone service). In other words, *more than half of the average RLEC sales dollar is attributable to government subsidies, and only 27 cents by telephone customers*.

FIGURE 9
RLEC REVENUE SOURCES



Source: NCTA, *Ex Parte Presentation to the FCC* (Jan. 6, 2004), page 14.

Consumers who pay USF taxes, however, tend to be widely diffused. It is very costly for telephone users to underwrite the high level of explicit and implicit subsidies now in effect, but the gain for an individual consumer in coordinating with others to alter the policy is outweighed by the opportunity costs. As seen in APPENDIX 7, the states with the highest net dollar flows from the USF (USF receipts less USF distributions) tend to be small (population-wise) and rural. It might be noted that one organized economic constituency, long distance carriers, has criticized current universal service policies.[128] But the political equilibrium that has developed has tilted decisively in favor of transfers away from these carriers and towards small RLECs.

[128]See, e.g., Federal Communications Commission, *In the Matter of Federal-State Joint Board on Universal Service, MCI Comments*, CC Docket No. 96-45 (Rec. Apr. 12, 1996). See also Federal Communications Commission, *In the Matter of Federal-State Joint Board on Universal Service, Comments of AT&T Corp.*, CC Docket No. 96-45 (Rec. Apr. 12, 1996).

The extreme skewing of HCF flows suggests why. As noted in TABLE 9, the average annual subsidy to Alaskan carriers amounts to $177 per person per year, while the national average is just $12. States like Alaska, Wyoming, North Dakota, South Dakota, Montana and Mississippi generate relatively intense levels of subsidy support. Several of these states have also seen some of the largest increases in their USF receipts in recent years. See APPENDIX 8. It appears that the tightly concentrated beneficiaries, owners of RLECs in these relatively few states, exercise a disparate level of political clout, particularly in the U.S. Senate where each state enjoys two votes. Just as in other policy matters, including agricultural subsidies, senators from rural states exercise influence beyond their (population) numbers.

The result is that a highly discriminatory tax-and-spend program is instituted under the rubric of "universal service." Rural interests, now dependent on taxpayer subsidies to maintain their highly profitable (and generously capitalized) businesses, press for an ever-expanding level of revenue. The broad, general interest congruent with those of consumers who pay taxes funding these transfers, is not sufficiently well organized to defend its interests. An anti-competitive outcome obtains.[129]

[129] Thomas Sowell, BASIC ECONOMICS: A CITIZEN'S GUIDE TO THE ECONOMY, (Basic Books 2004), p. 55.

TABLE 9
HIGH-COST FUND PAYMENTS BY STATE OR TERRITORY (2005)

State or Jurisdiction	High Cost (HC) Support Payments $ (Millions)	%	Population (Thousands)	Lines (Thousands)	Lines that Receive HC Support (Thousands)	%	HC Support per Capita	HC Support per Line	HC Support per Line Receiving HC Support
Virgin Islands	$24.8	0.7	109	70	70	100.0	$228	$355	$355
Alaska	$117.6	3.1	664	492	492	100.0	$177	$239	$239
Wyoming	$56.0	1.5	509	313	313	100.0	$110	$179	$179
Guam	$17.8	0.5	171	124	124	100.0	$104	$144	$144
North Dakota	$60.0	1.6	637	469	469	100.0	$94	$128	$128
South Dakota	$69.1	1.8	776	424	424	100.0	$89	$163	$163
Montana	$75.5	2.0	936	522	522	100.0	$81	$145	$145
Mississippi	$207.4	5.6	2,921	1,392	1,392	100.0	$71	$149	$149
Kansas	$157.5	4.2	2,745	1,538	1,538	100.0	$57	$102	$102
Arkansas	$148.9	4.0	2,779	1,507	1,507	100.0	$54	$99	$99
Vermont	$31.1	0.8	623	414	414	100.0	$50	$75	$75
Idaho	$55.2	1.5	1,429	726	231	31.8	$39	$76	$239
American Samoa	$2.2	0.1	58	11	11	100.0	$37	$200	$200
West Virginia	$66.9	1.8	1,817	1,011	1,011	100.0	$37	$66	$66
Oklahoma	$116.1	3.1	3,548	1,842	1,842	100.0	$33	$63	$63
Nebraska	$54.8	1.5	1,759	850	850	100.0	$31	$65	$65
Iowa	$86.5	2.3	2,966	1,912	1,855	97.0	$29	$45	$47
New Mexico	$55.0	1.5	1,928	1,002	1,002	100.0	$29	$55	$55
Puerto Rico	$110.4	3.0	3,912	1,243	1,243	100.0	$28	$89	$89
Alabama	$109.5	2.9	4,558	2,352	2,352	100.0	$24	$47	$47
Hawaii	$30.4	0.8	1,275	689	689	100.0	$24	$44	$44
Louisiana	$105.9	2.8	4,524	2,418	2,418	100.0	$23	$44	$44
Wisconsin	$126.2	3.4	5,536	3,523	1,184	33.6	$23	$36	$107
Maine	$29.3	0.8	1,322	867	867	100.0	$22	$34	$34
Minnesota	$109.6	2.9	5,133	2,981	976	32.8	$21	$37	$112
Oregon	$72.6	1.9	3,641	2,021	2,021	100.0	$20	$36	$36
Kentucky	$78.4	2.1	4,173	2,085	2,085	100.0	$19	$38	$38
South Carolina	$79.3	2.1	4,255	2,251	2,251	100.0	$19	$35	$35
Colorado	$77.9	2.1	4,665	2,721	2,721	100.0	$17	$29	$29
Missouri	$91.5	2.5	5,800	3,383	3,383	100.0	$16	$27	$27
Washington	$86.7	2.3	6,288	3,621	1,293	35.7	$14	$24	$67
Arizona	$77.6	2.1	5,939	2,787	2,787	100.0	$13	$28	$28
Northern Mariana Islands	$1.1	0.0	82	32	32	100.0	$13	$33	$33
Nevada	$30.6	0.8	2,415	1,329	1,329	100.0	$13	$23	$23
Georgia	$110.1	2.9	9,073	4,803	4,803	100.0	$12	$23	$23
Virginia	$83.7	2.2	7,567	4,470	4,470	100.0	$11	$19	$19
Utah	$24.4	0.7	2,470	1,055	1,055	100.0	$10	$23	$23
Texas	$224.9	6.0	22,860	12,037	2,840	23.6	$10	$19	$79
Tennessee	$57.3	1.5	5,963	3,235	3,235	100.0	$10	$18	$18
North Carolina	$80.4	2.2	8,683	4,841	4,841	100.0	$9	$17	$17
Indiana	$57.6	1.5	6,272	3,631	1,411	38.9	$9	$16	$41
New Hampshire	$9.7	0.3	1,310	784	784	100.0	$7	$12	$12
Pennsylvania	$65.1	1.7	12,430	7,708	2,001	26.0	$5	$8	$33
Michigan	$53.0	1.4	10,121	6,011	1,044	17.4	$5	$9	$51
Florida	$90.9	2.4	17,790	10,768	10,768	100.0	$5	$8	$8
Illinois	$60.5	1.6	12,763	7,651	1,180	15.4	$5	$8	$51
Ohio	$39.2	1.0	11,464	6,659	2,019	30.3	$3	$6	$19
New York	$51.2	1.4	19,255	12,020	11,535	96.0	$3	$4	$4
California	$95.8	2.6	36,132	21,895	4,872	22.3	$3	$4	$20
Maryland	$4.1	0.1	5,600	3,741	3,741	100.0	$1	$1	$1
Connecticut	$2.2	0.1	3,510	2,230	2,230	100.0	$1	$1	$1
Massachusetts	$3.2	0.1	6,399	3,985	3,985	100.0	$0	$1	$1
Delaware	$0.3	0.0	844	565	565	100.0	$0	$0	$0
New Jersey	$1.3	0.0	8,718	6,328	232	3.7	$0	$0	$6
Rhode Island	$0.1	0.0	1,076	550	550	100.0	$0	$0	$0
District of Columbia	$0.0	0.0	551	832	0	0.0	$0	$0	N/A
United States	$3,734.1	100.0	300,742	174,718	109,858	62.9	$12	$21	$34

Sources: See TABLE 4 data sources. Population data from July, 2005, U.S. Census Bureau; http://www.census.gov/popest/states/tables/NST-EST2005-01.xls. Population figures for Virgin Islands, Guam, American Samoa, and Northern Mariana Islands are July 2006 estimates from the CIA World Factbook; http://www.cia.gov/cia/publications/factbook/. Lines receiving High Cost Support are defined as all lines in study areas receiving High Cost Support.

VIII. TAX BURDENS

Summary*: The burdens of funding the USF are rising, with the tax rate applied to long distance revenues increasing from 3.2% in 1998 to its current level of 10.9%. This has prompted political interest in restructuring the USF tax, expanding the base to cover additional sources of telecommunications spending. But there are no free lunches. Moving to a monthly fee on telephone numbers, for instance, would dramatically raise tax burdens on lower income pre-paid wireless subscribers – a perverse outcome for "universal service" policy.*

The Universal Service Fund is financed by a tax on revenues generated by long distance phone calls.[130] Although virtually every telephone subscriber in the U.S. is a consumer of both local and long distance telecommunications services, each one consumes these services in varying proportions and therefore shoulders different burdens.

One trend is apparent: taxes are going up. Having been set at 2.1 percent of long distance revenues in 1997, the USF has grown while its taxable revenue base has shrunk. Hence, the USF tax rate is now set at 10.9 percent.[131] The explosive increase is forcing a re-thinking of both the USF expenditures and the manner in which the tax is applied.

Telecommunications industry service revenues totaled $292 billion in 2004,[132] but the amount available to be taxed for the USF – the USF contribution base – was significantly less. First, in an effort to avoid double counting, revenues from sales to other telecommunications carriers are excluded, reducing 2004 funds to $233 billion.[133] Next, about three quarters of intrastate revenues are excluded because only the portion

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[130] For an excellent background on USF financing see, Congress of the United States, Congressional Budget Office, *Financing Universal Telephone Service* (Mar. 2005) ["CBO 2005"], especially Chapter 1.

[131] *Trends in Telephone Service* 2005, Table 19.6; http://www.fcc.gov/wcb/universal_service/quarter.html.

[132] FCC, *Telecommunications Industry Revenue, 2004*, (Mar. 2006), Table 1.

[133] See TABLE 10.

deemed to be associated with long distance calls are subject to the USF tax.[134] Some international revenues, uncollected revenues and some smaller firms' revenues are also excluded, reducing the taxable base in 2004 to $78 billion. See TABLE 10.

TABLE 10
TELECOMMUNICATIONS REVENUES FOR SERVICE TO END USERS (2004) ($ BILLIONS)

Industry Segment	Intrastate	Interstate	International	Total	USF Contribution Base	Effective Average Tax Rate
LECs	62.9	20.4	0.1	83.4	21.0	2.2%
Wireless Carriers	72.6	21.7	0.2	94.4	21.6	2.0%
LD Toll Carriers	17.8	27.5	10.3	55.5	35.2	5.6%
Total	153.3	69.6	10.5	233.3	77.8	2.9%

Notes: Numbers may not add to totals due to rounding. The effective tax rate is calculated by multiplying the USF contribution base by the actual tax rate of 8.8% in 2004 (see Table 11), and then dividing the result by the total revenues from service. Source: Jim Lande and Kenneth Lynch, *Telecommunications Industry Revenues 2004*, Industry Analysis & Technology Division Wireline Competition Bureau (March 2006), Tables 6 and 8.

The USF was slated to spend $6.3 billion during 2004, which was raised by setting an 8.8% tax rate.[135] But the pool of funds available to support the USF has declined in recent years which, when combined with the increasing level of expenditures, pushes the tax rate higher. This is seen in TABLE 11, in the row labeled "Total USF as a Percentage of Contribution Base." This is an annualized approximation of the USF tax, which is set on a quarterly basis.

[134] This ratio is set by the FCC. For example, local loop costs are deemed to be 25% associated with long distance. See, FCC, *In the Matter of Jurisdictional Separations and Referral to the Federal-State Joint Board, Report and Order*, CC Docket No. 80-286 (Rel. May 22, 2001), ¶4.
[135] See TABLE 11. The amount collected can vary from commitments due to accounting adjustments.

TABLE 11
TELECOM REVENUES, USF SPENDING, AND USF TAX RATES, 1997-2005 ($ BILLIONS)

	1998	1999	2000	2001	2002	2003	2004	2005
Total Service Revenues from End Users	200.4	215.8	229.1	235.5	232.4	230.7	233.3	243.1*
Contribution Base for the USF	74.9	79.9	80.6	79.2	77.0	76.6	77.8	73.4**
Total USF	3.9	4.4	4.8	5.4	5.8	6.6	6.3	6.8
Contribution Base as % of Total Revenues	37.4	37.0	35.2	33.6	33.1	33.2	33.3	30.2
Total USF as a % of Contribution Base (actual tax rate)	5.1 (3.2)	5.4 (3.8)	6.0 (5.7)	6.8 (6.8)	7.6 (7.2)	8.7 (8.8)	8.1 (8.8)	9.3 (10.6)
Total USF as % of Total Service Revenue	1.9	2.0	2.1	2.3	2.5	2.9	2.7	2.8

Sources: Total Telecommunications Revenues from Service to End Users 1998-2003 data from CBO 2005 Table 1.3; 2004 data from Federal Communications Commission, Jim Lande and Kenneth Lynch, *Telecommunications Industry Revenues 2004*, Industry Analysis & Technology Division Wireline Competition Bureau (Mar. 2006), Table 8; 2005 data calculated as a 4.2% increase over 2004. See *Spending in U.S. Telecommunications Industry Rises 8.9% in 2005 Reaching 856.9 Billion*, TELECOMMUNICATIONS INDUSTRY ASSOCIATION PRESS RELEASE (Feb. 15, 2006). Contribution Base for the USF data 1998-2003 from CBO 2005 Table 1.3; 2004 data from Jim Lande and Kenneth Lynch, *Telecommunications Industry Revenues 2004*, Industry Analysis & Technology Division Wireline Competition Bureau (Mar. 2006), Table 8; 2005 data are the sum of data from Federal Universal Service Support Mechanism Quarterly Contribution Base for the First, Second, Third, and Fourth Quarter 2005, The Universal Service Administrative Company. Total USF data from APPENDIX 1. Actual tax rates are the average of all four quarters' factors for a given year. Quarterly data 1998-2005 Q1 from *Trends in Telephone Service* 2005, Table 19.16; data for Q2-Q3 2005 from the 2005 Monitoring Report Table 1.10; data for 2005 Q4 from: http://www.fcc.gov/wcb/universal_service/quarter.htm.

While USF taxes have risen, their sources have shifted. In 1998, when the TA96 reforms first affected the USF, Toll Service Providers (mainly long distance providers such as MCI and AT&T) accounted for 77.7% of USF funding. As of Q1 2006, however, these companies or their successors paid only 39.6% of the total fund.[136] Fixed Local Service Providers, conversely, increased their share of the total from 17.1% to 28.0%

[136] See TABLE 12.

over the period, while Wireless Service Providers increased their share *six-fold*, from 5.1% in 1998 to 32.3% in Q1 2006.[137]

TABLE 12
SHARE OF USF CONTRIBUTIONS (%)

Service Provider Category	1997	1998	1999	2000	2001	2002	2003	2004	2005	(Q1) 2006
Fixed Local Service Providers	15.1	17.1	18.5	20.1	23.1	26.0	26.6	27.0	28.9	28.0
Wireless Service Providers	3.3	5.1	6.6	9.2	12.0	17.2	24.8	27.8	27.7	32.3
Toll Service Providers	81.6	77.7	74.9	70.6	64.9	56.7	48.6	45.2	43.4	39.6
All Filers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Jim Lande and Kenneth Lynch, *Telecommunications Industry Revenues 2004*, Industry Analysis & Technology Division Wireline Competition Bureau (Mar. 2006), Table 12.

A financing reform advocated by some groups is a monthly phone number fee.[138] As of the end of 2004, there were 548,712,000 assigned phone numbers reported by the FCC. See TABLE 13. To raise the $6.3 billion in USF commitments in 2004 from a numbers tax would have required a charge of about $1 per number per month.[139] Some proposals suggest taxing some numbers, such as those assigned to pagers, only a fraction of the amount charged other numbers,[140] which would presumably increase the basic number fee. So long as the discounts are confined to providers that do not use a large portion of the total pool of assigned numbers, the effect on the base fee would not be large and is therefore ignored in the current analysis.

[137] See TABLE 12.
[138] CBO 2005; *Digital Age Communications Act* 2005, pp. 36-37.
[139] The calculation is: (548 million) * $1 * 12 = $6.576 billion. This assumes that no numbers would have been given up as a result of $12 per year in USF charges. This is a strong assumption, but estimates of the own-price elasticity of phone number demand are not available. To the extent a USF numbers tax would reduce the pool of assigned numbers, a higher tax rate would be required to raise a given revenue target.
[140] *Digital Age Communications Act* 2005, p. 36.

TABLE 13
ASSIGNED NUMBERS BY CARRIER TYPE AS OF DECEMBER 31, 2004 (THOUSANDS)

	Telephone Numbers	Percent of Total
ILEC	305,132	56
Cellular/PCS	183,998	34
CLEC	51,112	9
Paging	8,469	2
Total	*548,712*	*100*

Numbers may not add to total due to rounding.
Source: Craig Stroup and John Vu, *Numbering Resource Utilization in the United States as of December 31, 2004*, FCC Industry Analysis and Technology Division, Wireline Competition Bureau (Aug. 2005), Table 1.

A numbers based plan would shift the tax burden from long distance to local services. Projections for 2007 indicate that a numbers based plan would reduce the share of USF support from long distance companies from 37% to 13%.[141] The implied tax rate for those carriers, under current spending levels, would fall from about 11% of revenues to virtually zero (given that long distance services 'piggyback' on phone numbers distributed by other carriers). Most of the reduction in contributions from long distance companies would be made up for by contributions from local phone companies – an increase from a current policy projection for 2007 of 31% of the USF funding requirements to 55% under a numbers-based system.[142] The effective tax rate on local phone revenues was about 2.2% in 2004 but would increase under a numbers based plan.[143]

A numbers based policy would not substantially change the aggregate burden born by mobile carriers. It would, however, trigger a huge shift *within* the wireless

[141] CBO 2005, Table 2-1.
[142] CBO 2005, Table 2-1.
[143] See TABLE 10 and CBO 2005, Table 2-1. The calculation of the tax rate paid by local customers does not count the SLC as a tax payment.

sector. Currently, wireless phone revenues are deemed to be no more than 28.5% long distance,[144] and that portion of wireless revenues is taxed (at 10.9%). This yields an effective tax rate of about 3% (0.11 * 0.285) of revenues for most firms that pay USF taxes based on the 28.5% safe-harbor.

Moving from an *ad valorum* tax (proportional to revenues) of 3% to a fixed numbers based fee of $1 would not significantly change overall wireless sector contributions, but would sharply tilt customer burdens depending on the size of their subscription payments. TABLE 14 reports the Average Revenue Per User (ARPU) for a sample of wireless firms. A $1 fee applied to the average wireless phone user's bill would be equivalent, on average, to a 2.2% tax. However, it is clear that some carriers would be better off and some would be worse off. For example, Sprint Nextel has a relatively high ARPU and, therefore, its customers would presumably gain under a numbers based system by paying an estimated 1.59% average tax. TracFone, with far lower ARPU, would see its customers pay a far higher tax, estimated to be 7.14% – or more than three times the average wireless customer. The result is highly regressive, with proportionally higher burdens on customers who purchase the lowest-priced packages.

[144] CBO 2005, Box 1-2.

TABLE 14
WIRELESS CARRIERS ARPU (2005)

Wireless USF implicit tax rate in 2005		3.0%
	ARPU	**$1 Fee**
WIRELESS TOTAL	$45.51	2.20%
Alltel	$52.13	1.92%
Boost Mobile	$37.00	2.70%
Cingular	$48.86	2.05%
Leap Wireless	$40.22	2.49%
Qwest Wireless	$51.00	1.96%
Sprint Nextel Corp.	$63.00	1.59%
T-Mobile	$52.00	1.92%
Tracfone	$14.00	7.14%
Verizon Wireless	$49.36	2.03%

Sources: Industry data from CTIA's Semi-Annual Wireless Industry Survey, (2006); http://www.ctia.org/research_statistics/index.cfm/AID/10030. Boost ARPU (at year-end) from Kelly Hill, *Prepaid vs. Family Plan Debate Hinges on ARPU*, RCR WIRELESS, (Apr. 3, 2006). Leap Wireless' ARPU (2005-III) from *Leap Reports Results for Third Quarter of 2005*; http://phx.corporateir.net/phoenix.zhtml?c=95536&p=irol-reportsAnnual. Qwest ARPU (4th quarter) from Qwest Comm., *Qwest Reports Solid Fourth Quarter Results; EPS Break-Even Before Special Items; Margin Expansion; Improved Year-Over-Year Revenue*, (Feb. 14, 2006); http://www.qwest.com/about/media/pressroom/1,1281,1807_archive,00.html.
Tracfone ARPU (4th quarter) from *America Movil's Fourth Quarter of 2005 Financial and Operating Report*; http://www.americamovil. com/web/index.html.

The impact of moving from a tax applied to long distance revenue to one based on telephone numbers produces highly disparate impacts. Wireless services with relatively little long distance usage, as well as colleges and universities, would experience disproportionately large increases in their contributions to the USF. As noted, taxes paid by local phone companies would increase from an estimated 31% of the total USF in 2007 to 55% under a numbers based system – an increase of over 75%. Other tax increases could be even higher.

- Paging. Paging customers currently pay up to 10¢ per month in USF contributions.[145] A fee of $1 per number per month would represent an increase of *900 percent or more*.
- Pre-Paid Mobile. Pre-paid mobile customers tend to be lower income and use significantly less long distance than most wireless phone customers.[146] For example, TracFone Wireless contributes about 6¢ per customer per month to the USF.[147] A fee of $1 per number per month would represent an increase of *1,567 percent.*
- Automobile Telematics. Mobile phone networks are used for communications between vehicles and call centers for automatic collision notification, "MayDay" buttons, and vehicle theft recovery, but make only negligible contributions to the USF.[148] One industry participant gives a hypothetical example where a fleet owner with 350,000 vehicles would see USF contributions increase from about $10,000 to $350,000 per month under a numbers based plan.[149] This example represents an increase of *3,400 percent*.

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[145] Letter to Marlene H. Dortch, FCC, from Frederick M. Joyce, Counsel to USA Mobility, Inc., *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45 (Mar. 21, 2006).

[146] Letter to Marlene H. Dortch, FCC, from Michell F. Brecher on behalf of TracFone Wireless, Inc., Docket Nos. 96-45, 98-171, 90-571, 92-237, 99-200, 05-68 (Apr. 3, 2006) ["Brecher Letter"].

[147] Brecher Letter.

[148] Letter to Thomas Navin, Chief, Wireline Competition Bureau, FCC, from Gary A. Wallace, Vice President for Corporate Relations, ATX Group, Inc. and John E. Logan, Attorney for the ATX Group, Inc., *Universal Service Assessment- Automotive Telematics*, CC Docket Nos. 96-45, 98-171, 90-571, 92-237, 99-200, 95-116, 98-170 (Apr. 19, 2006) ["Wallace and Logan Letter"].

[149] Wallace and Logan Letter.

- Colleges and Universities. Institutions of higher education currently pay only nominal direct fees in support of the USF. One survey found that a numbers based fee would lead to an *892 percent increase* in direct USF payments.[150]

This latter example is highly instructive. The American Council on Education (ACE) recently conducted a survey of 15 college campuses representative of the 4,325 degree-granting institutions of higher learning, which serve some 17 million graduate and undergraduate students.[151] It concluded that imposing a $1 per month fee on telephone numbers would increase taxes on these educational institutions by an astounding $320 million per year.[152] The study noted that such a huge extraction would result in reduced telephone service for students, faculty, and campus residents, reduced campus safety, tuition increases, and a "diversion of resources from technology investments."[153] Such outcomes could scarcely be more counter-productive, resulting from a program advanced to promote universal access to telephone networks and the enhancement of telecommunications services for schools and libraries.

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[150] Keep Universal Service Fund (USF) Fair Coalition, *Flunking Numbers: How Changing the Federal Universal Service Fund (USF) Long-Distance Phone Bill Fee Would Harm America's Colleges and Universities* (May 11, 2006) ["Flunking Numbers"]; http://keepusffair.org/KeepUSFFair/release_051106.html.

[151] Flunking Numbers.

[152] The large cost increases were explained this way: "The structure of telecommunications networks on campus are fundamentally different than those employed by enterprise users in the business sector because they typically employ many more numbers per trunk… Moreover, colleges and universities have unusually large needs for assigned numbers that are not necessarily placed into service at a given time. For example, colleges and universities maintain dormitory numbers over semester and summer breaks even though those numbers are not functioning during those periods. The continuity that maintaining these inactive numbers provides to campus life, safety, and security results in enormous benefits, but those benefits would be endangered if schools were forced to pay into USF on a strict per-number basis." Flunking Numbers.

[153] Flunking Numbers.

IX. CONCLUSION

The current "universal service" system does not benefit low-income residents in rural areas. Whatever gains are available from lower phone rates result in higher housing costs, meaning that landlords and landowners gain – not poor renters. Moreover, those gains have largely vanished as competitive network options have emerged. According to standard data sources, no more than two or three percent of Americans are beyond the reach of communications systems offering an alternative to traditional fixed line phone service.

The "universal service" system has never achieved more than 95% penetration for fixed-line telephony, despite decades of policy effort, and tens of billions of dollars in transfers – from phone users to owners of rural phone companies – ostensibly required to achieve this goal. By the metric established by the policy itself, then, wireless, cable TV, and satellite networks have all achieved universal coverage of the U.S. market – without $7 billion in annual taxpayer funding.

Traditional fixed-line service supplied by rural carriers is exceedingly expensive due, in large measure, to government subsidies yielding inefficient incentives. This is revealed by the many rural telephone companies, which manage to spend over $500 per year per subscriber just on *corporate overhead*. This level of performance is remarkable, among other considerations, because wireless phone subscriptions with unlimited U.S. calling are now available for $420 annually.

Were the goal of extending phone access rationally met, alternative technologies would be seen as viable options to replace the system of cost-plus subsidies to incumbent carriers. It would be cheaper to purchase a $3,000 solar-powered, self-contained satellite

phone booth for each residential unit than to continue doling out payments to the highest cost rural carriers, which now receive as much as *$13,345 per line per year* to provide service to remote areas. The majority of the annual $3.7 billion High-Cost Fund could be eliminated by simply identifying the one, two, or three million households not reached by cable TV or mobile wireless networks and paying residents to install enhanced antennae, cellular repeaters, or satellite phones.

Sending $3.7 billion annually to inefficient, high-cost RLECs succeeds in transferring income from telephone users to phone company stockholders, but it does almost nothing – even under favorable assumptions – to expand access to telephone networks. The conservative estimates produced herein suggest that each incremental subscriber line added via High-Cost Fund subsidies costs from *$4,500 to $5,500 annually*, an extraordinary sum that is at least five times the cost of retail satellite phone subscriptions that include local minutes, free domestic long distance, and free text messaging.

This is the predictable outcome of a system that clings to existing technologies and rewards incumbent carriers for inefficiency, increasing payments as costs rise. Profits are so generous that some carriers owned by co-ops pay their members annual dividends that exceed their members' local phone charges. Publicly listed RLECs not only realize healthy profits, company cash flows are considered relatively safe, given that government subsidies virtually guarantee high rates of return. This results in company shares being substantially more valuable per dollar of profit than other telecommunications firms that must depend on customer revenues. The average rural

carrier realizes some 30% of its revenues in state and federal subsidies, and over one-half in government transfers (including access fees).

These benefits are extracted from consumers of long distance telephone service. The tax burden, less than $4 billion in 1998, rose to nearly $7 billion in 2005. The dramatic rise in the tax on long distance services, leaping from 2.1 percent in 1997 to 10.9 percent in the second quarter of 2006, is forcing a re-evaluation of the funding mechanism. Alternatives are available, but introduce their own distortions. A fixed fee on telephone numbers, for instance, would impose over $300 million annually in additional taxes on U.S. colleges and universities, while imposing taxes on the lowest-cost wireless services proportionally more than triple the average level. Such outcomes would harm low-income phone users, reduce network utilization, and sabotage the explicit goals of "universal service."

A pro-consumer approach to the problems of the current regime focuses on eliminating its endemic waste and inefficiency. A first step would be a policy to cap and then reduce the HCF. One encouraging sign is that many policy makers, including FCC Chairman Kevin Martin, are considering the use of "reverse auctions" to assign universal service obligations.[154] Here, phone carriers compete to become the "provider of last resort" in areas where regulators deem local services (without subsidies) insufficient, bidding a price (paid by the government) to supply such services. Firms should be free to adopt any technology or network architecture, promoting innovation, and the effect of

[154] *USF Fans Weigh Martin's Reverse Auction' Idea, Capital Hill Reforms*. TELECOM POLICY REPORT (Apr. 3, 2006).

rivalry would push subsidy levels down to the actual cost of service, saving taxpayers billions of dollars.[155]

The extreme inefficiency of the existing universal service system makes it relatively easy to devise reforms that achieve generous social benefits. Policies to deliver these savings are the superior alternative to tax increases, and would be welcomed by the millions of users of U.S. telecommunications networks.

[155] Reverse auctions to assign universal service obligations have been successfully utilized in other countries, including Chile. Jon M. Peha, *Tradable Universal Service Obligations*, 23 TELECOMMUNICATIONS POLICY (July 1999), p. 363-74.

APPENDIX 1

TOTAL UNIVERSAL SERVICE FUND PAYMENTS
($ MILLIONS)

	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
High Cost Fund (HCF)	1,132	1,188	1,263	1,690	1,718	2,235	2,592	2,935	3,259	3,488	3,734
Low Income (LI)	156	166	161	464	480	519	589	676	717	763	794
Rural Health Care (RHC)	0.0	0.0	0.0	3.4	4.3	10.3	18.6	21.4	18.8	30.2	41.1
Schools and Libraries (SL) Payments	0	0	0	1,401	1,662	1,650	1,660	1,477	1,406	254	55
Additional Commitments (SL)	*0*	*0*	*0*	*295*	*488*	*424*	*543*	*726*	*1,233*	*1,751*	*2,195*
Total Commitments (SL)	*0*	*0*	*0*	*1,696*	*2,150*	*2,074*	*2,203*	*2,203*	*2,639*	*2,006*	2,250
Total Expenditures	1,288	1,354	1,424	3,558	3,864	4,414	4,860	5,110	5,400	4,535	4,624
Including Additional Commitments from SL	*1,288*	*1,354*	*1,424*	*3,854*	*4,352*	*4,838*	*5,403*	*5,835*	*6,633*	*6,286*	*6,819*

Source: 1995-2004 data from the 2005 Monitoring Report, Tables 3.1, 2.2, 4.1, 5.1. RHC 2004 from the Second Quarter 2006 USAC Report, p.18. HC 2005 from Table 3.30 in the 2005 Monitoring Report. LI 2005 from the Fourth Quarter 2005 USAC Report pp.13-14. RHC 2005 from the Second Quarter 2006 USAC Report, p.18. SL 2005 disbursements from the Second Quarter 2006 USAC Report, p.25. The funding year 2005 for the SL fund through June 2006 – the total Commitments are assumed to reach the fund's cap of $2.25 billion. According to the Second Quarter 2006 USAC Report, as of Dec. 2005, $1.146 billion has already been committed.

APPENDIX 2

HIGH-COST SUPPORT FUND PAYMENTS
($ MILLIONS)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
High-Cost Loop Support (HCLS)	750	763	794	827	864	874	927	1,045	1,085	1,137	1,196
Safety Net Additive Support	0	0	0	0	0	0	0	0	9	12	15
Safety Valve Support	0	0	0	0	0	0	0	0	0	0	5
High-Cost Model Support	0	0	0	0	0	219	206	233	234	273	291
Long-Term Support (LTS)	382	426	470	473	473	478	492	493	504	275	0
Interstate Common Line Support (ICLS)	0	0	0	0	0	0	0	173	409	727	1,107
LTS + ICLS	*382*	*426*	*470*	*473*	*473*	*478*	*492*	*666*	*913*	*1,002*	*1,107*
Interstate Access Support (IAS)	0	0	0	0	0	279	577	615	622	642	675
Local Switching Support	0	0	0	390	380	385	390	376	396	422	445
Total High-Cost Support	1,132	1,188	1,263	1,690	1,718	2,235	2,592	2,935	3,259	3,488	3,734

Sub-funds do not sum to total due to rounding.
Source: 2005 Monitoring Report, Table 3.1.

APPENDIX 3

LOW INCOME SUPPORT

	Payments ($ Millions)		Beneficiaries (Millions)		Payment per Beneficiary ($)	
Year	**Lifeline**	**Link Up**	**Lifeline**	**Link Up**	**Lifeline**	**Link Up**
1995	137.3	18.4	4.91	0.82	27.94	22.33
1996	148.2	18.2	5.23	0.81	28.32	22.57
1997	147.6	13.7	5.11	1.5	28.88	9.13
1998	422	42.5	5.38	2.2	78.43	19.34
1999	446.2	34	5.64	1.83	79.11	18.53
2000	488.6	30.4	5.89	1.69	82.95	17.99
2001	558.6	30.9	6.2	1.69	90.08	18.22
2002	645.1	31.2	6.63	1.69	97.29	18.48
2003	685.7	30.8	6.64	1.68	103.31	18.38
2004	730.7	32.2	6.97	1.71	104.85	18.83

Source: 2005 Monitoring Report, Table 2.1 & 2.2.

APPENDIX 4

DISTRIBUTION OF SCHOOL & LIBRARY PAYMENTS

Year	Total Payments	Libraries	Schools	School Districts	Other Consortia	Internal Connections	Internet Access	Telecom
1998	$1,400,748	$50,325	$83,474	$1,070,822	$196,127	$797,976	$94,931	$472,265
1999	$1,662,142	$47,462	$140,312	$1,276,327	$198,042	$1,112,370	$95,836	$432,290
2000	$1,649,949	$43,718	$87,509	$1,386,150	$132,573	$1,035,433	$134,798	$479,718
2001	$1,659,630	$41,914	$120,884	$1,358,546	$138,287	$991,397	$149,281	$518,951
2002	$1,477,165	$41,117	$99,705	$1,178,487	$157,855	$721,945	$166,354	$588,866
2003	$1,405,803	$41,396	$107,343	$1,124,256	$132,809	$635,457	$184,497	$585,849
2004	$254,266	$10,367	$20,068	$193,541	$30,289	$60,462	$63,021	$130,783

Source: 2005 Monitoring Report, Table 4.1.

APPENDIX 5

ILEC PROFITABILITY

	EV/EBITDA[1]	P/E[2]	Price/Book[3]	EBITDA Margin[4]	Indicated Dividend Yield[5]	Spread (bps)[6]
LARGE-CAP TELCOS						
Verizon Communications, Inc.	5.16	12.82	2.29	37.72	4.94%	-11
AT&T, Inc.	9.00	14.96	1.81	31.49	5.20%	16
Bellsouth Corporation	7.61	17.90	2.52	41.89	3.52%	-153
Qwest Communications International, Inc.	6.40	N/A	N/A	28.20	N/A	N/A
Alltel Corporation	8.04	19.23	1.92	38.29	2.36%	-269
Average	7.24	16.22	2.14	35.52	4.01%	-104.00
MID-CAP RURAL TELCOS						
Centurytel, Inc.	5.40	15.11	1.42	51.16	0.64%	-441
Cincinnati Bell, Inc.	6.48	16.50	N/A	39.38	N/A	N/A
Citizens Communications Company	6.94	22.81	4.17	53.12	7.56%	252
Telephone and Data Systems, Inc.	5.81	25.70	1.35	26.57	0.97%	-408
Average	6.16	20.03	2.31	42.56	3.06%	-198.83
SMALL CAP RURAL TELCOS						
Alaska Communications Systems Group, Inc.	6.45	N/A	N/A	39.34	7.22%	218
Commonwealth Telephone Enterprises, Inc.	5.70	13.29	13.20	50.90	5.93%	89
Consolidated Communications Holdings, Inc.	N/A	N/A	2.29	N/A	10.11%	507
CT Communications, Inc.	4.86	17.01	1.27	31.37	3.05%	-200
D&E Communciations, Inc.	N/A	14.20	0.96	N/A	4.05%	-100
FairPoint Communications, Inc.	8.09	3.92	1.86	45.43	12.11%	707
General Communication, Inc.	6.56	27.09	2.43	34.45	N/A	N/A
Hector Communications Corporation	9.14	18.56	1.93	48.48	1.35%	-370
Hickory Tech Corporation	7.31	12.72	3.05	36.39	5.90%	86
Iowa Telecommunications Services, Inc.	7.73	11.98	2.03	54.31	8.84%	380
North Pittsburgh Systems, Inc.	5.12	15.91	3.62	45.07	3.16%	-189
Shenandoah Telecommunications Company	8.06	31.12	2.79	28.79	1.04%	-401
Surewest Communications	8.70	53.70	1.49	25.43	4.23%	-82
Warwick Valley Telephone Company	35.48	23.78	3.01	9.89	3.58%	-147
Average	9.43	20.27	3.07	37.49	5.43%	38.35

Source: Bloomberg.

[1] Defined as the ratio of enterprise value to trailing twelve month EBITDA. EV/EBITDA data correspond to December 31, 2005 except for those of Telephone and Data Systems and SureWest, which correspond to June 30, 2005.

[2] Defined as price to earnings ratio. Data as of April 14, 2006.

[3] Defined as the ratio of a stock's price divided by the book value per share. Data as of April 14, 2006.

[4] Defined as trailing twelve month EBITDA divided by trailing twelve month sales, times 100. Data as of April 14, 2006. EBITDA margin data correspond to December 31, 2005 except for those of Telephone and Data Systems and SureWest, which correspond to June 30, 2005.

[5] Company yields from Bloomberg as of April 14, 2006. Indicated yield defined as the annualized rate of a security's coupon or dividend as a percentage of the current market price.

[6] Spread defined as company dividend yield minus 10-year treasury yield in basis points. The 10 year treasury yield is 5.045%. Data from Bloomberg as of April 14, 2006.

APPENDIX 6

RURAL AND NON-RURAL ILEC CORPORATE EXPENSE

SUMMARY STATISTICS

RURAL AND NON-RURAL ILECS

Weighted Average Corporate Expense per Loop	$77.50
Median Corporate Expense per Loop	$150.46
ILECs count in sample	977
ILECs that exceed $50 (Corporate Expense/Loop)	947
ILECs that exceed $100 (Corporate Expense/Loop)	705
ILECs that exceed $150 (Corporate Expense/Loop)	490
ILECs that exceed $200 (Corporate Expense/Loop)	381
ILECs that exceed $250 (Corporate Expense/Loop)	301
ILECs that exceed $300 (Corporate Expense/Loop)	242
ILECs that exceed $500 (Corporate Expense/Loop)	85
ILECs that exceed $1000 (Corporate Expense/Loop)	16
ILECs that exceed $2500 (Corporate Expense/Loop)	3

RURAL ILECS

Weighted Average Corporate Expense per Loop	$98.58
Median Corporate Expense per Loop	$166.89
Rural ILECs count in sample	892
Rural ILECs that exceed $50 (Corporate Expense/Loop)	868
Rural ILECs that exceed $100 (Corporate Expense/Loop)	684
Rural ILECs that exceed $150 (Corporate Expense/Loop)	488
Rural ILECs that exceed $200 (Corporate Expense/Loop)	380
Rural ILECs that exceed $250 (Corporate Expense/Loop)	301
Rural ILECs that exceed $300 (Corporate Expense/Loop)	242
Rural ILECs that exceed $500 (Corporate Expense/Loop)	85
Rural ILECs that exceed $1000 (Corporate Expense/Loop)	16
Rural ILECs that exceed $2500 (Corporate Expense/Loop)	3

NON-RURAL ILECS

Weighted Average Corporate Expense per Loop	$74.85
Median Corporate Expense per Loop	$72.49
Non-Rural ILECs count in sample	85
Non-Rural ILECs that exceed $50 (Corporate Expense/Loop)	79
Non-Rural ILECs that exceed $100 (Corporate Expense/Loop)	21
Non-Rural ILECs that exceed $150 (Corporate Expense/Loop)	2
Non-Rural ILECs that exceed $200 (Corporate Expense/Loop)	1
Non-Rural ILECs that exceed $250 (Corporate Expense/Loop)	0
Non-Rural ILECs that exceed $300 (Corporate Expense/Loop)	0

Source: NECA, file "USF2005LC05.xls," http://www.fcc.gov/wcb/iatd/neca.html.

APPENDIX 7

2005 USF CONTRIBUTIONS AND RECEIPTS BY STATE
($ THOUSANDS)

State or Jurisdiction	High-Cost Support	Low-Income Support	Schools & Libraries	Rural Health Care	Total		Estimated Contributions		Estimated Net Dollar Flow
					Amount	% of Total	Amount	% of Total	
Mississippi	$186,961	$3,080	$24,420	$97	$214,558	3.78%	$50,504	0.88%	$164,054
Texas	$231,715	$66,709	$194,960	$3	$493,387	8.69%	$376,947	6.56%	$116,440
Alaska	$95,578	$3,907	$13,135	$11,138	$123,758	2.18%	$18,428	0.32%	$105,331
Arkansas	$136,215	$2,003	$12,451	$51	$150,720	2.66%	$48,922	0.85%	$101,798
Oklahoma	$101,990	$21,265	$36,574	$30	$159,859	2.82%	$64,602	1.12%	$95,257
Kansas	$127,849	$2,227	$9,989	$316	$140,381	2.47%	$51,475	0.90%	$88,906
Puerto Rico	$114,730	$11,849	$1,447	$0	$128,026	2.26%	$42,644	0.74%	$85,381
Louisiana	$104,532	$2,108	$34,820	$1	$141,462	2.49%	$79,445	1.38%	$62,016
Montana	$75,089	$2,185	$2,936	$463	$80,674	1.42%	$20,764	0.36%	$59,910
South Dakota	$56,535	$4,279	$3,529	$302	$64,645	1.14%	$14,050	0.24%	$50,594
North Dakota	$54,797	$3,168	$3,165	$390	$61,519	1.08%	$13,004	0.23%	$48,515
Alabama	$99,527	$3,120	$25,986	$27	$128,659	2.27%	$83,254	1.45%	$45,406
Wyoming	$55,526	$710	$1,193	$121	$57,550	1.01%	$12,667	0.22%	$44,883
New Mexico	$50,978	$7,630	$22,541	$155	$81,304	1.43%	$38,593	0.67%	$42,711
Iowa	$81,842	$4,475	$8,727	$127	$95,171	1.68%	$54,802	0.95%	$40,370
West Virginia	$68,429	$650	$5,564	$72	$74,715	1.32%	$36,526	0.64%	$38,189
Idaho	$54,001	$3,643	$2,977	$80	$60,700	1.07%	$28,532	0.50%	$32,168
Wisconsin	$103,452	$8,283	$10,982	$739	$123,456	2.18%	$96,767	1.68%	$26,689
Kentucky	$71,028	$7,166	$16,383	$450	$95,026	1.67%	$69,578	1.21%	$25,448
Minnesota	$95,466	$5,320	$16,540	$748	$118,075	2.08%	$93,855	1.63%	$24,220
Arizona	$78,320	$19,698	$35,537	$461	$134,016	2.36%	$110,660	1.92%	$23,356
Nebraska	$47,039	$2,151	$6,361	$594	$56,146	0.99%	$33,527	0.58%	$22,619
Vermont	$31,565	$3,024	$1,077	$1	$35,667	0.63%	$14,953	0.26%	$20,714
South Carolina	$76,058	$2,922	$24,879	$4	$103,863	1.83%	$83,569	1.45%	$20,295
Maine	$31,037	$9,471	$6,286	$2	$46,796	0.82%	$26,524	0.46%	$20,272
Virgin Islands	$21,653	$0	$3,170	$114	$24,936	0.44%	$5,058	0.09%	$19,879
Oregon	$71,498	$6,036	$11,010	$3	$88,547	1.56%	$71,889	1.25%	$16,659
Guam	$7,229	$437	$3,387	$0	$11,052	0.19%	$2,717	0.05%	$8,335
American Samoa	$1,959	$64	$1,792	$0	$3,816	0.07%	$109	0.00%	$3,707
Mariana Is.	$881	$82	$727	$0	$1,690	0.03%	$991	0.02%	$699
Missouri	$90,105	$4,231	$18,099	$63	$112,498	1.98%	$112,122	1.95%	$377
Georgia	$111,137	$8,187	$60,458	$70	$179,852	3.17%	$183,011	3.18%	-$3,159
Washington	$89,480	$17,334	$13,687	$38	$120,538	2.12%	$126,321	2.20%	-$5,783
Rhode Island	$56	$4,975	$7,126	$0	$12,157	0.21%	$20,543	0.36%	-$8,386
Colorado	$84,475	$3,993	$9,911	$105	$98,484	1.74%	$107,566	1.87%	-$9,082
Utah	$22,510	$2,542	$7,488	$548	$33,089	0.58%	$42,330	0.74%	-$9,242
Hawaii	$12,928	$769	$1,897	$212	$15,807	0.28%	$25,247	0.44%	-$9,440
Tennessee	$55,279	$6,245	$33,123	$9	$94,656	1.67%	$109,803	1.91%	-$15,147
New Hampshire	$11,831	$667	$1,667	$0	$14,165	0.25%	$30,913	0.54%	-$16,748
Delaware	$266	$282	$684	$0	$1,233	0.02%	$21,206	0.37%	-$19,973
Nevada	$28,053	$4,691	$4,430	$21	$37,195	0.66%	$57,528	1.00%	-$20,333
Dist. of Columbia	$0	$980	$1,307	$0	$2,287	0.04%	$28,673	0.50%	-$26,386
Indiana	$54,799	$5,161	$12,600	$19	$72,579	1.28%	$107,620	1.87%	-$35,041
California	$95,373	$301,411	$178,726	$242	$575,753	10.15%	$613,111	10.67%	-$37,357
North Carolina	$78,988	$14,239	$35,458	$71	$128,756	2.27%	$172,992	3.01%	-$44,236
Virginia	$79,165	$2,264	$24,877	$162	$106,469	1.88%	$172,306	3.00%	-$65,838
Connecticut	$2,211	$5,527	$9,259	$0	$16,998	0.30%	$87,282	1.52%	-$70,284
Michigan	$49,783	$11,474	$23,787	$433	$85,477	1.51%	$169,514	2.95%	-$84,037
Ohio	$38,047	$33,205	$39,789	$80	$111,121	1.96%	$195,484	3.40%	-$84,363
New York	$51,306	$53,514	$181,369	$14	$286,203	5.04%	$376,067	6.54%	-$89,863
Pennsylvania	$54,732	$15,743	$70,163	$19	$140,657	2.48%	$241,800	4.21%	-$101,143
Massachusetts	$2,253	$15,792	$13,420	$0	$31,465	0.55%	$140,153	2.44%	-$108,688
Maryland	$2,854	$503	$8,852	$0	$12,208	0.22%	$130,052	2.26%	-$117,844
Illinois	$52,604	$9,167	$40,823	$58	$102,652	1.81%	$230,376	4.01%	-$127,724
New Jersey	$1,155	$13,983	$30,051	$0	$45,190	0.80%	$215,211	3.74%	-$170,021
Florida	$84,700	$18,368	$34,205	$97	$137,370	2.42%	$386,162	6.72%	-$248,791
Total	3,487,572	762,907	1,405,803	18,752	5,675,034	100.00%	5,748,747	100.00%	-73,713

Source: 2005 Monitoring Report, Table 1.12.

APPENDIX 8

TOTAL USF RECEIPTS BY STATE (2001-2004)
($ THOUSANDS)

State or Jurisdiction	2001	2002	2003	2004	Change 2001-2004
Alabama	$110,205	$115,296	$113,269	$128,659	17%
Alaska	$93,317	$103,782	$117,837	$123,758	33%
American Samoa	$1,525	$2,802	$3,765	$3,816	150%
Arizona	$86,846	$116,868	$114,559	$134,016	54%
Arkansas	$89,925	$106,392	$128,816	$150,720	68%
California	$677,510	$592,271	$535,847	$575,753	-15%
Colorado	$74,565	$82,992	$100,554	$98,484	32%
Connecticut	$24,882	$23,440	$28,006	$16,998	-32%
Delaware	$1,696	$1,564	$1,661	$1,233	-27%
Dist. of Columbia	$8,400	$3,710	$7,365	$2,287	-73%
Florida	$132,119	$146,695	$138,450	$137,370	4%
Georgia	$144,074	$168,710	$163,352	$179,852	25%
Guam	$2,751	$4,869	$7,184	$11,052	302%
Hawaii	$8,082	$11,404	$12,705	$15,807	96%
Idaho	$48,173	$55,196	$58,179	$60,700	26%
Illinois	$143,506	$91,173	$113,820	$102,652	-28%
Indiana	$57,680	$65,532	$74,764	$72,579	26%
Iowa	$39,729	$49,686	$81,666	$95,171	140%
Kansas	$89,988	$103,213	$123,459	$140,381	56%
Kentucky	$61,940	$76,615	$84,584	$95,026	53%
Louisiana	$103,014	$113,626	$111,109	$141,462	37%
Maine	$41,690	$44,414	$43,305	$46,796	12%
Maryland	$21,631	$15,479	$18,714	$12,208	-44%
Massachusetts	$41,306	$44,641	$47,014	$31,465	-24%
Michigan	$93,491	$113,498	$89,635	$85,477	-9%
Minnesota	$67,885	$92,773	$101,077	$118,075	74%
Mississippi	$160,518	$196,833	$195,946	$214,558	34%
Missouri	$111,187	$113,704	$144,995	$112,498	1%
Montana	$55,927	$68,600	$71,975	$80,674	44%
Nebraska	$32,042	$39,484	$53,099	$56,146	75%
Nevada	$27,436	$31,071	$38,068	$37,195	36%
New Hampshire	$10,594	$12,781	$13,293	$14,165	34%
New Jersey	$42,035	$43,645	$43,350	$45,190	8%
New Mexico	$58,483	$93,754	$77,815	$81,304	39%
New York	$319,450	$416,093	$360,262	$286,203	-10%
North Carolina	$68,140	$91,472	$120,097	$128,756	89%
North Dakota	$30,715	$36,866	$57,615	$61,519	100%
Northern Mariana Is.	$3,894	$6,545	$2,868	$1,690	-57%
Ohio	$92,424	$120,874	$106,105	$111,121	20%
Oklahoma	$97,568	$123,532	$145,410	$159,859	64%
Oregon	$70,285	$81,404	$84,665	$88,547	26%
Pennsylvania	$90,972	$117,727	$137,141	$140,657	55%
Puerto Rico	$167,760	$108,392	$111,909	$128,026	-24%
Rhode Island	$7,961	$9,284	$11,998	$12,157	53%
South Carolina	$88,947	$107,293	$124,476	$103,863	17%
South Dakota	$27,158	$42,385	$54,507	$64,645	138%
Tennessee	$71,131	$87,147	$82,523	$94,656	33%
Texas	$294,733	$428,263	$455,302	$493,387	67%
Utah	$20,251	$25,585	$32,897	$33,089	63%
Vermont	$26,837	$30,107	$32,515	$35,667	33%
Virgin Islands	$25,945	$37,217	$27,897	$24,936	-4%
Virginia	$84,235	$90,334	$98,788	$106,469	26%
Washington	$99,574	$106,924	$107,248	$120,538	21%
West Virginia	$75,923	$86,300	$84,127	$74,715	-2%
Wisconsin	$83,127	$92,750	$126,068	$123,456	49%
Wyoming	$36,713	$43,563	$50,450	$57,550	57%
Total	$4,647,895	$5,236,571	$5,474,106	$5,675,034	22%

Sources: 2003-2004 data from 2005 Monitoring Report, Table 1.12. 2002 data from 2003 Monitoring Report, Table 1.12. 2001 data from the 2001 FCC Annual Filing, Appendix B (sum of all the 2001 sub fund totals).

APPENDIX 9

TOTAL HIGH-COST SUPPORT PAYMENTS BY STATE OR JURISDICTION - ILECS AND CETCS

	1999		2000		2001		2002		2003		2004		2005		
State or Jurisdiction	ILECs	CETCs	ILECs	CETCs	ILECs	CETCs	ILECs	CETCs	ILECs	CETCs	ILECs	CETCs	ILECs	CETCs	CETCs % of 2005 Total
Alabama	$36,318,951	$0	$88,214,302	$0	$93,882,843	$0	$99,840,657	$21,647	$89,293,506	$2,988,331	$93,301,596	$6,225,107	$98,078,741	$11,438,434	0.31%
Alaska	$67,816,605	$0	$70,315,653	$0	$74,543,499	$0	$79,633,434	$124,846	$88,850,054	$1,403,390	$91,903,208	$3,674,814	$102,690,426	$14,900,517	0.40%
American Samoa	$124,410	$0	$473,151	$0	$458,928	$0	$875,238	$0	$1,230,722	$0	$1,959,261	$0	$2,153,855	$0	0.00%
Arizona	$31,174,674	$0	$35,577,804	$0	$48,845,290	$1,060,306	$56,758,691	$4,632,839	$62,265,191	$5,816,508	$64,587,848	$13,732,372	$63,653,313	$13,911,048	0.37%
Arkansas	$73,247,163	$0	$71,691,402	$0	$75,398,793	$0	$101,091,641	$0	$112,277,219	$816,659	$105,983,271	$30,232,128	$107,245,490	$41,642,095	1.12%
California	$49,657,305	$0	$64,070,553	$0	$82,347,999	$0	$86,503,022	$24,999	$92,059,403	$123,276	$95,320,520	$52,770	$95,662,408	$92,844	0.00%
Colorado	$43,789,464	$0	$53,761,542	$0	$62,003,540	$0	$66,143,448	$688,329	$73,651,142	$2,876,978	$76,031,238	$8,443,922	$71,532,603	$6,397,544	0.17%
Connecticut	$958,953	$0	$952,617	$0	$1,192,074	$0	$1,506,436	$0	$2,242,663	$0	$2,211,289	$0	$2,238,580	$0	0.00%
Delaware	$0	$0	$199,512	$0	$385,947	$0	$373,665	$0	$320,397	$0	$266,283	$0	$267,078	$0	0.00%
District of Columbia	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	0.00%
Florida	$18,547,026	$0	$49,781,316	$0	$84,627,004	$0	$85,609,445	$0	$80,109,504	$0	$82,731,719	$1,968,584	$85,214,417	$5,640,492	0.15%
Georgia	$71,765,064	$0	$79,228,268	$0	$91,334,696	$0	$110,244,701	$0	$110,373,162	$0	$109,460,718	$1,676,740	$102,464,928	$7,635,360	0.20%
Guam	$2,321,256	$0	$3,169,872	$0	$2,318,838	$0	$1,969,968	$356,718	$4,572,924	$1,382,807	$5,085,360	$2,143,229	$10,219,298	$7,628,625	0.20%
Hawaii	$1,472,913	$0	$2,403,015	$0	$5,348,833	$0	$7,010,380	$0	$9,967,573	$0	$12,656,699	$271,666	$18,760,202	$11,641,153	0.31%
Idaho	$29,219,598	$0	$35,787,777	$0	$44,531,158	$0	$49,013,604	$0	$51,909,601	$0	$54,000,607	$0	$55,164,697	$0	0.00%
Illinois	$38,898,339	$0	$31,342,473	$0	$39,137,373	$0	$48,479,657	$5,241	$55,080,459	$2,406	$52,604,016	($201)	$60,521,346	$0	0.00%
Indiana	$17,058,453	$0	$30,488,022	$0	$42,060,071	$0	$47,141,468	$0	$53,149,059	$12,474	$54,644,085	$155,402	$56,167,142	$1,457,296	0.04%
Iowa	$25,802,260	$0	$30,643,488	$0	$35,233,563	$66,101	$43,224,375	$652,816	$54,547,156	$15,891,086	$54,843,012	$26,998,689	$57,090,230	$29,439,124	0.79%
Kansas	$64,603,071	$0	$67,053,729	$0	$81,019,830	$5,967	$94,268,913	$147,749	$108,785,249	$2,692,475	$119,978,055	$7,870,617	$130,018,958	$27,483,412	0.74%
Kentucky	$19,501,563	$0	$29,807,009	$0	$36,026,757	$0	$57,147,036	$0	$59,757,468	$15,999	$70,753,698	$274,041	$77,063,508	$1,305,212	0.03%
Louisiana	$63,648,414	$0	$72,467,664	$0	$80,748,606	$0	$87,583,016	$0	$91,029,193	$0	$89,434,032	$15,098,404	$86,126,898	$19,785,724	0.53%
Maine	$18,968,121	$0	$32,099,073	$0	$30,927,750	$0	$29,496,861	$0	$29,725,830	$832,312	$28,855,948	$2,181,541	$26,257,060	$3,061,715	0.08%
Maryland	$596,790	$0	$2,580,717	$0	$4,657,430	$0	$4,704,481	$0	$3,451,702	$0	$2,853,887	$0	$4,135,188	$0	0.00%
Massachusetts	$641,841	$0	$1,285,080	$0	$1,657,924	$0	$1,340,972	$0	$2,120,262	$0	$2,253,112	$0	$3,158,045	$0	0.00%
Michigan	$34,738,875	$0	$39,393,036	$0	$40,431,984	$10,688	$44,477,695	$800,750	$44,379,093	$1,553,320	$43,232,335	$6,551,023	$45,110,077	$7,869,973	0.21%
Minnesota	$41,442,858	$0	$48,130,605	$0	$49,698,983	$94,060	$65,788,105	$104,776	$78,599,334	$2,039,645	$75,387,769	$20,078,152	$83,905,707	$25,738,855	0.69%
Mississippi	$26,773,044	$0	$132,785,751	$0	$141,139,843	$0	$149,589,072	$20,997,855	$145,961,305	$24,339,170	$145,721,088	$41,239,604	$148,326,305	$59,102,764	1.58%
Missouri	$50,654,082	$0	$65,568,381	$0	$73,621,807	$59,280	$84,225,880	$90,201	$92,095,987	$75,773	$89,939,186	$166,041	$91,439,016	$70,299	0.00%
Montana	$43,346,418	$0	$45,254,916	$0	$51,504,570	$189,660	$62,361,590	$470,874	$65,692,180	$622,224	$73,896,331	$1,192,629	$74,281,258	$1,262,489	0.03%
Nebraska	$21,377,097	$0	$23,729,919	$0	$26,378,585	$0	$31,464,331	$0	$44,359,887	$0	$46,976,759	$62,706	$53,893,048	$948,068	0.03%
Nevada	$10,994,325	$0	$15,066,537	$0	$22,846,950	$63	$22,973,633	$289,777	$26,224,437	$3,907,911	$24,395,004	$3,657,808	$25,490,305	$5,102,155	0.14%
New Hampshire	$8,506,026	$0	$8,489,304	$0	$9,433,625	$0	$11,898,687	$0	$11,384,021	$0	$11,831,100	$0	$9,679,157	$0	0.00%
New Jersey	$993,234	$0	$3,688,155	$0	$6,020,140	$0	$3,491,193	$0	$1,533,302	$0	$1,155,013	$0	$1,281,699	$0	0.00%
New Mexico	$34,527,114	$0	$37,100,202	$0	$41,421,404	$0	$46,221,145	$210,478	$46,776,559	$3,770,150	$47,332,128	$3,645,984	$48,410,483	$6,572,483	0.18%
New York	$37,395,060	$0	$51,532,557	$0	$59,460,149	$482,043	$55,659,061	$523,518	$51,104,130	$729,603	$51,084,646	$221,818	$50,373,510	$799,014	0.02%
North Carolina	$31,719,741	$0	$33,997,699	$0	$38,944,285	$0	$55,742,932	$0	$71,561,647	$0	$77,835,982	$1,152,320	$75,309,078	$5,087,955	0.14%
North Dakota	$21,703,062	$0	$25,437,877	$0	$28,584,627	$0	$31,654,811	$89,341	$39,959,801	$11,056,151	$39,268,717	$15,527,855	$38,156,420	$21,863,654	0.59%
N. Mariana Islands	$5,529,978	$0	$3,257,226	$0	$3,594,740	$0	$3,526,267	$0	$1,652,912	$0	$793,107	$87,888	$884,920	$184,002	0.00%
Ohio	$15,056,667	$0	$19,503,900	$0	$29,246,406	$0	$33,911,495	$0	$38,248,134	$0	$38,046,726	$0	$39,165,091	$0	0.00%
Oklahoma	$58,345,860	$0	$67,401,390	$0	$76,622,223	$0	$85,800,208	$27,921	$106,262,224	($18,225)	$101,305,609	$684,134	$107,654,769	$8,396,847	0.22%
Oregon	$36,809,835	$0	$47,354,850	$0	$60,851,409	$0	$67,392,263	$0	$70,843,149	$0	$67,102,946	$4,395,399	$66,730,477	$5,893,009	0.16%
Pennsylvania	$21,611,712	$0	$28,472,919	$0	$35,438,459	$0	$42,712,402	$0	$55,174,266	$0	$54,276,629	$455,574	$63,655,487	$1,487,994	0.04%
Puerto Rico	$132,925,644	$534,012	$139,946,898	$1,494,642	$111,508,014	$6,440,727	$86,185,212	$10,363,326	$85,955,805	$13,672,345	$79,609,986	$35,119,682	$67,210,566	$43,181,439	1.16%
Rhode Island	$0	$0	$25,686	$0	$96,477	$0	$60,198	$0	$46,491	$0	$56,457	$0	$56,379	$0	0.00%
South Carolina	$40,003,113	$0	$46,068,145	$0	$55,646,667	$0	$71,350,010	$0	$79,517,759	$0	$76,057,884	$0	$79,302,436	$0	0.00%
South Dakota	$19,478,967	$0	$22,225,041	$0	$23,913,594	$0	$32,003,665	$347,297	$40,952,744	$7,612,395	$43,508,729	$13,026,119	$52,824,465	$16,229,435	0.43%
Tennessee	$28,449,801	$0	$34,482,177	$0	$40,665,639	$69,516	$46,063,270	$292,623	$52,740,553	$139,741	$54,941,598	$337,750	$56,143,200	$1,129,167	0.03%
Texas	$118,600,308	$0	$138,101,139	$0	$167,610,051	$99,339	$188,031,058	$1,152,675	$211,301,637	$2,278,421	$230,189,149	$1,525,835	$221,860,991	$3,070,840	0.08%
Utah	$10,178,430	$0	$12,535,251	$0	$14,109,453	$0	$18,079,066	$0	$23,912,518	$0	$22,510,329	$0	$24,399,500	$0	0.00%
Vermont	$11,248,704	$0	$26,244,471	$0	$22,593,331	$0	$25,804,315	$0	$27,501,079	$638,436	$28,816,045	$2,748,895	$28,573,518	$2,481,939	0.07%
Virgin Islands	$22,973,160	$0	$23,786,676	$0	$25,253,094	$0	$27,525,044	$0	$26,869,011	$0	$21,652,518	$0	$24,759,986	$0	0.00%
Virginia	$12,837,387	$0	$38,477,018	$0	$64,489,462	$0	$69,908,969	$0	$76,629,469	$261	$76,267,360	$2,897,967	$78,196,015	$5,454,665	0.15%
Washington	$43,165,287	$0	$53,885,595	$0	$68,815,275	$8,232,717	$75,016,670	$3,030,131	$72,354,489	$7,939,390	$68,469,877	$21,009,637	$67,065,957	$19,658,385	0.53%
West Virginia	$22,991,175	$0	$63,450,822	$0	$72,163,053	$0	$80,382,176	$83,529	$76,909,660	$1,539,760	$64,008,144	$4,420,527	$60,463,001	$6,467,400	0.17%
Wisconsin	$50,982,323	$0	$54,591,597	$0	$58,828,654	$90	$68,344,845	$203,841	$83,112,053	$7,835,222	$86,015,664	$17,436,695	$96,222,160	$29,948,395	0.80%
Wyoming	$25,954,848	$0	$29,896,680	$0	$35,057,650	$137,400	$41,262,316	$348,567	$43,036,041	$5,034,146	$41,106,041	$14,419,920	$41,195,123	$14,777,115	0.40%
Industry	$1,717,446,369	$534,012	$2,233,276,459	$1,494,642	$2,574,679,349	$16,947,957	$2,888,868,695	$46,082,664	$3,129,421,116	$129,620,540	$3,154,510,318	$333,061,787	$3,237,905,679	$496,238,937	13.29%

Source: 2005 Monitoring Report, Table 3.

APPENDIX 10

TOP RURAL ILECs BY DOLLAR PER LOOP

State	Study Area	ID	Pop. (2005) (Thousands)	Agg. Income (2005) (Millions)	Agg. Income per capita	Hhlds (2005)	Agg. Net Worth/ Hhld	Hhlds Net Worth > $250,000		Value of Home Equity per Hhld	High Cost Payments (HCP) (2005)	HCP per capita	Number of Working Lines	HCP per Line	Corp. Exp. per Line
								Number	%						
	NATIONAL TOTAL	-	294,865	$7,176,681	$24,339	109,554,662	$143,226	12,853,352	11.73%	$214,543	$3,734,144,616	$13	174,718,390	$21	$78
	SAMPLE TOTAL	-	538	$9,628	$17,886	198,760	$139,942	22,057	11.10%	$200,683	$352,735,047	$655	261,839	$1,346	N/A
WY	Jackson, WY (at Jackson Hole Valley)		15	$425	$27,742	6,787	$145,331	847	12.48%	$226,199	$2,232,536	$146	7,930	$282	N/A
	ALASKA (TOTAL IN SAMPLE)	-	28	$751	$26,824	9,033	$148,185	1,120	12.40%	$226,881	$23,825,301	$851	16,588	$1,436	$378
AK	ARCTIC SLOPE TEL. ASSOCIATION COOP.INC.	613001	7	$216	$30,510	2,257	$154,096	296	13.11%	$241,023	$4,660,617	$659	2,659	$1,753	$478
AK	BUSH-TELL INC.	613004	1	$15	$13,268	316	$138,721	35	11.08%	$204,484	$1,148,434	$1,003	1,024	$1,122	$602
AK	COPPER VALLEY TEL. COOP. INC.	613006	6	$172	$27,423	2,519	$152,753	312	12.39%	$228,631	$8,518,400	$1,356	6,130	$1,390	$300
AK	INTERIOR TELEPHONE COMPANY INC.	613011	6	$192	$32,542	1,542	$146,016	200	12.97%	$230,257	$6,338,727	$1,072	4,959	$1,278	$307
AK	MUKLUK TEL. COMPANY, INC.	613016	7	$139	$20,214	2,105	$140,214	243	11.54%	$212,767	$2,399,355	$349	1,566	$1,532	$425
AK	SUMMIT TEL & TEL CO OF ALASKA	613028	1	$16	$23,065	294	$142,285	34	11.56%	$210,745	$759,768	$1,085	250	$3,039	$1,473
AK	YUKON TELEPHONE COMPANY, INC.	613025	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$609,671	N/A	591	$1,032	$582
	ARIZONA (TOTAL IN SAMPLE)	-	31	$520	$16,874	10,742	$146,768	1,240	11.54%	$208,626	$17,393,154	$565	11,597	$1,500	$348
AZ	ACCIPITER COMMUNICATIONS, INC.	452191	8	$253	$30,794	3,810	$169,712	547	14.36%	$243,586	$1,517,008	$184	219	$6,927	$2,113
AZ	MIDVALE TELEPHONE EXCHANGE, INC.-ARIZONA	452226	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$1,432,296	N/A	1,093	$1,310	$312
AZ	SADDLEBACK COMMUNICATIONS COMPANY	457991	11	$148	$13,440	3,563	$134,225	369	10.36%	$193,726	$2,625,577	$239	768	$3,419	$732
AZ	SAN CARLOS APACHE TELECOMM. UTILITY, INC.	452169	6	$41	$6,352	1,612	$129,792	139	8.62%	$178,982	$2,570,040	$398	2,633	$976	$359
AZ	VALLEY TELEPHONE COOPERATIVE INC-AZ	452176	5	$77	$15,149	1,757	$138,028	185	10.53%	$190,229	$10,680,529	$2,094	7,977	$1,339	$255
	ARKANSAS (TOTAL IN SAMPLE)	-	2	$39	$16,123	974	$136,586	99	10.16%	$190,633	$318,736	$132	122	$2,613	$1,082
AR	SCOTT COUNTY TELEPHONE COMPANY	403031	2	$39	$16,123	974	$136,586	99	10.16%	$190,633	$318,736	$132	122	$2,613	$1,082
	CALIFORNIA (TOTAL IN SAMPLE)	-	21	$439	$20,617	7,118	$145,450	833	11.70%	$211,770	$13,902,660	$653	13,784	$1,009	$348
CA	CAL-ORE TELEPHONE CO.	542311	3	$46	$15,277	1,139	$129,286	114	10.01%	$181,098	$2,519,892	$834	2,660	$947	$465
CA	DUCOR TELEPHONE COMPANY	542313	4	$33	$7,959	922	$112,916	80	8.68%	$165,121	$1,952,358	$466	1,245	$1,568	$821
CA	PINNACLES TELEPHONE COMPANY	542346	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$619,616	N/A	289	$2,144	$752
CA	THE PONDEROSA TELEPHONE COMPANY	542332	14	$360	$25,524	5,057	$155,022	639	12.64%	$227,183	$9,430,409	$669	9,879	$955	$258
	COLORADO (TOTAL IN SAMPLE)	-	13	$291	$23,089	5,187	$142,220	596	11.49%	$206,039	$9,175,951	$728	7,151	$1,283	$410
CO	AGATE MUTUAL TELEPHONE COOPERATIVE ASSOC.	462178	1	$18	$23,693	309	$140,267	37	11.97%	$202,177	$292,125	$386	168	$1,739	$940
CO	BLANCA TELEPHONE CO.	462182	2	$26	$15,978	798	$136,321	80	10.03%	$186,931	$2,186,953	$1,322	1,377	$1,588	$335
CO	FARMERS TEL CO, INC. - COLORADO	462188	1	$33	$25,653	535	$150,982	65	12.15%	$216,923	$673,436	$522	546	$1,233	$537
CO	NUNN TEL. COMPANY	462194	2	$48	$27,118	679	$144,789	81	11.93%	$215,915	$763,868	$428	696	$1,098	$466
CO	PLAINS COOPERATIVE TEL. ASSOC. INC.	462199	1	$33	$27,403	569	$138,876	63	11.07%	$197,330	$1,616,178	$1,336	1,538	$1,051	$359
CO	ROGGEN TELEPHONE COOPERATIVE CO.	462202	4	$88	$21,068	1,553	$139,270	179	11.53%	$208,199	$394,230	$94	295	$1,336	$632
CO	SOUTH PARK TELEPHONE COMPANY	462195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$795,568	N/A	201	$3,958	$1,138
CO	THE RYE TELEPHONE CO. INC.	462203	2	$44	$25,454	744	$149,432	91	12.23%	$213,450	$3,249,160	$1,890	2,531	$1,284	$383
	HAWAII (TOTAL IN SAMPLE)	-	7	$143	$19,346	2,263	$131,720	251	11.09%	$196,257	$16,521,509	$2,237	1,238	$13,345	$3,473
HI	SANDWICH ISLES COMMUNICATIONS, INC.	623021	7	$143	$19,346	2,263	$131,720	251	11.09%	$196,257	$16,521,509	$2,237	1,238	$13,345	$3,473
	IOWA (TOTAL IN SAMPLE)	-	1	$21	$15,655	576	$137,912	64	11.11%	$194,735	$329,322	$244	366	$900	N/A

APPENDIX 10

TOP RURAL ILECs BY DOLLAR PER LOOP

State	Study Area	ID	Pop. (2005) (Thousands)	Agg. Income (2005) (Millions)	Agg. Income per capita	Hhlds (2005)	Agg. Net Worth/ Hhld	Hhlds Net Worth > $250,000		Value of Home Equity per Hhld	High Cost Payments (HCP) (2005)	HCP per capita	Number of Working Lines	HCP per Line	Corp. Exp. per Line
								Number	%						
IA	JORDAN SOLDIER VAL COOP. TEL. CO.	351213	1	$21	$15,655	576	$137,912	64	11.11%	$194,735	$329,322	$244	366	$900	N/A
	IDAHO (TOTAL IN SAMPLE)	-	10	$181	$18,393	4,023	$144,291	461	11.46%	$202,032	$12,614,902	$1,284	11,104	$1,136	$326
ID	CUSTER TEL. COOPERATIVE INC.	472218	2	$28	$16,317	783	$140,301	85	10.86%	$193,358	$2,800,504	$1,644	2,352	$1,191	$237
ID	DIRECT COMMUNICATIONS ROCKLAND, INC.	472232	3	$41	$15,824	995	$145,005	115	11.56%	$201,547	$1,447,951	$562	1,314	$1,102	$534
ID	INLAND TELEPHONE COMPANY - ID	472423	1	$25	$18,799	581	$145,896	68	11.70%	$205,487	$429,590	$323	402	$1,069	$439
ID	MIDVALE TEL. EXCH. INC.	472226	2	$43	$23,862	722	$147,794	85	11.77%	$210,413	$1,408,311	$777	1,121	$1,256	$427
ID	RURAL TELEPHONE COMPANY - ID	472233	0	$6	$16,738	202	$142,889	22	10.89%	$189,587	$1,046,824	$2,814	718	$1,458	$621
ID	SILVER STAR TEL. CO. INC.-ID	472295	2	$38	$18,548	740	$143,258	86	11.62%	$204,367	$5,481,723	$2,700	5,197	$1,055	$239
	ILLINOIS (TOTAL IN SAMPLE)	-	14	$308	$22,218	5,739	$141,183	668	11.64%	$204,652	$6,327,172	$456	3,200	$1,977	$700
IL	HOME TEL. CO.-ST. JACOB	341032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$1,823,688	N/A	1,039	$1,755	$883
IL	LEAF RIVER TEL. CO.	341045	1	$28	$24,209	432	$140,403	53	12.27%	$203,809	$849,276	$739	579	$1,467	$639
IL	MADISON TEL. CO.	341049	13	$280	$22,038	5,307	$141,247	615	11.59%	$204,721	$3,654,208	$287	1,582	$2,310	$721
	INDIANA (TOTAL IN SAMPLE)	-	2	$31	$15,886	695	$140,537	77	11.08%	$203,335	$633,710	$326	648	$978	$288
IN	BLOOMINGDALE HOME TEL. CO., INC.	320742	2	$31	$15,886	695	$140,537	77	11.08%	$203,335	$633,710	$326	648	$978	$288
	KANSAS (TOTAL IN SAMPLE)	-	94	$1,815	$19,203	38,333	$139,492	4,351	11.35%	$199,769	$79,720,854	$844	60,005	$1,329	$337
KS	BLUE VALLEY TELEPHONE COMPANY	411746	10	$173	$17,633	3,944	$137,114	433	10.98%	$193,343	$4,923,415	$503	3,058	$1,610	$456
KS	COUNCIL GROVE TEL. CO.	411758	3	$62	$19,412	1,362	$136,248	151	11.09%	$193,543	$2,038,005	$636	2,055	$992	$124
KS	GOLDEN BELT TELEPHONE ASSN. INC.	411777	9	$179	$19,435	4,149	$138,286	467	11.26%	$196,571	$5,631,791	$611	6,305	$893	$185
KS	GORHAM TELEPHONE COMPANY INC.	411778	0	$7	$16,663	221	$136,960	24	10.86%	$185,594	$319,102	$722	326	$979	$744
KS	HAVILAND TELEPHONE COMPANY INC.	411780	7	$134	$19,348	2,578	$142,899	304	11.79%	$207,683	$4,816,116	$693	3,893	$1,237	$294
KS	HOME TELEPHONE COMPANY INC.	411782	5	$94	$20,317	1,730	$143,120	206	11.91%	$211,767	$1,885,300	$406	2,051	$919	$223
KS	KANOKLA TEL. ASSOC. INC.- KS	411788	4	$80	$22,066	1,532	$139,421	171	11.16%	$196,038	$4,101,704	$1,134	2,365	$1,734	$720
KS	MADISON TELEPHONE, LLC	411801	1	$15	$16,575	375	$133,550	40	10.67%	$188,521	$1,058,489	$1,162	771	$1,373	$549
KS	MOUNDRIDGE TEL. CO.	411808	5	$105	$20,506	1,999	$137,852	234	11.71%	$199,021	$2,560,264	$501	2,897	$884	$442
KS	MUTUAL TELEPHONE COMPANY	411809	1	$14	$16,642	310	$135,763	33	10.65%	$193,969	$618,150	$750	505	$1,224	$680
KS	PEOPLES TELECOMMUNICATIONS, LLC	411814	3	$71	$21,077	1,321	$141,361	155	11.73%	$204,634	$2,326,733	$687	1,801	$1,292	$399
KS	RAINBOW TEL COOPERATIVE ASSN INC.	411820	5	$88	$18,282	1,911	$137,542	208	10.88%	$195,331	$2,570,212	$532	1,899	$1,353	$328
KS	RURAL TEL. SERVICE CO.,INC.	411826	15	$264	$17,921	6,423	$138,035	712	11.09%	$193,960	$17,691,540	$1,199	10,653	$1,661	$163
KS	S & A TEL. CO.,INC.	411829	2	$36	$17,890	781	$138,925	90	11.52%	$202,562	$1,191,167	$586	919	$1,296	$807
KS	S & T TEL. COOP. ASSN.	411827	5	$103	$21,073	2,203	$140,630	250	11.35%	$199,985	$6,828,268	$1,394	2,933	$2,328	$410
KS	SOUTH CENTRAL TEL. ASSN. INC.-KS	411831	1	$29	$19,758	606	$142,868	71	11.72%	$200,433	$4,003,702	$2,718	1,925	$2,080	$601
KS	SOUTHERN KANSAS TEL. CO.,INC.	411833	9	$179	$19,003	3,318	$143,274	389	11.72%	$212,232	$7,055,881	$750	4,882	$1,445	$458
KS	TWIN VALLEY TEL. INC.-KS	411840	3	$65	$19,205	1,365	$140,512	157	11.50%	$202,133	$2,052,127	$604	2,331	$880	$555
KS	UNITED TELEPHONE ASSN. INC.	411841	1	$23	$20,117	497	$138,434	56	11.27%	$196,712	$5,729,704	$5,048	5,831	$983	$204
KS	WHEAT STATE TELEPHONE, INC.	411847	4	$91	$20,442	1,708	$141,936	200	11.71%	$208,872	$2,319,182	$519	2,605	$890	$350
KS	ZENDA TELEPHONE COMPANY INC.	411852	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$248,555	N/A	225	$1,105	$1,231
	LOUISIANA (TOTAL IN SAMPLE)	-	12	$184	$15,143	4,565	$139,799	472	10.34%	$196,770	$4,606,986	$379	4,477	$1,029	$294
LA	ELIZABETH TEL. CO., INC.	270430	8	$121	$15,696	2,920	$140,942	307	10.51%	$199,640	$3,487,746	$452	3,434	$1,016	$200
LA	NORTHEAST LOUISIANA TEL. CO., INC.	270435	4	$63	$14,188	1,645	$137,771	165	10.03%	$191,675	$1,119,240	$251	1,043	$1,073	$599

APPENDIX 10

TOP RURAL ILECs BY DOLLAR PER LOOP

State	Study Area	ID	Pop. (2005) (Thousands)	Agg. Income (2005) (Millions)	Agg. Income per capita	Hhlds (2005)	Agg. Net Worth/ Hhld	Hhlds Net Worth > $250,000		Value of Home Equity per Hhld	High Cost Payments (HCP) (2005)	HCP per capita	Number of Working Lines	HCP per Line	Corp. Exp. per Line
								Number	%						
	MINNESOTA (TOTAL IN SAMPLE)	-	2	$52	$24,034	1,258	$142,973	136	10.81%	$195,890	$1,916,456	$892	2,090	$917	$562
MN	JOHNSON TELEPHONE COMPANY	361410	2	$52	$24,034	1,258	$142,973	136	10.81%	$195,890	$1,916,456	$892	2,090	$917	$562
	MISSOURI (TOTAL IN SAMPLE)	-	6	$98	$16,670	2,292	$135,862	233	10.17%	$193,481	$2,576,893	$438	1,606	$1,605	$576
MO	LE-RU TELEPHONE COMPANY	421908	6	$98	$16,670	2,292	$135,862	233	10.17%	$193,481	$2,576,893	$438	1,606	$1,605	$576
MO	NEW FLORENCE TELEPHONE CO.	421927	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$476,299	N/A	531	$897	$333
	MISSISSIPPI (TOTAL IN SAMPLE)	-	3	$35	$14,065	950	$136,838	96	10.11%	$192,510	$1,491,841	$596	804	$1,856	$952
MS	GEORGETOWN TELE. CO., INC.	280456	1	$13	$18,897	240	$139,482	24	10.00%	$194,550	$877,657	$1,320	391	$2,245	$1,267
MS	LAKESIDE TEL. CO., INC.	280457	2	$23	$12,318	710	$135,944	72	10.14%	$191,820	$614,184	$334	413	$1,487	$661
	MONTANA (TOTAL IN SAMPLE)	-	4	$57	$15,781	1,397	$140,963	154	11.02%	$197,964	$4,728,114	$1,315	3,652	$1,295	$313
MT	INTERBEL TEL. COOPERATIVE INC.	482242	2	$24	$14,677	668	$141,468	73	10.93%	$196,305	$3,217,738	$1,951	2,137	$1,506	$333
MT	NORTHERN TEL. COOP INC.- MT	482248	2	$33	$16,716	729	$140,500	81	11.11%	$199,485	$1,510,376	$776	1,515	$997	$286
	NEBRASKA (TOTAL IN SAMPLE)	-	22	$413	$18,443	8,998	$137,587	1,005	11.17%	$196,133	$14,144,007	$631	10,480	$1,350	$553
NE	BENKELMAN TELEPHONE COMPANY INC.	372455	2	$35	$16,322	928	$135,292	100	10.78%	$189,349	$1,464,476	$679	1,216	$1,204	$433
NE	CURTIS TELEPHONE COMPANY	371536	3	$57	$18,284	1,232	$132,782	129	10.47%	$188,992	$1,006,235	$324	908	$1,108	$648
NE	DALTON TEL. CO.,INC.	371537	1	$22	$18,680	501	$140,765	56	11.18%	$201,513	$2,400,729	$2,036	1,262	$1,902	$335
NE	DILLER TELEPHONE COMPANY	371540	1	$22	$18,062	454	$140,779	53	11.67%	$204,147	$852,468	$712	930	$917	$898
NE	ELSIE COMMUNICATIONS, INC.	371518	1	$19	$21,650	345	$143,766	41	11.88%	$211,282	$710,707	$807	232	$3,063	$751
NE	GLENWOOD TELEPHONE MEMBERSHIP CORP.	371553	5	$85	$17,273	1,903	$138,026	215	11.30%	$198,701	$3,022,416	$617	2,552	$1,184	$346
NE	HARTMAN TELEPHONE EXCHANGES INC.	371557	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$634,800	N/A	432	$1,469	$902
NE	HEMINGFORD COOP. TELEPHONE COMPANY	371558	2	$37	$24,087	625	$140,791	71	11.36%	$199,978	$1,731,825	$1,121	993	$1,744	$1,071
NE	KEYSTONE-ARTHUR TELEPHONE COMPANY	371567	2	$35	$21,302	841	$144,772	99	11.77%	$200,357	$616,808	$372	617	$1,000	$662
NE	STANTON TELECOM INC.	371592	4	$75	$17,372	1,568	$134,005	174	11.10%	$192,471	$1,221,988	$282	1,134	$1,078	$482
NE	WAUNETA TEL. CO.	371597	1	$27	$17,981	601	$136,948	67	11.15%	$193,527	$1,116,356	$757	636	$1,755	$634
	NEW MEXICO (TOTAL IN SAMPLE)	-	47	$690	$14,591	17,398	$136,875	1,819	10.46%	$191,266	$24,704,905	$522	16,964	$1,456	$482
NM	BACA VALLEY TEL. CO.	492259	2	$31	$16,135	697	$136,728	77	11.05%	$193,029	$1,173,893	$616	856	$1,371	$981
NM	DELL TELEPHONE CO-OP. INC.-NM	492066	5	$50	$9,268	1,580	$127,085	145	9.18%	$179,683	$1,369,122	$252	504	$2,717	$1,195
NM	LEACO RURAL TEL. COOPERATIVE INC.	492264	8	$93	$12,199	2,512	$132,613	261	10.39%	$188,347	$3,906,152	$510	2,401	$1,627	$333
NM	MESCALERO APACHE TELECOM, INC.	491231	3	$32	$9,721	894	$121,202	77	8.61%	$175,377	$2,977,053	$907	1,270	$2,344	$712
NM	PENASCO VALLEY TEL. COOPERATIVE INC.	492270	6	$132	$22,079	2,195	$143,594	250	11.39%	$206,348	$5,893,919	$983	3,600	$1,637	$470
NM	VALLEY TELEPHONE COOPERATIVE INC-NM	492176	5	$76	$13,990	2,046	$137,504	207	10.12%	$187,113	$2,729,200	$502	1,359	$2,008	$286
NM	WESTERN NEW MEXICO TEL. CO., INC.	492268	18	$275	$15,649	7,474	$140,119	802	10.73%	$193,140	$6,655,565	$378	6,974	$954	$439
	NEVADA (TOTAL IN SAMPLE)	-	18	$435	$24,041	5,848	$143,711	695	11.88%	$215,552	$3,559,570	$197	2,345	$1,518	$733
NV	BEEHIVE TELEPHONE COMPANY, INC., NV	552284	7	$148	$21,042	2,002	$126,140	208	10.39%	$188,383	$452,066	$64	140	$3,229	$2,640
NV	HUMBOLDT TELEPHONE COMPANY	553304	4	$90	$21,406	1,413	$142,670	169	11.96%	$210,154	$2,090,645	$495	1,063	$1,967	$419
NV	RURAL TELEPHONE COMPANY - NV	552233	7	$197	$28,742	2,433	$158,775	318	13.07%	$241,043	$1,016,859	$148	1,142	$890	$751
	OKLAHOMA (TOTAL IN SAMPLE)	-	55	$839	$15,283	20,730	$137,250	2,186	10.55%	$192,568	$31,891,099	$581	29,124	$1,095	$335

APPENDIX 10

TOP RURAL ILECs BY DOLLAR PER LOOP

State	Study Area	ID	Pop. (2005) (Thousands)	Agg. Income (2005) (Millions)	Agg. Income per capita	Hhlds (2005)	Agg. Net Worth/ Hhld	Hhlds Net Worth > $250,000		Value of Home Equity per Hhld	High Cost Payments (HCP) (2005)	HCP per capita	Number of Working Lines	HCP per Line	Corp. Exp. per Line
								Number	%						
OK	CANADIAN VALLEY TELEPHONE CO.	431974	2	$37	$15,039	1,029	$143,691	110	10.69%	$196,270	$1,311,163	$533	1,267	$1,035	$419
OK	CHICKASAW TELEPHONE CO.	431980	16	$254	$15,966	5,891	$133,000	621	10.54%	$190,023	$9,765,191	$614	8,981	$1,087	$223
OK	CROSS TELEPHONE CO.	431985	16	$203	$12,853	5,877	$136,634	597	10.16%	$190,112	$9,525,152	$603	10,191	$935	$351
OK	DOBSON TELEPHONE CO.	431988	7	$130	$17,658	3,181	$139,908	346	10.88%	$194,733	$3,984,142	$543	4,401	$905	$257
OK	KANOKLA TELEPHONE ASSN.INC. - OK	431788	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$1,790,263	N/A	1,297	$1,380	$464
OK	POTTAWATOMIE TELEPHONE CO.	432020	8	$116	$15,049	2,900	$140,854	313	10.79%	$198,294	$2,970,270	$385	2,585	$1,149	$595
OK	SHIDLER TEL. CO.	432023	5	$80	$17,299	1,381	$137,827	148	10.72%	$193,030	$1,449,486	$314	1,030	$1,407	$396
OK	SOUTH CENTRAL TEL. ASSN., INC.-OK	431831	1	$14	$23,128	249	$145,463	29	11.65%	$205,466	$1,048,376	$1,750	387	$2,709	$752
OK	TERRAL TEL. CO.	432029	0	$6	$12,053	222	$138,497	22	9.91%	$184,805	$1,837,319	$3,884	282	$6,515	$1,246
	OREGON (TOTAL IN SAMPLE)	-	10	$189	$18,404	4,106	$136,133	460	11.20%	$196,007	$6,937,083	$677	4,521	$1,534	$523
OR	EAGLE TELEPHONE SYSTEM INC.	532369	0	$8	$18,448	200	$146,732	23	11.50%	$203,099	$525,546	$1,234	479	$1,097	$629
OR	HELIX TELEPHONE COMPANY	532376	3	$61	$18,025	1,333	$133,781	151	11.33%	$193,461	$451,679	$134	337	$1,340	$768
OR	MONROE TELEPHONE COMPANY	532385	2	$47	$20,424	915	$135,707	102	11.15%	$199,678	$1,022,661	$446	1,038	$985	$435
OR	OREGON-IDAHO UTILITIES, INC.	532390	2	$21	$12,472	596	$139,264	66	11.07%	$198,276	$1,856,069	$1,107	735	$2,525	$642
OR	PINE TELEPHONE SYSTEM INC. - OR	532392	1	$22	$18,379	579	$135,929	61	10.54%	$186,010	$1,842,455	$1,550	1,011	$1,822	$415
OR	ROOME TELECOMMUNICATIONS INC.	532375	1	$18	$20,768	313	$132,723	36	11.50%	$201,690	$1,007,952	$1,159	692	$1,457	$458
OR	TRANS-CASCADES TELEPHONE COMPANY	532378	0	$12	$29,055	170	$140,389	21	12.35%	$203,489	$230,721	$540	229	$1,008	$682
	SOUTH DAKOTA (TOTAL IN SAMPLE)	-	2	$34	$16,104	818	$138,509	90	11.00%	$198,363	$1,889,488	$891	1,365	$1,384	$582
SD	JEFFERSON TELEPHONE COMPANY - SD	391666	1	$18	$17,638	388	$137,517	44	11.34%	$202,558	$597,269	$590	548	$1,090	$413
SD	KENNEBEC TELEPHONE COMPANY	391668	1	$16	$14,700	430	$139,405	46	10.70%	$194,579	$1,292,220	$1,167	817	$1,582	$683
	TEXAS (TOTAL IN SAMPLE)	-	90	$1,140	$12,633	28,374	$137,610	2,941	10.37%	$194,674	$51,029,727	$566	33,723	$1,513	$535
TX	ALENCO COMMUNICATIONS, INC.	442090	7	$121	$16,156	2,225	$144,186	250	11.24%	$217,201	$3,924,417	$525	2,102	$1,867	$571
TX	BIG BEND TELEPHONE COMPANY INC.	442039	15	$169	$11,327	4,556	$132,703	448	9.83%	$184,485	$12,584,854	$843	6,101	$2,063	$591
TX	BORDER TO BORDER COMMUNICATIONS	442073	2	$14	$8,672	484	$137,481	48	9.92%	$189,134	$1,143,958	$698	108	$10,592	$3,926
TX	CENTRAL TEXAS TELEPHONE CO-OP. INC.	442052	11	$195	$17,285	4,369	$143,444	492	11.26%	$200,466	$8,324,316	$739	7,878	$1,057	$278
TX	DELL TELEPHONE CO-OP. INC. - TX	442066	4	$38	$10,952	1,259	$134,105	122	9.69%	$186,152	$2,273,366	$650	781	$2,911	$1,130
TX	LA WARD TELEPHONE EXCHANGE INC.	442103	3	$53	$18,659	1,092	$142,698	127	11.63%	$202,826	$1,197,968	$424	1,233	$972	$604
TX	LAKE LIVINGSTON TEL. CO.	442104	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$1,640,305	N/A	1,096	$1,497	$877
TX	LIPAN TELEPHONE COMPANY	442105	1	$22	$20,719	447	$155,093	57	12.75%	$226,592	$1,775,840	$1,653	1,567	$1,133	$521
TX	RIVIERA TELEPHONE COMPANY INC.	442134	0	$5	$12,428	127	$115,323	12	9.45%	$159,749	$2,405,152	$6,074	1,282	$1,876	$1,230
TX	SANTA ROSA TEL. COOP.,INC.	442141	2	$40	$19,597	858	$136,733	91	10.61%	$190,058	$2,042,527	$1,002	2,326	$878	$569
TX	VALLEY TELEPHONE CO-OP. INC. - TX	442159	35	$293	$8,426	9,766	$135,138	939	9.61%	$189,556	$9,560,018	$275	6,666	$1,434	$446
TX	WEST TEXAS RURAL TEL. CO-OP. INC.	442166	6	$102	$18,421	1,894	$136,269	204	10.77%	$196,333	$2,650,306	$480	2,124	$1,248	$743
TX	XIT RURAL TELEPHONE CO-OP. INC.	442170	5	$88	$18,371	1,297	$140,401	151	11.64%	$207,379	$3,147,004	$657	1,555	$2,024	$480
	UTAH (TOTAL IN SAMPLE)	-	16	$270	$17,082	5,763	$136,375	619	10.74%	$195,120	$6,969,918	$440	4,485	$1,554	$495
UT	BEEHIVE TELEPHONE CO., INC., UT	502284	5	$98	$20,451	1,976	$129,227	211	10.68%	$187,416	$2,073,964	$435	988	$2,099	$1,075
UT	UINTAH BASIN TEL. ASSN. INC.DBA UBTA COMMUN.	502287	11	$173	$15,629	3,787	$140,104	408	10.77%	$199,139	$4,895,953	$443	3,497	$1,400	$327
	WASHINGTON (TOTAL IN SAMPLE)	-	5	$98	$20,123	1,979	$139,794	226	11.42%	$199,199	$4,319,210	$885	3,489	$1,238	$502
WA	TOLEDO TELEPHONE COMPANY INC.	522447	3	$57	$18,799	1,138	$137,503	129	11.34%	$196,625	$2,229,360	$731	2,245	$993	$418
WA	WESTERN WAHKIAKUM COUNTY TEL COMPANY	522451	2	$41	$22,330	841	$142,894	97	11.53%	$202,683	$2,089,849	$1,141	1,244	$1,680	$662

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								Number	%						
	WYOMING (TOTAL IN SAMPLE)	-	7	$131	$19,409	2,814	$139,848	318	11.30%	$197,450	$8,973,944	$1,334	8,981	$999	$250
WY	CHUGWATER TELEPHONE COMPANY	512289	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$292,306	N/A	267	$1,095	$1,018
WY	DUBOIS TELEPHONE EXCHANGE INC.	512291	2	$43	$23,018	881	$140,348	100	11.35%	$197,711	$2,279,769	$1,222	2,323	$981	$380
WY	TRI-COUNTY TEL. ASSN. INC.-WY	512296	5	$88	$18,025	1,933	$139,620	218	11.28%	$197,331	$6,694,175	$1,377	6,658	$1,005	$205

Values greater than the national average are highlighted in yellow.

Sources: State Totals and Sample Totals exclude Study Areas with no available information on population.

Non-ILEC carriers excluded.

Population and Household data from Spatial Insights, Inc.,*Telecom & Demographic Data* ("CB Workbook.xls").

Data for Jackson, WY from file "Wire Center Boundaries.xls" and from USAC filings, Fourth Quarter appendix file "HC15 - Cost Model Support Projected by Wire Center - 4Q2005.xls"; http://www.universalservice.org/about/governance/fcc-filings/.

HCP per Loop and Working Loops data from 2005 Monitoring Report from file 05t3-22to30.xls; http://www.fcc.gov/wcb/iatd/monitor.html. Universal Service payments from Spreadsheet "Total" and Loops from spreadsheets "HCLS" and "LSS."

When the number of loops indicated in "HCLS" and "LSS" differed, the larger number was used.

Corporate expense data from NECA, file "USF2005LC05.xls", available at http://www.fcc.gov/wcb/iatd/neca.html. National Corporate Expense per Loop is the NECA file sample average.

Carriers 341049, 457991, 502287, 613011, 613016, 613001 show two entries in the corporate expense dataset. The entry that shows the number of loops closest to that reported in the Monitoring Report is used.

Saddleback Population and Households data are the sum of data corresponding to Pima and Maricopa, AZ. See Federal Communications Commission, Public Notice, Comments Invited on Qwest Corporation Application to Discontinue Domestic Telecommunications Services (July 13, 2001).

The number of loops associated with a given area reported by the Monitoring report does not necessarily match the number of loops reported in the NECA file. However, only in six cases were the differences higher than 10%.