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## GEORGE MASON UNIVERSITY

### REGULATORY STUDIES PROGRAM

#### **Public Interest Comment on High Cost Universal Service Support<sup>1</sup>**

March 27, 2008

**WC Docket No. 05-337; FCC Nos. 08-22, 08-4, 08-5**

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The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, RSP conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this comment on the Federal Communications Commission's three Notices of Proposed Rulemaking on High Cost Universal Service Support<sup>2</sup> does not represent the views of any particular affected party or special interest group, but is designed to evaluate the effect of the commission's proposals on overall consumer welfare.

In three Notices of Proposed Rulemakings, the commission seeks comment on modifications to the Universal Service Fund. The commission is considering (1) the merits of reverse auctions to determine the amount of high-cost universal service support, (2) a proposal to eliminate the "identical support" rule for competitive eligible telecommunications carriers, and (3) ways to reform the high-cost program more generally. The Mercatus Center at George Mason University has extensive experience analyzing the costs and outcomes of the Universal Service Fund.<sup>3</sup>

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<sup>1</sup> Prepared by Jerry Ellig, senior research fellow, and Andrew Perraut, research associate, Mercatus Center at George Mason University. This comment is one in a series of Public Interest Comments from Mercatus Center's Regulatory Studies Program and does not represent an official position of George Mason University.

<sup>2</sup> Notice of Proposed Rulemaking, WC Docket No. 05-337, FCC 08-22 (released January 29, 2008) [Hereinafter "Joint Board Recommended Decision"]; Notice of Proposed Rulemaking, WC Docket No. 05-337, FCC 08-4 (released January 29, 2008) [Hereinafter "Reverse Auction NPRM"]; Notice of Proposed Rulemaking, WC Docket No. 05-337, FCC 08-5 (released January 29, 2008) [Hereinafter "Identical Support NPRM"].

<sup>3</sup> Among others, see Jerry Ellig & Joseph Rotondi, Outcomes and Alternatives for Universal Telecommunications Services: A Case Study of Texas, 12 TEX. REV. LAW & POLITICS 1 (2007); Jerry Ellig, *Costs and Consequences of Federal Telecommunications and Broadband Regulations*, 58 Federal Communications Law Journal 17 (Feb. 2005); Jerry Ellig and James Taylor, *The Irony of Transparency: Unintended Consequences of Wireless Truth-in-Billing*, Loyola Consumer Law Review 19:1

## I. Introduction

The Universal Service Fund was established to extend wireline telephone service to consumers in rural areas and other high-cost areas at reasonable rates. The subsidy was later extended to wireless coverage provided by “eligible telecommunications carriers” (ETCs), and the FCC now seeks to extend that coverage explicitly to include broadband Internet service. The purpose for and methods of awarding wireless subsidies would also change to focus subsidies on unserved or underserved areas.

The commission seeks comment on whether “reverse auctions” are a more effective means to disburse the universal support than current methods. Reverse auctions present the possibility of a market-based solution for dispersing the funds. Under a reverse auction system, telecommunications companies would bid to provide service to a given high-cost area. The company making the lowest bid would be granted the funding to provide service. Hopefully, this will help to price the subsidy coming from the fund nearer the actual cost of delivering the service. Previous methods for assigning funds may have overestimated the amount of the allocation necessary to secure telecommunications services for these consumers.

The commission also seeks comment on whether the “identical support” rule for ETCs should be discontinued. Originally, the commission sought to create a condition of competitive neutrality, by disbursing universal service funds to local exchange carriers (more often wireline providers) and ETCs (more often wireless providers) so that neither would receive an advantage over the other due to the subsidy. It was thought that consumers would opt for one of these services, but this has not proved to be the case. Instead, consumers are purchasing subsidized wireless service in addition to, rather than as a substitute for, their subsidized wireline service. This creates a serious problem for the commission, as it calls into question whether this use of the USF is appropriate, given the fund’s purpose of providing communication to consumers who would otherwise go without.

We also call attention to the problems associated with increasing the total contributions to the fund. The fund has grown rapidly in recent years, and the extension of its mission to cover broadband Internet service calls into question whether it will grow still more. This is primarily worrisome because the costs of the contributions are ultimately paid by consumers. A great deal of empirical evidence that will be discussed below suggests that the total social costs of increasing the fund size would be quite significant and would likely cause many people to cancel their telecommunications service as price increases.

To the FCC’s credit, several proposals to limit the size of the fund and mitigate this problem have been put forward. Reverse auctions might serve this goal. There is also a proposal to cap the total size of the fund permanently, preventing the total allocation from

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(2006); Jerry Ellig and Andrew Perraut, “Public Interest Comment on Universal Service Fund Contribution Methodology.” WC Docket No. 06-122 (Nov. 2, 2007).

increasing over time. Some members of the Federal-State Joint Board also note that the size of the proposed broadband and mobility funds might eventually decrease over time, because their principal role is to subsidize network construction. Nevertheless, it is unclear whether the fund can continue to support rural and high-cost consumers with wireline, wireless, and broadband service without growing in the near future. This is especially true since, historically, the fund has grown faster than anticipated.

In this comment, we primarily address whether the proposed reforms will accomplish the fund's stated goals: providing access to reasonably comparable services at reasonable rates. We applaud the commission for seeking comment on the proposed reforms, but we conclude that the absence of empirical analysis in the NOPRs and the absence of outcome measures make it very difficult if not impossible to determine whether the reforms will actually accomplish the primary goals of the USF. To know whether universal service programs have or are likely to provide access to reasonably comparable services at reasonable rates, the FCC must first define and measure what counts as availability of service and "reasonably comparable" rates.

Without some outcome-based assessment methodology, the commission will be unable to estimate the effects of reforms before they are adopted or assess the effects of reforms after they are adopted. We suggest, therefore, that the commission begin by adopting such a system of assessment. The analysis is incomplete unless it makes an attempt to establish causation. Universal service funds should not only be disbursed to minimize their unintended consequences (such as increasing the cost of service to consumers) but also to actually bring about the outcomes intended. Therefore, the commission should hold other possible sources of change in subscribership and cost constant when assessing the impact of reforms.

More specifically, the FCC should:

- Explicitly define how it will measure availability and rate comparability for wireline, wireless, and broadband in high-cost areas.
- Conduct and publish analysis to determine how the proposed reforms are likely to affect availability and rate comparability.
- Set outcome goals and report on outcome measures.
- Define when the problem could be considered solved.
- Require states receiving grants to report data on availability and prices of service to the Universal Service Administrative Corp. and/or the FCC.
- Consider all costs, not just the obvious ones.
- Avoid universal service assessments on broadband.
- Arrange for independent program evaluation after the reforms are adopted.

These steps are intended to produce and disclose solid factual information on which to base rational decisions about universal service funding. Without these steps, universal service reform will be nothing more than a faith-based initiative.

## **II. Will the Reforms Achieve the Desired Outcomes?**

The 1996 Telecommunications Act articulates the primary outcomes the federal high-cost universal service programs are supposed to accomplish: “access to telecommunications and information services ... that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.”<sup>4</sup> The two key concepts, therefore, are access—the service is available—and “reasonably comparable” rates. The reforms will advance these outcomes if they will increase availability of these services in high-cost areas at rates “reasonably comparable” to those charged in urban areas.

Assessing whether the proposed reforms will accomplish these outcomes requires two things: a plausible theory explaining how the expenditures will affect the outcomes, and empirical evidence suggesting that the theory is actually true. Assessing the results of reforms after they are implemented requires an analysis of causality that controls for other factors that might influence the outcomes.

Neither the Joint Board’s recommendations nor the FCC’s NPRMs provide such an analysis *ex ante* or specify measures and goals that would permit evaluation *ex post*. The comprehensive reform proposal presumes, but does not provide analysis to prove, that the proposed new subsidies for mobility and broadband will increase availability at reasonably comparable rates. Two commissioners question this presumption, suggesting that the amount of subsidy proposed is not nearly enough to fully accomplish the desired outcomes.<sup>5</sup> Since the proposals include no analysis demonstrating how the amount of subsidy under either the current or reformed system affects or would affect availability or rates, there is no factual basis in the Joint Board’s recommendations or the FCC’s NPRMs for determining who is right.

A sound analysis of the reforms’ effect on outcomes must identify how the outcomes are to be measured and project how the reforms would cause a change in the outcomes. The

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<sup>4</sup> Sec. 254(b)(3).

<sup>5</sup> “I must express a degree of reservation over the amount of support allocated to the Broadband Fund, among other limitations on support. Maintaining our commitment to connectivity, particularly in the broadband age, is more important than ever, and the Commission must start to provide realistic assessments of what will be required. To that end, I am also concerned about the impact of reverse auctions and whether such mechanisms can provide adequate incentives for build out in Rural America.” (Statement of Commissioner Jonathan S. Adelstein on the Identical Support NPRM.) “I must express disappointment, however, that once the initial decision to include broadband was made, councils of caution found their way to the fore. Instead of bold recommendations to implement our historic decision, the Joint Board only suggests that \$300 million of federal dollars be dedicated to this challenge. And none of this would be new money, but rather a mere reshuffling of dollars among different pots.” (Statement of Commissioner Michael J. Copps, Joint Board Recommended Decision).

FCC cannot know if the Joint Board’s proposals will make service available at reasonably comparable rates unless it has a clear theory and empirical analysis demonstrating that the proposals will increase availability and reduce the price of the subsidized services in rural areas, above and beyond the levels that would exist in the absence of subsidies. Similarly, if the proposals are adopted, the FCC will not know if they achieved the legislative objective unless it defines availability and reasonably comparable rates, measures them, and conducts rigorous analysis to assess how the subsidies have affected them.

## **A. Outcome Measures**

Since the outcomes articulated in the Telecommunications Act are access to telecommunications and information services at reasonably comparable rates, they can be measured by examining availability and price.

### **1. Availability**

An availability measure, such as number and percent of homes where the service is available, documents the extent to which a service is physically there for people to subscribe if they choose. The FCC already measures availability to some extent for both broadband and wireless. For the wireline high-cost program, the FCC apparently measures subscribership but not availability.

#### **a. Broadband**

The FCC’s annual report on broadband deployment assesses whether high-speed Internet service is offered in various zip codes and calculates the percentage of cable and telephone customers who have high-speed service available.<sup>6</sup> The Joint Board suggests that the FCC efforts provide inadequate information to inform the proposed grants to subsidize rural broadband construction.<sup>7</sup> The Joint Board suggests that a major factor for awarding grants should be “the number of residents of each state who are unable to purchase terrestrial broadband Internet service at their residences.”<sup>8</sup> But for accountability purposes, this figure should be calculated even if it is given little weight in the funding allocations, because it is crucial for measuring whether the proposed grant program actually achieves the goal of making broadband available in areas where it would not otherwise be available. The survey responses used by FCC staff to calculate availability of DSL and cable modem service likely provide useful data to establish a baseline—at least for those two types of broadband services.

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<sup>6</sup> Federal Communications Commission, HIGH-SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF JUNE 30, 2007 (2008) at tbl. 14.

<sup>7</sup> Joint Board Recommended Decision at para. 13.

<sup>8</sup> Joint Board Recommended Decision para. 15.

## **b. Wireless**

The FCC's report on wireless competition includes a series of maps that indicate where wireless service is available<sup>9</sup> and where a wireless signal is available.<sup>10</sup> The Joint Board recommended that the algorithm for awarding grants might include "the number of residents of each state who cannot receive a strong and reliable wireless signal at their residence."<sup>11</sup> But again for accountability purposes, this figure should be calculated even if it is given little weight in the funding allocations, because it is crucial for measuring whether the proposed grant program actually achieves the goal of making a reliable wireless signal available in areas where it would not otherwise be available.

## **c. Wireline**

In its rulemaking on management of the universal service programs, the FCC decided to compare subscribership rates in rural and urban areas as one measure of the effectiveness of the high-cost programs.<sup>12</sup> The subscribership rate can sometimes be a reasonable proxy for availability since a low subscribership rate may indicate that the service is simply not available to a segment of the target population. However, the subscribership rate may not be an accurate measure if some households and businesses place negligible value on the service offered. A rural community with many vacation homes, for example, might show a low subscribership rate for wireline phone service because many homeowners simply bring their wireless phones with them when vacationing. Or some families might regard television as a more useful source of information than a high-speed Internet connection. As a result of such consumer decisions, the subscribership rate for the service might be low even though it is available. Alternatively, some families might choose to purchase high-speed Internet service even though the price makes it a substantial financial sacrifice; in that case, the subscribership rate might be high even though many would question whether the price of the service is "reasonably comparable." For these reasons, the analysis should focus on availability and price, not just subscription.

That's not to say that subscribership rates might not provide useful information for program design and management. Since a low subscribership rate might indicate problems with availability or affordability, it could prompt a more careful look at the program's structure. And if the program causes an increase in subscribership at a relatively low cost, that suggests the program is accomplishing its goals in a cost-effective manner.

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<sup>9</sup> In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, WT Docket No. 06-17, Eleventh Report 109 (2006) *available at* [http://fjallfoss.fcc.gov/edocs\\_public/attachmatch/FCC-06-142A1.pdf](http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-06-142A1.pdf).

<sup>10</sup> *Id.* at 110-11.

<sup>11</sup> Joint Board Recommended Decision at para. 17.

<sup>12</sup> Federal Communications Commission, In the Matter of Comprehensive Review of the Universal Service Fund Management, Administration, and Oversight, Final Report and Order (released Aug. 29, 2007) at para. 55.

But to determine whether the universal service subsidies achieve their statutory objectives, the FCC must measure and track availability of wireline phone service.

## 2. Price

For wireline, wireless, or broadband, one measure of “reasonably comparable” prices would be the ratio of rural prices to urban prices. Rural prices might be reasonably comparable if they are not more than X percent higher than urban prices.

Urban and rural incomes, however, can differ substantially, and so a more accurate measure would be the rural price/income ratio divided by the urban price/income ratio. Dividing prices by income measures the relative burden, or percent of the household budget, spent on communications services. Comparing these percentages for rural vs. urban households tells us whether the cost of these services represents a “comparable” burden for different types of households. Whether this additional refinement is worth the additional complication is an open question.

Measuring price or price/income ratios does not necessarily imply that the goal of the high-cost programs is to ensure that rural households spend the same percentage of their income on communications services as urban households. The desired rural/urban price ratio may be higher or lower than one. What ratio constitutes “reasonably comparable” is ultimately a policy judgment.

This is a type of policy judgment the FCC has heretofore not had to make. Up to now, “universal service” has meant universal wireline *telephone* service. States regulate the price of local wireline telephone service. Traditionally, states have sought to keep local rates in rural areas comparable to, or even below, those in urban areas.<sup>13</sup> The FCC could, therefore, presume that the state-mandated price of local phone service was “reasonably comparable” to the price in urban areas. Federal universal service programs achieved their objectives if they permitted telephone companies to cover their costs while charging state-regulated prices for local service.

The changing telecommunications marketplace and the proposed expansion of universal service to cover wireless and broadband will require the FCC to scrutinize retail prices if it is to ensure that the high-cost universal service programs achieve their statutory objectives. We are not suggesting that the FCC ought to regulate retail rates, but rather that the FCC must seriously evaluate retail rates if it is to determine whether the proposed changes in universal service accomplish the statutory objectives.

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<sup>13</sup> See, e.g., Robert W. Crandall & Jerry Ellig, Texas Public Policy Foundation, TEXAS TELECOMMUNICATIONS: EVERYTHING’S DYNAMIC EXCEPT THE PRICING 41 (2005), available at <http://www.texaspolicy.com/pdf/2005-01-telecom.pdf>.

### a. Wireline Rates

For wireline telephone service, the FCC can no longer presume that longstanding state-regulated rates in rural areas are “reasonably comparable” to urban rates. Mercatus Center researchers recently completed a study of universal service in the state of Texas that illustrates this point.<sup>14</sup> In Texas, regulation keeps most rural phone rates for basic local service below urban rates and below economic measures of long-run cost.<sup>15</sup> All basic local residential rates of the largest incumbent, AT&T, are below the national average urban rate of \$14.53.<sup>16</sup> No basic local rates of the four largest incumbents exceed the national average urban rate by more than \$1.50.<sup>17</sup> Only six of the 54 smaller incumbents have any basic local residential rates exceeding the national average urban rate.<sup>18</sup> Basic local residential rates in Texas have not changed since 2000 or earlier. In a recent analysis of state universal service programs, the Texas Public Utility Commission found that state subsidies have kept rural rates reasonable—but also hinted that higher rates for basic local telecommunications service might also be considered reasonable. The PUC noted, “The preservation of existing BLTS rates, some of which have been in effect for decades, does not necessarily mean that existing rates are still reasonable.”<sup>19</sup>

Therefore, the FCC cannot presume that universal service subsidies accomplish their statutory objectives simply because they enable phone companies in urban areas to charge regulated rates that are lower than they would be in the absence of subsidies. The FCC needs to determine whether the regulated local rates are reasonably comparable to urban rates.

A traditional justification for keeping rural rates below urban rates is that rural customers have fewer people in their local calling areas, and hence they are more likely to pay substantial long-distance charges. Lower local rates help compensate for the higher long-distance charges. Long-distance service, however, is priced much differently than it was when current local rate structures were put in place. All-distance plans available from both wireline and wireless carriers offer long-distance calling at zero incremental cost per call. Even when purchased separately, long-distance is now widely available for a few cents per minute. Clearly, the size of the long-distance penalty paid by rural subscribers has fallen significantly. Hence, it is much more difficult to justify the idea of keeping rural rates below urban rates to compensate for rural residents’ higher long-distance costs.

The FCC does not, of course, regulate local telephone rates. A reformed high-cost program, however, should ensure that subsidies are no higher than necessary to keep local rates reasonably comparable to urban rates—not below urban rates.

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<sup>14</sup> Ellig & Rotondi, *supra* note 3.

<sup>15</sup> *Id.*

<sup>16</sup> Texas Public Utility Commission, REVIEW AND EVALUATION OF THE TEXAS UNIVERSAL SERVICE FUND PURSUANT TO PURA SECTION 56.029 28 (2007) at tbl. 6.

<sup>17</sup> *Id.*

<sup>18</sup> *Id.* at tbl. 7.

<sup>19</sup> Texas PUC, *supra* note 16, at 24.



## **b. Wireless and Broadband Rates**

The proposed expansion of universal service subsidies to mobility and broadband creates a different set of issues in defining “reasonably comparable” rates. States do not regulate wireless or broadband rates, and so there is no state-determined “reasonable” rate. In addition, there is no regulatory rate base the companies must be permitted an opportunity to earn a return upon and recover. These are opportunities, not obstacles, because they give the FCC greater freedom in defining “reasonably comparable” rates.

Economists and regulators generally accept that competitive markets tend to produce reasonable rates that reflect the true cost of serving consumers. The logical place for the FCC to look for rate benchmarks, therefore, would be urban markets that tend to have more competition than rural markets. For mobile service and broadband, the FCC could define “reasonably comparable” rural rates as rates that keep the cost of the service in rural areas no more than X percent higher than the cost in urban areas. A definition that takes incomes into account would define the “reasonably comparable” rates as a price as a percentage of rural household income no higher than some specified percentage of the cost of the service in urban areas as a percentage of urban household income. In either case, the benchmark would be the price charged in competitive urban markets, not a regulated price. Firms offering these services should have to agree to offer “reasonably comparable” prices in rural areas as a condition for receiving subsidies.

## **B. Analysis of Causation**

Once outcome measures are identified, it is necessary to determine how, and to what extent, the subsidy programs cause changes in the outcomes. It is not enough to identify positive trends. This is precisely the point that the Government Accountability Office made in its 2005 assessment of the schools and libraries program:

For fiscal years 2000 through 2002, FCC’s goals focused on achieving certain percentage levels of Internet access for schools, public school instructional classrooms, and libraries. However, the data that FCC used to report on its progress ... did not isolate the impact of E-rate funding from other sources of funding, such as state and local government ... Consequently, a fundamental performance question that remains unanswered is how much of the increase in public schools’ access to the internet can be attributed to the E-rate program.<sup>20</sup>

Ex ante, the analysis needs to identify whether the subsidy program is likely to cause any change in the outcomes. Ex post, the analysis needs to identify whether the subsidies actually caused any change in the outcomes.

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<sup>20</sup> U.S. Government Accountability Office, TELECOMMUNICATIONS: GREATER INVOLVEMENT NEEDED BY THE FCC IN THE MANAGEMENT AND OVERSIGHT OF THE E-RATE PROGRAM 5 (February 2005).

A substantial body of scholarly research on universal service programs demonstrates that this kind of analysis is indeed feasible. The elasticity of demand—a measure of consumer responsiveness to price changes—has frequently been used to estimate the effects of universal service programs on subscribership. Subscribership can sometimes be a misleading outcome measure, but these studies provide a useful template for assessing the effects of universal service subsidies on outcomes.

High-cost subsidies help reduce telephone rates for rural customers. As a result, they bring more rural households onto the phone network. However, most studies find that subscription levels for local telephone service change very, very little in response to changes in price.<sup>21</sup> Many recent studies find elasticities of demand between -0.01 and -0.026; that is, a 1% change in price leads to 0.1% or 0.2% change in subscriptions.<sup>22</sup> Empirical studies commonly presume that low-income households are more sensitive to the price of local phone service than high-income households.<sup>23</sup> The highest elasticity of demand for local phone service estimated since 1980 appears to be about -0.05.<sup>24</sup>

A recent Mercatus Center study used commonly-accepted estimates of the elasticity of demand to assess the effects of the Texas high-cost subsidies on subscribership. The study found that the high-cost programs have increased telephone subscription by 50,000 subscribers—equal to 3 percent of rural lines or 0.37 percent of all Texas lines. These additional subscriptions cost \$10,000 annually per additional subscriber. However, the findings are sensitive to assumptions about the elasticity of demand. A sensitivity analysis that assumed rural residents' elasticity of demand was the same as that of low-income consumers found that the subsidies generated 125,000 additional subscriptions, equal to 7 percent of subsidized lines or 1 percent of all lines, at an annual cost of \$4,000 per additional subscriber.<sup>25</sup>

Several other studies have examined the cost-effectiveness of federal high-cost support programs. The programs appear to be a very costly way of increasing subscribership. The most recent study on this topic estimates that the cost of adding one subscriber through loop support was at least \$11,000 in 2000, up from \$3,350 in 1990. The cost of adding one subscriber through local switching support was \$5,155, up from approximately

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<sup>21</sup> A.H. Barnett & David L. Kaserman, *The Simple Welfare Economics of Network Externalities and the Uneasy Case for Subscribership Subsidies*, 13 J. REG. ECON. 245, 252–53 (1998); David L. Kaserman, John W. Mayo & Joseph E. Flynn, *Cross-Subsidization in Telecommunications: Beyond the Universal Service Fairy Tale*, 2 J. REG. ECON. 231 (1990); Robert Crandall and Leonard Waverman, WHO PAYS FOR UNIVERSAL SERVICE? WHEN TELECOMMUNICATIONS SUBSIDIES BECOME TRANSPARENT 91 (2000).

<sup>22</sup> Crandall & Waverman, *Id.* at 91.

<sup>23</sup> *Id.* at 110 (assuming that the elasticity of demand declines in absolute value from -0.0475 for the lowest-income households to -0.001 for high-income households).

<sup>24</sup> *Id.* at 90 (citing Perl's 1983 study implying a demand elasticity of -0.055); *Id.* at 91 (citing several other studies estimating a demand elasticity of -0.04); *id.* at 110 (assuming that the lowest-income households have a demand elasticity of -0.0475). See also Christopher Garbacz & Herbert G. Thompson, *Estimating Demand with State Decennial Census Data from 1970-1990*, 21 J. REG. ECON. 317, 326 (2002) (showing elasticities between -0.028 and -0.047 when using pooled 1970-90 data).

<sup>25</sup> Ellig & Rotondi, *supra* note 3, at 32-36.

\$2,000 in 1990.<sup>26</sup> This cost is substantially higher than the \$666 estimated by another study for 1985-93.<sup>27</sup>

### III. Universal Service Costs

Several aspects of the Joint Board's proposals attempt to limit high-cost program expenditures and reduce costs of some elements in order to free up funds for the new mobility and broadband initiatives.<sup>28</sup> The Telecommunications Act does not explicitly articulate any limit on the total cost of universal service programs. Nevertheless, the Joint Board notes,

Any possible benefit anticipated from increased universal service fund (USF) distributions must be weighed against the added burden on consumers of telecommunications services. Larger USF contributions increase the risk that telecommunications services will become unaffordable for some, or even a substantial number, of consumers. As the courts have noted, excessive subsidization arguably may affect the affordability of telecommunications services, thus violating one of the principles in Section 254. We note widespread concern that further increases in the size of the fund under existing collection methodologies would be detrimental to both customers and carriers alike.<sup>29</sup>

The Joint Board and the FCC also express concern that excessive costs might undermine public support for universal service, thus undermining the congressional mandate that support mechanisms must be "sufficient."<sup>30</sup>

Extensive scholarly research suggests that the Joint Board's concerns are justified.

Because firms' revenues often vary with the amount of service customers choose to buy, universal service contributions act like a usage-based tax. When applied to price-sensitive services such as long-distance and wireless, this tax leads to substantial reductions in usage and output. Consumers are worse off because they use less of the service, and telecommunications firms are worse off because they sell less of the service. Economists call this reduction in consumer and producer welfare the "excess burden" or "deadweight loss" associated with the price distortion. The universal service program best promotes

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<sup>26</sup> Daniel J. Ryan, "Universal Telephone Service and Rural America," unpublished manuscript (April 30, 2004), 18-19.

<sup>27</sup> R.C. Eriksson, D.L. Kaserman, and J.W. Mayo, *Targeted and Untargeted Subsidy Schemes: Evidence from Post-Divestiture Efforts to Promote Universal Service*, 41 J. LAW & ECON., 477-502 (1998). This study uses data only for the Bell telephone companies, which receive a small portion of total high-cost support and may not be typical.

<sup>28</sup> Identical Support NPRM at paras. 1, 4; Reverse Auction NPRM at paras. 10-11; Joint Board Recommended Decision at paras. 2, 26-27, 35.

<sup>29</sup> Joint Board Recommended Decision at para. 24.

<sup>30</sup> Identical Support NPRM at para. 5; Joint Board Recommended Decision at para. 25.

the public interest when it raises revenue to achieve its intended purposes with as little deadweight loss as possible.<sup>31</sup>

The amount of deadweight loss from universal service assessments depends critically on the “elasticity of demand” for the services paying the assessment. If demand is elastic, a price increase generates a large reduction in the amount purchased; if demand is inelastic, a price increase generates a small reduction in the amount purchased. Studies indicate that demand for wireline service is almost completely inelastic, meaning that customers will generally continue to purchase the service, regardless of price changes. The elasticity of demand for wireline service has been calculated as near-zero in the United States,<sup>32</sup> implying that assessing a universal service charge on wireline numbers, rather than minutes used, would have little effect on subscription rates (and thus fewer hidden costs to consumers).

Demand for long-distance communication has significant price elasticity; increases in price cause consumers to buy fewer minutes, which leads them to forego significant benefits. The elasticity of demand for wireline long-distance service is approximately -0.7; that is, a 1 percent increase in the price of long-distance leads to a 0.7 percent decrease in minutes used.<sup>33</sup> Historically, universal service assessments have acted like a per-minute surcharge on the price of long-distance service. This is because most long distance customers paid by the minute—either explicitly, or because they chose to purchase “buckets” of minutes whose price varied with the number of minutes purchased. An unknown number of consumers now purchase packages that include unlimited long distance service. These customers do not face a price per minute each time they make a long distance call. Nevertheless, it is likely still accurate to model universal service assessments on long-distance as an increase in the per-minute price. If many of the most price-sensitive customers still purchase long-distance by the minute or in buckets with finite numbers of minutes, then a per-minute surcharge will still have a significant effect on the amount purchased.

Wireless service is more complicated, but careful analysis still suggests benefits from changing the assessment methodology. The elasticity of demand for wireless *subscription* is much lower than the elasticity for wireless *minutes of use*. Most economic studies that estimate the demand for wireless subscription (using the number of subscribers per hundred or the probability of subscription as the dependent variable) yield elasticities between -.43 and -.71.<sup>34</sup> That is, a 1 percent increase in the monthly subscription price reduces the number of subscribers by between four-tenths and seven-tenths of 1 percent.

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<sup>31</sup> Ellig & Rotondi, *supra* note 3, at 15-17 and references cited therein.

<sup>32</sup> ROBERT CRANDALL & LEONARD WAVERMAN, WHO PAYS FOR UNIVERSAL SERVICE? WHEN TELEPHONE SUBSIDIES BECOME TRANSPARENT (2000) at 47.

<sup>33</sup> A range of estimates exists, but -0.7 is the consensus view. See Jerry Hausman & Howard Shelanski, *Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies*, 16 Yale J. ON Reg. 19, 36-37 (1999); See also Michael H. Riordan, *Universal Residential Telephone Service*, in 1 HANDBOOK OF TELECOMMUNICATIONS ECONOMICS 423, 431 (Martin E. Cave et al. eds.) (2002).

<sup>34</sup> See Jerry Hausman, *Cellular Telephone, New Products, and the CPI*, J. BUS & ECON. STAT. 188, 191 (1999) (estimating a demand elasticity of approximately -0.5 with 1988-1993 data); Jerry Hausman,

This contrasts markedly with studies measuring the elasticity of demand for wireless minutes, which usually find that a 1 percent price change leads to a greater than 1 percent change in quantity. Researchers have calculated that the elasticity of demand for wireless minutes ranges between -1.12 and -1.29,<sup>35</sup> though some calculations using international data put the figure as high as -3.62.<sup>36</sup>

Empirical research confirms that the welfare losses to consumers from Universal Service Fund contributions are real and substantial:

- In one of the first empirical studies assessing the effects of federal USF charges on long-distance consumers, Jerry Hausman estimated that the deadweight loss associated with assessments on long-distance averaged between 65 and 79 cents for every dollar raised by the assessment. He estimated that the deadweight loss from raising the revenue by increasing the Subscriber Line Charge (analogous to a per-number charge) would be negligible.<sup>37</sup>
- In a study published in 2000, Hausman estimated that every dollar raised by USF assessments on wireless reduced producer and consumer welfare by 53 cents on average.<sup>38</sup>
- A 2006 study found that the \$2.7 billion in federal universal service charges on interstate long-distance in 2002 cost producers and consumers \$1.16 billion in lost welfare (43 percent of revenue raised).<sup>39</sup> For wireless, federal universal service charges generated a welfare loss of \$978 million (56 percent of revenue raised).<sup>40</sup>
- Using 2004 data, Ellig and Taylor estimated that the welfare loss associated with wireless universal service charges totaled \$994 million, equal to 56 percent of the \$1.77 billion in revenues raised.<sup>41</sup>

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*Efficiency Effects on the U.S. Economy from Wireless Taxation*, 53 NAT'L TAX J. 733, 738 (2000) (estimating a demand elasticity of -0.71); Mark Rodini et al., *Going Mobile: Substitutability Between Fixed and Mobile Access*, 27 Telecommunications Policy 457, 470 (2003) (estimating an elasticity of -.43 with respect to the monthly access charge and an overall price elasticity of demand of -0.6 with 2000–01 data); Christopher Garbacz & Herbert G. Thompson, Jr., *Universal Telecommunication Services: A World Perspective*, Info.Econ. & Pol'y 495 (2005), tbl. 5 (estimating an elasticity of -0.45).

<sup>35</sup> See J. Gregory Sidak, *Is State Taxation Of The Wireless Industry Counterproductive?* Criterion Econ. L.L.C., 19 (2003), [www.criterioneconomics.com/docs/sidak\\_pacific\\_research.pdf](http://www.criterioneconomics.com/docs/sidak_pacific_research.pdf) (using 1999–2001 data).

<sup>36</sup> See Thomas W. Hazlett & Roberto E. Munoz, *A Welfare Analysis of Spectrum Allocation Policies*, AEI Brookings Joint Center For Regulatory Studies, related pub'n 04-18, available at <http://www.aeibrookings.org/admin/authorpdfs/page.php?id=1024>; See also, Gary Madden & Grant Coble-Neal, *Economic Determinants of Global Mobile Telephony Growth*, 16 Info. Econ. & Pol'y 519, 531 (2004).

<sup>37</sup> Jerry Hausman, *Taxation by Telecommunications Regulation*, 12 Tax Policy the Economy 29, 31 (James M. Poterba ed., 1998).

<sup>38</sup> Jerry Hausman, *Efficiency Effects on the U.S. Economy from Wireless Taxation*, 53 Nat'l Tax J. 733, 738 (2000) (estimating a demand elasticity of -0.71)

<sup>39</sup> Ellig, *Costs and Consequences*, *supra* note 3 at tbl. 2.

<sup>40</sup> *Id.*

<sup>41</sup> Ellig & Taylor, *supra* note 3 at 65,

The evidence strongly supports the commission's concerns about growth of the Universal Service Fund. If the size of the fund continues to grow, consumers are likely to be adversely affected. Because the social cost of increasing the fund is so large, this unintended consequence should be taken into careful consideration before any changes are made.

Two FCC commissioners suggested that the FCC should expand the size of the Broadband Fund beyond what the Joint Board proposed.<sup>42</sup> One commissioner suggested that additional funding could come from universal service assessments on broadband users, and another suggested broadening the base of contributors in general.<sup>43</sup> Imposing universal service contribution requirements on broadband would significantly reduce broadband subscribership, thus undermining the goal of the Broadband Fund and generating substantial deadweight losses for society.

Multiple studies find that the elasticity of demand for DSL broadband service exceeds -1; that is, a 1 percent change in price leads to a greater than 1 percent change in subscribership.<sup>44</sup> Most attempts to measure the overall elasticity of demand for broadband—not just DSL—have found that it is highly elastic, ranging from -1.5 to -3.76.<sup>45</sup> One of the most recent papers, by University of Chicago economist Austan Goolsbee, found an average demand elasticity of -2.75.<sup>46</sup>

At a demand elasticity of -2, a 10 percent universal service assessment would reduce subscribership by 20 percent. If the elasticity is -2.75, a 10 percent assessment reduces subscribership by 27.5 percent; an elasticity of 3.5 yields a subscribership drop of 35 percent. With the most recent FCC survey reporting about 100 million subscribers to high-speed service,<sup>47</sup> imposing a 10 percent universal service assessment on broadband would generate \$3–5 billion in revenue while reducing subscribership by between 20 million and 35 million. If expanding the funding base to include broadband permits a lower assessment rate—perhaps 5 percent—broadband subscribership would still fall by 4–7 million, while raising \$700 million–\$1.2 billion in new revenue. Even if one counts as “true” broadband only the 41.6 million lines with speeds exceeding 2.5 MB in one direction<sup>48</sup>, a 10 percent universal service assessment would reduce subscribership by

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<sup>42</sup> Copps, *supra* note 5; Adelstein, *supra* note 5.

<sup>43</sup> Copps, *supra* note 5. In addition, Commissioner McDowell stated he wants to “permanently broaden the base of contributors,” but did not elaborate how. See Statement of Commissioner Robert M. McDowell, Joint Board Recommended Decision, at 55.

<sup>44</sup> Robert W. Crandall, J. Gregory Sidak, and Hal J. Singer, *The Empirical Case Against Asymmetric Regulation of Broadband Internet Access*, 17 BERKELEY TECHNOLOGY LAW JOURNAL (Summer 2002) at 973–74; Robert W. Crandall, Robert W. Hahn, and Timothy J. Tardiff, *The Benefits of Broadband and the Effect of Regulation*, in Robert W. Crandall and James H. Alleman (eds.), BROADBAND (2002) at 301 and references cited therein.

<sup>45</sup> Austan Goolsbee, *Subsidies, the Value of Broadband, and the Importance of Fixed Costs*, in Crandall and Alleman *supra* note 44, at 283–84.

<sup>46</sup> Austan Goolsbee, *The Value of Broadband and the Deadweight Loss of Taxing New Technology*, NBER Working Paper No. 1194 (2006) at 11.

<sup>47</sup> FCC Broadband Report, *supra* note 6, at 1.

<sup>48</sup> *Id.* at tbl. 5.

between 8 and 14.6 million while generating \$1.3–\$1.6 billion in new revenue, depending on the elasticity assumption. Extending assessments to broadband in order to fund universal service would reduce subscribership unless several billion dollars worth of broadband subsidies generates between 8 million and 35 million new subscribers in rural areas.

Using the simple deadweight loss calculations employed in previous Mercatus Center studies of universal service fees,<sup>49</sup> a 10 percent universal service assessment that reduced subscribership by 20–35 million would impose a deadweight loss \$3 billion–\$5.5 billion on broadband consumers and providers.<sup>50</sup> The actual effects could be much larger if the universal service assessment induces broadband providers to deploy broadband more slowly in areas they do not currently serve.<sup>51</sup>

## IV. Conclusion

The Joint Board's recommendations suggest there is a broad consensus that universal service reform is long overdue. There is somewhat less unanimity on precisely what form reform should take.

Some of the disagreement may reflect differences in values and priorities held by different stakeholders and even different commissioners. Part of the problem may be the wording of the mandate in the 1996 Telecommunications Act, which could be read to justify either a minimalist universal service program or a very large one. But we believe two enormous problems with the universal service debate are that the desired outcomes are poorly defined and significant costs are hidden. As a result, this comment is not so much a call for some particular policy decision as it is a plea for greater transparency about the outcomes and costs associated with the universal service fund.

A sound analysis of the reforms' effect on outcomes must identify how the outcomes are to be measured and project how the reforms would cause a change in the outcomes. The FCC cannot know if the Joint Board's proposals will make service available at reasonably comparable rates unless it has a clear theory and empirical analysis demonstrating that the proposals will increase availability and reduce the price of the subsidized services in rural areas, above and beyond the levels that would exist in the absence of subsidies. Similarly, if the proposals are adopted, the FCC will not know if they achieved their legislative objectives unless it defines availability and reasonably comparable rates, measures them, and conducts rigorous analysis to assess how the subsidies have affected them.

The evidence strongly supports the commission's concerns about growth of the Universal Service Fund. The current mechanism generates substantial social costs, over and above

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<sup>49</sup> Ellig & Rotondi, *supra* note 3; Ellig, *supra* note 3; Ellig & Taylor, *supra* note 3.

<sup>50</sup> Assumes average broadband price of \$40/month and a marginal cost of \$300 per subscriber, as estimated in Goolsbee, *supra* note 46.

<sup>51</sup> *Id.*

the revenues raised by universal service contributions. Mercatus Center studies have found that federal universal service charges create an annual deadweight loss of approximately \$2 billion in addition to the revenues they raise. Bringing broadband into the contribution pool would increase these losses enormously, because demand for broadband is even more price-sensitive than demand for long-distance or wireless. A 10 percent universal service charge on broadband would reduce subscribership by between 8 and 35 million subscribers, depending on how one defines broadband. This effect would likely swamp any increase in rural subscribership caused by increased universal service subsidies.

To promote greater transparency of outcomes and costs, the FCC should:

**Explicitly define how it will measure availability and rate comparability for wireline, wireless, and broadband in high-cost areas.** Because a service may be available even if people choose not to subscribe, the FCC should measure availability, not just subscribership. Because wireless and broadband rates are not regulated, and because state-regulated wireline rates may be below urban rates, the FCC must establish its own measures and benchmarks for rate comparability.

**Conduct and publish analysis to determine how the proposed reforms are likely to affect availability and rate comparability.** The analysis should determine whether the reforms are likely to have a material effect on availability of service at reasonably comparable rates and estimate the size of that effect.

**Set outcome goals and report on outcome measures.** Going forward, the FCC should set goals for the improvement in universal service outcomes it expects to achieve with the funding devoted to each service. Data on actual availability and price outcomes should be reported at least annually to facilitate accountability and permit retrospective analysis of the programs.

**Define when the problem could be considered solved.** Goals and measures should be set in reference to a meaningful ideal. At what point could the problem be considered solved, so that the high-cost universal service program in its current form is no longer necessary? Answering this question will help decision makers focus on setting ambitious and meaningful goals to help ensure that the program makes a genuine effort to achieve significant results.

**Require states receiving grants to report data on availability and prices of service to the Universal Service Administrative Corp. and/or the FCC.** The Joint Board proposes that the new broadband and mobility subsidies should take the form of grants to the states—in part because states are in a better position to assess availability of these services.<sup>52</sup> Genuine accountability means ensuring not just that the money is spent for the intended purpose, but that the expenditures actually produce the intended outcomes.

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<sup>52</sup> Joint Board Recommended Decision at para. 46.



**Consider all costs, not just the obvious ones.** In determining whether various universal service initiatives produce sufficient outcomes to justify the costs, the FCC should take into account the social costs, or deadweight losses, caused by the funding mechanism. When these costs are taken into account, the total social cost of universal service assessments on long-distance and wireless is 40–80 percent larger than the revenues raised.

**Avoid universal service assessments on broadband.** This would enormously expand the size of the deadweight loss. Expanding the fund by requiring contributions from broadband would probably lead to a net reduction in broadband subscribership.

**Arrange for independent program evaluation.** The FCC should arrange for independent researchers to conduct retrospective analysis to identify whether the high-cost universal service programs achieve their intended outcomes and estimate the size of the effects. The analysis should control for other factors that affect the outcomes so it can identify how much of the effect was caused by the universal service programs.

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Jerry Ellig ([jellig@gmu.edu](mailto:jellig@gmu.edu); 703.993.4925)  
Senior Research Fellow

Andrew Perraut ([aperraut@gmu.edu](mailto:aperraut@gmu.edu); 703.993.4877)  
Research Associate

Regulatory Studies Program  
Mercatus Center at George Mason University  
3301 North Fairfax Drive, Suite 450  
Arlington, VA 22201

## Appendix I

### RSP Checklist

<b>Element</b>	<b>Agency Approach</b>	<b>RSP Comments</b>
1. Has the agency identified a significant market failure?	<p>Universal service program is taken as a given, but the Joint Board and FCC do identify several systemic problems in the program that they are trying to solve.</p> <p><b>Grade: B</b></p>	A fundamental reform proposal should probably include an analysis of how well the existing program is accomplishing intended outcomes.
2. Has the agency identified an appropriate federal role?	<p>FCC assumes federal government must fund universal service, but proposes that the expansions of the high-cost fund should be grants to states.</p> <p><b>Grade: A</b></p>	It is not clear why federal should override state preferences re the amount of funding, but FCC deserves an “A” for recognizing that states likely have better information to craft programs to expand availability of broadband and wireless.
3. Has the agency examined alternative approaches?	<p>It is clear the Joint Board and FCC considered current practice, the alternatives they proposed, and some other alternatives.</p> <p><b>Grade: C</b></p>	Specific outcomes and costs of alternatives are not clearly defined or analyzed in the NPRMs.
4. Does the agency attempt to maximize net benefits, or explained why not?	<p>FCC seems to be trying to balance costs of universal service fund against broad legislative goals, but its actual criteria for making the decision are opaque.</p> <p><b>Grade: D</b></p>	Poor definition and measurement of outcomes and costs makes it impossible for the FCC to determine how to accomplish the legislative universal service mandate at lowest cost.

<b>Element</b>	<b>Agency Approach</b>	<b>RSP Comments</b>
5. Does the proposal have a strong scientific or technical basis?	NPRMs have no economic analysis of projected outcomes or costs.  <b>Grade: D</b>	Decisions appear to be based on faith, conjecture, and intentions.
6. Are distributional effects clearly understood?	Proposals seem carefully crafted to avoid stepping on toes of companies currently receiving subsidies when this is possible. No analysis of how the programs or the reforms would affect different types of consumers (rural, suburban, urban) on net after all effects are taken into account.  <b>Grade: C</b>	Universal service for high-cost areas is fundamentally a redistribution program from urban and suburban consumers to rural companies and their customers. But the net effect may be ambiguous for some rural customers because they also pay universal service assessments.
7. Are individual choices and property impacts understood?	Occasional offhand comments note that since consumers pay universal service assessments, excessive costs could undermine universal service goals by inducing some people to stop subscribing. But there is no systematic analysis of this.  <b>Grade: C</b>	Unusual to see so little analysis of human behavior in response to price changes when the program's principal purpose is to alter prices to change behavior.