



## PUBLIC INTEREST COMMENT ON THE *CONNECT AMERICA FUND*<sup>1</sup>

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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 in response to the Federal Communications Commission's (the commission or FCC) Notice of Proposed Rulemaking (NPRM)<sup>2</sup> does not represent the views of any particular affected party or special interest group, but is designed to assist the FCC as it seeks to develop the most effective and economical way to bring broadband service to unserved areas.

The commission has offered a sweeping proposal to reform the \$4.3 billion high-cost universal service program to eliminate inefficiencies, reform intercarrier compensation to eliminate inefficiencies, use the savings to subsidize broadband in high-cost areas, award subsidies via competitive bidding, and adopt outcome-oriented performance measures for the high-cost universal service program. A series of comments by Mercatus Center scholars in this and related proceedings have outlined the case for reform and offered numerous specific suggestions.<sup>3</sup>

We have conducted extensive analysis of the effects of universal service and intercarrier compensation regulations on price, availability, and consumer welfare.<sup>4</sup> We submitted a series of comments proposing outcome-based performance measures for the FCC's universal service programs.<sup>5</sup>

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

<sup>2</sup> Federal Communications Commission, *Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking*, WC Docket 10-90 (released February 9, 2011). (Hereinafter "NPRM")

<sup>3</sup> Jerry Ellig, *Public Interest Comment on the Connect America Fund*, WC Docket 10-90 (July 9, 2010), available at <http://mercatus.org/publication/public-interest-comment-connect-america-fund>.

<sup>4</sup> Jerry Ellig, *Public Interest Comment on Intercarrier Compensation and Universal Service*, WC Docket No. 05-337 et al. (November 26, 2008), available at [http://www.mercatus.org/uploadedFiles/Mercatus/Publications/PDF\\_PIC\\_2008%2011%20Intercarrier%20and%20Universal%20Service%20reform%20Comment%20-%20Ellig.pdf](http://www.mercatus.org/uploadedFiles/Mercatus/Publications/PDF_PIC_2008%2011%20Intercarrier%20and%20Universal%20Service%20reform%20Comment%20-%20Ellig.pdf); Jerry Ellig, *Public Interest Ex Parte Comment on Intercarrier Compensation and Universal Service*, CC Docket No. 01-92 et. al, available at [http://www.mercatus.org/uploadedFiles/Mercatus/Publications/PICPDF\\_Intercarrier%20ExParte%20Comment\\_Ellig.pdf](http://www.mercatus.org/uploadedFiles/Mercatus/Publications/PICPDF_Intercarrier%20ExParte%20Comment_Ellig.pdf); Andrew Perraut and Jerry Ellig, *Public Interest Comment on High Cost Universal Service Support*, WC Docket No. 05-337 et al. (March

Rather than repeat here the analysis and recommendations in all of those previous filings, we focus on two specific issues in the current NPRM that would have a significant impact on the efficiency and effectiveness of the proposed Connect America Fund. Those issues are (1) the definition of broadband and (2) performance measures the commission would use to assess the program's results.

The commission asks if the proposed definition of broadband as four Mbps download and one Mbps upload is appropriate for the Connect America Fund. It is not. Those speeds are not essential for education, public health, or public safety; the available evidence shows that *essential* functions in all three areas are accomplished with much slower speeds. A substantial majority of residential consumers do not subscribe to a service providing a four Mbps/one Mbps speed; 768 kbps download is the only speed the evidence unambiguously shows a substantial majority of residential consumers purchase. Finally, the four Mbps download/oneMbps upload definition is inconsistent with the public interest, because it would result in a universal service fund (USF) contribution burden on consumers much higher than necessary to satisfy the previous two criteria.

To assess the program's future performance, the commission considers measuring deployment, subscribership, and rate comparability. These are intermediate outcomes well worth measuring. But measuring and reporting these numbers is not enough. Accurate assessment of the program's actual effects on these intermediate outcomes requires that the commission compare observed outcomes against a relevant counterfactual estimate of what would have occurred in the absence of the subsidies. And accurate assessment of the program's effect on ultimate outcomes—improved social, educational, and economic opportunities in high-cost areas—requires that the commission evaluate how subscribership affects those ultimate outcomes.

The commission also proposes to measure the USF contribution burden per household and seeks comment on an appropriate efficiency measure for the contribution burden. Since the contribution burden is a revenue-raising mechanism, the appropriate efficiency measure is the economic measure of “deadweight loss”: the value sacrificed by society because the USF contributions reduce subscribership and/or use of telecommunications services.

Finally, the commission proposes to review the performance measures annually and take corrective action if the program fails to achieve its goals. We agree that regular review and use of performance information

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27, 2008), available at

<http://www.mercatus.org/uploadedFiles/Mercatus/Publications/High%20Cost%20Universal%20Service%20Support.pdf>; Andrew Perraut and Jerry Ellig, *Notice of Ex Parte Communication, Universal Service Contribution Methodology*, WC Docket 06-122 (November 2, 2007), available at

[http://www.mercatus.org/uploadedFiles/Mercatus/Publications/20071105\\_USF\\_Ex\\_Parte\\_Oct\\_2007.pdf](http://www.mercatus.org/uploadedFiles/Mercatus/Publications/20071105_USF_Ex_Parte_Oct_2007.pdf); Jerry Ellig, *Public Interest Comment on Unified Intercarrier Compensation*, May 23, 2005,

[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6517623936](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517623936); Jerry Ellig, *Intercarrier Compensation and Consumer Welfare*, 2005 U. OF IL. J. OF LAW, TECH., AND POL'Y 97 (2005), available at

<http://www.mercatus.org/PublicationDetails.aspx?id=17794>; Jerry Ellig and Joseph Rotondi, *Outcomes and Alternatives for Universal Telecommunications Services: A Case Study of Texas*, 12 TEXAS REVIEW OF LAW & POLITICS 1 (2007), available at <http://www.mercatus.org/PublicationDetails.aspx?id=16094>.

<sup>5</sup> Maurice McTigue and Jerry Ellig, *Public Interest Comment on Performance Measures for Universal Service Programs*, FCC Docket 05-195 (October 17, 2005), available at

[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6518169986](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518169986); Maurice McTigue and Jerry Ellig, *Notice of Ex Parte Communication*, FCC Docket 05-195 (January 26, 2006), available at

[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6518313841](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518313841); Maurice McTigue and Jerry Ellig, *Public Interest Reply Comment on Comprehensive Review of the Universal Service Fund Management and Oversight*, FCC Docket No. 05-195 (December 15, 2008), available at <http://www.mercatus.org/PublicationDetails.aspx?id=25580>.

in decisions is essential. However, the GPRA Modernization Act of 2010<sup>6</sup> will likely require quarterly rather than annual reviews of performance measures for the Connect America Fund.

## I. DEFINITION OF BROADBAND UNDER THE USF

In its NPRM, the commission asks the threshold question of whether it has the authority to include broadband as a covered service under the USF per Section 254 of the Communications Act.<sup>7</sup> We do not address that question here. Assuming that it does have such authority, however, Section 254(c) requires the commission to consider what level of broadband it may include in the USF. The commission therefore asks if it should set a target of four Mbps download/one Mbps upload for broadband and if it should make that speed a requirement for USF support.<sup>8</sup> In essence, assuming it has authority to include *some* level of broadband in the USF, the commission must define what that level is. Part I of our comment addresses this issue.

Section 254(c) states that “[u]niversal service is an evolving level of telecommunications services that the Commission shall establish periodically . . . taking into account advances in telecommunications and information technologies and services.”<sup>9</sup> In determining “the definition of the services supported by Federal universal service support mechanisms,” the act requires the commission to consider whether the services it seeks to define:

- (A) are essential to education, public health, or public safety;
- (B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;
- (C) are being deployed in public telecommunications networks by telecommunications carriers; and
- (D) are consistent with the public interest, convenience, and necessity.<sup>10</sup>

The commission must therefore consider whether these criteria support the proposed 4 Mbps/1Mbps definition, or whether in fact the criteria support a different definition of broadband. If broadband is defined as any type of Internet access faster than dial-up, then such a service would likely meet the Section 254 criteria.<sup>11</sup> However, if the commission defines “broadband” as 4 Mbps download/1 Mbps upload, then such a service does not meet the criteria.

We examine whether the 4 Mbps/1 Mbps definition is essential to education, public health, or public safety and find that it is not. We also find that a substantial majority of residential customers do not subscribe to 4 Mbps/1 Mbps broadband. Finally, we conclude that the costs of subsidizing broadband at these speeds will likely subvert the public interest goals of universal service by making telephone rates less affordable for those who pay the universal service assessments.

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<sup>6</sup> GPRA Modernization Act of 2010, Pub. L. No. 111-352, 124 Stat. 3866 (2011). The GPRA Modernization Act amends the Government Performance and Results Act of 1993, Pub. L. No. 103-62, 107 Stat. 285 (1993).

<sup>7</sup> NPRM, para. 61-62. The statutory ambiguity that must be resolved is whether broadband, as an information service, can be included within universal service even though the statute only refers to telecommunications services.

<sup>8</sup> NPRM, paras. 24, 63, and 109.

<sup>9</sup> 47 U.S.C. § 254(c)(1).

<sup>10</sup> 47 U.S.C. § 254(c)(1)(A)-(D).

<sup>11</sup> See Federal-State Joint Board on Universal Service, *Recommended Decision*, WC Docket 05-337 (released November 20, 2007), para. 59 (recommending that broadband be included in USF and taking evidence that a vast majority of households subscribe to some kind of Internet access as sufficient to satisfy Section 254(c)(1)(B)).

## A. Essential to Education, Public Health, or Public Safety

The operative word in the first criterion is “essential.” The main purpose of the USF is to ensure that rural and high-cost areas have access to telecommunications and information services reasonably comparable to those available in urban areas.<sup>12</sup> It is not to subsidize cutting-edge technologies or to drive an aspirational national industrial policy. It is therefore proper that the commission limit itself to including within the USF only services that are essential to those ends, and not merely desirable. With this in mind, we can see that the 4Mbps/1Mbps definition of broadband fails the first criterion, because such speeds are not essential to education, public health, or public safety.

### 1. Education

As the Broadband Plan makes clear, “Broadband can be an important tool to help educators, parents and students meet major challenges in education.”<sup>13</sup> The question that must be answered, however, is whether in the context of the USF, broadband must be defined as 4 Mbps/1Mbps to play that important role. The answer is no.

Online education does not rely on super high-speed Internet connections. For example, one of the leading providers of online education in the U.S. is the University of Phoenix.<sup>14</sup> It offers associate’s, bachelor’s, master’s, and doctoral degrees for which all coursework is completed online. Students interact with each other and instructors using email, chat, forums, virtual whiteboards, and remote access to e-books, none of which require 4 Mbps broadband. This is how most online education takes place.

Like the University of Phoenix,<sup>15</sup> Kaplan University and Kaplan High School list a 56.6 kbps modem connection to the Internet as sufficient for enrollment.<sup>16</sup> Similarly, most of the successful online education efforts highlighted in the Broadband Plan do not require super high-speed Internet access. For example, the Oregon Connections Academy and the Florida Virtual Schools programs—noted for improving AP scores—work with any existing cable or DSL speeds.<sup>17</sup> Also, technical analysis underlying the Broadband Plan cites the Assessment and LEarning in Knowledge Spaces (ALEKS) program as the example of an online education requiring “real-time” broadband.<sup>18</sup> ALEKS lists a connection requirement of only 56 kbps.<sup>19</sup>

An argument could be made that 4 Mbps broadband is necessary to support live interactive lectures. However, live interactive video is not essential to quality online education. A recent national survey of community colleges by the Instructional Technology Council found that while 75 percent of institutions

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<sup>12</sup> 47 U.S.C. § 254(b)(3).

<sup>13</sup> Federal Communications Commission, *Connecting America: The National Broadband Plan* (released March 16, 2010, at 244. (Hereinafter “Broadband Plan”)

<sup>14</sup> The University of Phoenix is the largest accredited university in the country with over half a million enrolled students in the last 12 months. Department of Education, Integrated Post-secondary Education Data System, <http://nces.ed.gov/ipeds/datacenter> (last visited April 5, 2011). The third largest university by enrollment is Kaplan University.

<sup>15</sup> University of Phoenix, *Computer Requirements*, [http://www.phoenix.edu/students/how-it-works/innovative\\_education\\_technology/computer\\_requirements.html](http://www.phoenix.edu/students/how-it-works/innovative_education_technology/computer_requirements.html) (last visited April 5, 2011).

<sup>16</sup> Kaplan Virtual Education, *Technology Requirements for Individual Users* (June 1, 2010), available at [http://www.kaplanonlineschools.com/download/pdf/Technology\\_Requirements\\_KVE\\_Individual-Users\\_June2010.pdf](http://www.kaplanonlineschools.com/download/pdf/Technology_Requirements_KVE_Individual-Users_June2010.pdf).

<sup>17</sup> Oregon Connections Academy, *System Requirements*, <http://www.connectionsacademy.com/oregon-school/technology/hardware/minimum.aspx> (last visited April 5, 2011).

<sup>18</sup> FCC Omnibus Broadband Initiative, “Broadband Performance,” OBI Technical Paper No. 4, at 9. [Hereinafter “Broadband Performance.”]

<sup>19</sup> ALEKS, *Support – System Requirements*, [http://www.aleks.com/support/system\\_requirements](http://www.aleks.com/support/system_requirements) (last visited April 5, 2011).

offered online classes, only 3 percent offered interactive video courses.<sup>20</sup> Additionally, 25 percent of institutions said that they are reducing the number of interactive video courses offered each semester.<sup>21</sup>

Live interactive video is not only inessential to online education, it runs counter to one of the main benefits the Internet brings to education: asynchronicity. That is, online tools free students and instructors from having to meet simultaneously for coursework. Email and discussion forums allow students and teachers to engage with each other on their own time. And downloadable audio and video lectures, which allow students to learn without the limitations of a class schedule, have made repositories such as iTunes U, YouTube EDU, Academic Earth, and MIT Open Courseware incredibly popular.<sup>22</sup>

Although faster broadband speeds may always be welcome, online education as widely practiced today does not rely on 4 Mbps download and 1 Mbps upload service. A visionary might argue that live interactive lectures are the wave of the future, but live interactive lectures have been around at least since the time of Socrates; a real advance offered by online education is eliminating the requirement that the student be available at the same time as the teacher. Therefore, as it considers the criteria in Section 254(c), the commission should find that the 4Mbps/1Mbps definition of broadband is not essential to education.

## 2. Public Health and Public Safety

As with education, while very-high-speed Internet connections may be desirable, 4 Mbps broadband is not essential to public health and public safety.

As the Broadband Plan suggests, the most pressing need for public safety today is the development of a nationwide interoperable wireless broadband network.<sup>23</sup> That first responder network will have a funding mechanism unrelated to the USF.<sup>24</sup> In the context of public safety, consumer access to broadband is important to help consumers report emergencies, or be alerted of emergencies, and help them have access to information about unfolding events and what course of action to take in case of emergency.<sup>25</sup> However, the reporting and alert systems now in place, as well as those being contemplated for the near future, do not require 4 Mbps broadband.

The Emergency Alert System and existing 9-1-1 systems do not require 4 Mbps broadband. Additionally, some of the most important gains to public safety expected from the proposed Integrated Public Alert and Warning System and Next Generation 9-1-1 systems come from the ability of citizens to receive and send text alerts, which do not require 4 Mbps broadband speeds.<sup>26</sup> These next generation systems also contemplate allowing citizens to report emergencies using photos and video, but again, there is no reason why a 4 Mbps target is essential to achieve those public safety goals.

In an ideal world, a citizen at an accident scene would be able to transmit live high-definition video to first responders from a wireless consumer device. However, such a capability, as desirous as it may be, is

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<sup>20</sup> Institutional Technology Council, *Distance Education Survey Results - Trends in eLearning: Tracking The Impact of eLearning at Community Colleges* (March 2010), 8.

<sup>21</sup> *Id.* at 9.

<sup>22</sup> Mark Tutton, *Welcome to the University of iTunes*, CNN, October 16, 2009, available at <http://www.cnn.com/2009/BUSINESS/10/16/online.university>.

<sup>23</sup> Broadband Plan at 313.

<sup>24</sup> See FCC Omnibus Broadband Initiative, "A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to America's First Responders," OBI Technical Paper No. 2 (May 2010).

<sup>25</sup> Broadband Plan at 323-327.

<sup>26</sup> *Id.* See also Government Accountability Office, "Emergency Preparedness: Improved Planning and Coordination Necessary for Modernization and Integration of Public Alert and Warning System," GAO-09-834 (September 2009).

not essential to public safety, which Section 254(c) requires the commission to consider. In fact, 4 Mbps speeds are not necessary for some of broadband's greatest contributions to increased public safety.

For example, in its public safety chapter, the Broadband Plan highlights a case study demonstrating how wireless broadband helps George Washington University cardiologist Richard Katz provide emergency medical care:

A "smart band-aid" attached to an accident victim's chest or wrist can detect vital signs and wirelessly transmit this information to Dr. Katz over GWU's mVisum network. He can receive electrocardiograms of "pristine" quality on his cell phone. And he can use his phone to access patient medical records and disseminate emergency messages and alerts.<sup>27</sup>

The mVisum system Dr. Katz uses operates over existing 3G wireless networks and is available for use on a wide number of standard consumer smartphones.<sup>28</sup>

Similarly, the greatest contributions of broadband to improved public health do not require super high speeds. As the Broadband Plan states, public health benefits from access to wireless and high-speed Internet because those services facilitate data collection and information sharing.<sup>29</sup> The use of national networks to identify public health trends, and to track outbreaks or the spread of infectious diseases, is low-hanging fruit that widespread Internet access allows medical professionals to collect. However, such collaboration does not require 4 Mbps broadband; slower speeds are sufficient.

## B. Substantial Majority of Residential Customers

The second criterion the commission must consider under the Act is whether the proposed speed has "through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers." Again, the answer is no.

At the outset, it will be helpful to understand what is meant by a "substantial majority of residential customers." In plain language, a majority is at least 50 percent plus 1 of an amount. By adding the modifier "substantial" to the word "majority," we assume Congress meant to exclude amounts only slightly above a bare majority, and instead meant amounts that can be reasonably construed as well in excess of 50 percent.

Next, although Congress refers to a substantial majority of *residential customers*, we assume that the proper denominator to use in the analysis is *all* households, not simply all households who subscribe to Internet access. Otherwise, it would be possible to have an absurd situation in which only 10 percent of households subscribe to Internet access, but broadband could be included in the USF because 90 percent of the 10 percent choose broadband. Such a result is absurd because Congress did not intend to subsidize a service to which only a small minority of households subscribes. Indeed, the Federal-State Joint Board on Universal Service has previously interpreted the denominator contemplated in Section 254(c) as "all households."<sup>30</sup>

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<sup>27</sup> Broadband Plan at 315.

<sup>28</sup> mVisum, *Customer Supplied Hardware Requirements*, available at <http://www.mvisum.com/Brochures/Hardware%20Requirements%206-28-10.pdf>.

<sup>29</sup> Broadband Plan at 207.

<sup>30</sup> Federal-State Joint Board on Universal Service, *Recommended Decision*, WC Docket 05-337 (released November 20, 2007), paras. 58-62.



The 4 Mbps/1 Mbps definition does not reflect the speed of broadband subscribed to by a substantial majority of residential customers. In a previous comment, we used data from the Broadband Plan to calculate that 59 percent of Americans subscribe to broadband with a download speed of 768 kbps or higher. According to those figures, only about 31 percent have download speeds of 4 Mbps or higher.<sup>31</sup>

The commission's March 2011 *Internet Access Services* report shows that the situation has not changed much.<sup>32</sup> Statistics in the report suggest that no more than 48 percent of households have download speeds of at least 3 Mbps, no more than 64 percent have download speeds of at least 1.5 Mbps, and no more than 88 percent have download speeds of at least 768 kbps.<sup>33</sup> The report does not use 4 Mbps as a breakpoint for reporting subscribership statistics, so we cannot calculate the percentage of households with download speeds of 4 Mbps from the data in the report. Nevertheless, clearly a "substantial majority" of residential subscribers do not subscribe to broadband with a 4 Mbps, or even 3 Mbps, download speed.

A critic might argue that many broadband subscribers have speeds of 1.5 Mbps or 768 kbps not by choice, but because faster speeds are not available where they live. The report, however, indicates that 97 to 98 percent of U.S. households are located in census tracts where download speeds of at least 3 Mbps are available.<sup>34</sup> Clearly, most of the households with speeds below 3 Mbps have chosen those slower speeds even though 3 Mbps is available.

The figures in the *Internet Access Services* report likely overstate the percentages of households with various broadband speeds because they double count an unknown but potentially large number of households who have both fixed and mobile service—a home computer and a smart phone. Table 13 of the report shows residential connections by speed tier and technology but does not indicate how many households use mobile wireless as their sole broadband connection. If we simply omit mobile wireless connections from the calculations, we find that 44 percent of households have a download speed of at least 3 Mbps, 54 percent have a download speed of at least 1.5 Mbps, and 59 percent have a download speed of at least 768 kbps.<sup>35</sup>

Most mobile wireless connections reported in Table 13 of the report are at speeds of 1.5 Mbps or lower. Thus, if we could include the number of households using mobile wireless as their sole connection, the percentage with download speeds of at least 1.5 Mbps or 768 kbps would likely be higher, but the percentage with download speeds of 3 Mbps or higher would increase slightly, if at all.

In short, a review of the FCC's most recent statistics shows that a substantial majority of households subscribe to broadband with a download speed of at least 768 kbps. A substantial majority might subscribe to broadband with a download speed of at least 1.5 Mbps, but the FCC cannot know for sure without knowing the number of households who use mobile wireless as their sole broadband connection. A minority of households has broadband service with a download speed of 3 Mbps or higher.

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<sup>31</sup> Ellig, *supra* note 3, at 8-10.

<sup>32</sup> Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *Internet Access Services: Status as of June 30, 2010* (March 2011). (Hereinafter *Internet Access Services*.)

<sup>33</sup> Percentages calculated by totaling the number of subscriptions listed in Table 13 of the *Internet Access Services* report at each download speed or faster, then dividing these totals by the total of 117,671,000 households referenced in Table 16. Unfortunately, the report does not indicate how many households have both fixed and mobile wireless. This means that the percentages reported above likely overstate the proportion of households with broadband at each speed by double counting households that have both fixed and mobile wireless.

<sup>34</sup> *Internet Access Services*, Figures 3(a) and 3(b).

<sup>35</sup> These calculations are performed the same way as in footnote 33. In this case, however, the numerator is total subscriptions listed in Table 13 minus mobile wireless subscriptions listed in Table 13.

### C. Consistent with the Public Interest, Convenience, and Necessity

The final criterion the commission must consider under Section 254(c) is the public interest, convenience, and necessity. The cost of universal service subsidies is a key factor in determining whether subsidization of particular services advances the public interest. Additionally, the commission notes that “excessive” funding may violate Section 254’s “sufficiency” requirement or could undermine affordability.<sup>36</sup> Excessive costs of universal service subsidies could subvert the goal of universal service by making telephone rates less affordable for those who pay the universal service assessments, perhaps even reducing telephone subscribership as a result.

Universal service assessments, however, also apply to interstate services that are not directly supported by high-cost universal service subsidies, such as long-distance service and wireless service in urban and suburban areas. When consumers pay more or reduce their usage of these services in response to the price increases universal service assessments cause, consumers sacrifice value and firms sacrifice revenues. In economics jargon, the value of service that consumers forego because of the price increase is known as the “deadweight loss” the assessments cause. Numerous economic studies find that these reductions in consumer welfare are substantial:

- In one of the first empirical studies assessing the effects of federal universal service 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 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, Jerry Ellig and James 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. Switching the USF fee to a numbers-based charge would cut the deadweight loss by \$529 million.<sup>41</sup>
- Examining state universal service charges in Texas, Jerry Ellig and Joseph Rotondi found that a numbers-based charge would reduce consumer welfare much less than a revenue-based charge. Substituting a numbers-based charge for the current revenue-based charge would reduce the total deadweight loss from \$176 million (28.4 percent of the revenue raised) to \$86 million (14 percent of revenue raised). The welfare loss in wireless would drop from 48.6 cents to 25.1 cents per

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<sup>36</sup> NPRM, para. 412.

<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 (2000).

<sup>39</sup> Jerry Ellig, *Costs and Consequences of Federal Telecommunications Regulations*, 58 FED. COMM. LAW J. 37 (2006), at tbl. 2.

<sup>40</sup> Id.

<sup>41</sup> Jerry Ellig and James Taylor, *The Irony of Transparency: Unintended Consequences of Wireless Truth-in-Billing*, LOYOLA CONSUMER LAW REVIEW 19:1 (2006), at 65.



dollar of assessment, and the welfare loss in long distance would drop from 53.9 cents per dollar of assessment to zero.<sup>42</sup>

It is especially important in this proceeding that the FCC minimize the costs universal service charges impose on consumers, because the FCC has declined to reform the inefficient universal service funding mechanism in this proceeding. Until the FCC reforms the funding mechanism, consumers will continue to pay universal service assessments on price-sensitive services, which reduce use of those services. These losses borne by consumers of services that are not supported by universal service subsidies are clearly substantial and affect the public interest.

The speed defined as “broadband” is a significant driver of universal service subsidy costs. For example, a technical paper accompanying the Broadband Plan estimates that making 4 Mbps/1 Mbps broadband universally available would require subsidies with a net present value of \$23.5 billion over the next 20 years.<sup>43</sup> If the goal is reduced to 1.5 Mbps download, however, the size of the subsidy falls to \$15.3 billion—a 35 percent reduction.<sup>44</sup>

The 4 Mbps/1Mbps definition proposed by the commission dramatically expands the size of the population considered “unserved” and excludes some cost-effective broadband solutions, thus inflating the cost of the subsidies. In a previous comment, we showed, using figures from the Broadband Plan and supporting technical documents, that the proposed 4 Mbps upload/1 Mbps download definition more than doubled the percentage of the population considered “unserved.” This occurs because the 4 Mbps/1Mbps definition does not count 3G wireless or some slower DSL services as “broadband” and greatly constrains the number of people satellite could serve.<sup>45</sup>

A technical paper prepared for the Broadband Plan estimated that about 5 percent of housing units lack access to broadband with minimum 4 Mbps download and 1 Mbps upload speed.<sup>46</sup> Unfortunately, the commission’s March 2011 *Internet Access Services* report does not use 4 Mbps as a breakpoint for reporting broadband availability statistics, so we do not know if this percentage has fallen since the Broadband Plan was issued. Nevertheless, figures in the report show that the 4 Mbps/1Mbps definition would still significantly inflate costs by leaving out 3G wireless, slower DSL services, and satellite.

The *Internet Access Services* report shows the percentage of households in census tracts with download speeds of at least 3 Mbps. As of June 2010, 97 percent of households are located in census tracts where fixed-location broadband connections of at least 3 Mbps download and 768 kbps upload are available. The number rises to 98 percent when mobile wireless is included.<sup>47</sup> In other words, the percentage of households without access to broadband falls from the 5 percent estimated in the Broadband Plan to around 2 percent, if the goal is defined as 3 Mbps download/768 kbps upload. Furthermore, 99 percent of households are in census tracts with broadband at least 3 Mbps download and 200 kbps upload. The number rounds to 100 percent when mobile wireless is included.<sup>48</sup>

Clearly, reducing the threshold download and upload speeds reduces the size (and expense) of the problem that needs to be solved with universal service subsidies. The 3 Mbps/768 kbps definition cuts the

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<sup>42</sup> Ellig and Rotondi, *supra* note 4, at 40.

<sup>43</sup> FCC Omnibus Broadband Initiative, “The Broadband Availability Gap,” OBI Technical Paper No. 1 (April 2010), 1. (Hereinafter “Broadband Availability Gap.”)

<sup>44</sup> *Id.* at 45.

<sup>45</sup> Ellig, *supra* note 3, at 6-7.

<sup>46</sup> Broadband Availability Gap, at 17-20.

<sup>47</sup> *Internet Access Services*, Figures 3(a) and 3(b).

<sup>48</sup> *Id.*

percentage of households without access from 5 percent to about 2 percent, and the 3 Mbps/200 kbps definition cuts the percentage below 1 percent.

An even more modest minimum download speed, such as 1.5 Mbps or lower, would likely reduce the cost of universal service subsidies even more by reducing the number of households for which broadband is considered “unavailable.” Unfortunately, the *Internet Access Services* report does not show the percentage of households in census tracts with lower minimum download speeds, such as 1.5 Mbps, 1 Mbps, or 768 kbps. This is a serious omission that inhibits comprehensive and thoughtful discussion of the appropriate broadband speed benchmark for universal service. Before selecting a speed benchmark in this proceeding, the commission should calculate and disclose the percentages of households in census tracts that have minimum download speeds of 1.5 Mbps, 1 Mbps, and 768 kbps, comparable to the figures reported for faster speeds in Figures 3(a) and 3(b) of the March 2011 *Internet Access Services* report. The commission should also estimate the size of the universal service subsidies required to provide service to all households at these benchmark speeds, just as the Broadband Plan did for the proposed 4 Mbps/1 Mbps benchmark.

Lower speed benchmarks may not reduce the cost of universal service subsidies proportionately, since customers in the very highest-cost locations account for a disproportionate share of the estimated costs. But lower speed benchmarks could still cut the cost of the program substantially below the Broadband Plan’s estimate and substantially below the cost of the current high-cost program. For example, a technical paper accompanying the Broadband Plan calculates that serving the highest-cost 250,000 households with satellite broadband would reduce subsidies by \$13.4 billion, or 57 percent of the estimated funding gap.<sup>49</sup> The 4 Mbps/1 Mbps goal, however, significantly constrains satellite’s potential contribution. Reducing the goal to 2 Mbps download, for example, would roughly double broadband satellite capacity, allowing satellite to serve two million homes in 2015. Reducing the goal to 1 Mbps would probably allow satellite to serve about four million homes in 2015. Thus, a lower goal could allow satellite to make a much more pervasive contribution, reducing subsidies by even more than the \$13.4 billion estimated in the technical paper. We estimate that subsidizing satellite broadband subscriptions with 1.5 Mbps download/250 kbps upload speeds for the 1 percent of households who may lack access to 3 Mbps broadband would cost about \$635 million annually, compared to the more than \$4 billion price tag of the current high-cost subsidies.<sup>50</sup> Moreover, even the \$635 million figure is a likely overstatement, since it assumes that all of these households would actually want broadband service and receive subsidies.

Given the large cost of the universal service program and the large impact of the speed benchmark on costs, it would be inherently arbitrary for the commission to pick a speed benchmark in ignorance of the cost consequences of alternative benchmarks that could substantially reduce the cost of the program to consumers.

## II. PERFORMANCE MEASUREMENT

This NPRM marks the first time the commission has proposed specific outcome measures for this high-cost program. Outcomes are the actual benefits created, or harms avoided, for citizens. “*Outcomes are not what the program did but the consequences of what the program did.*”<sup>51</sup> Outcome measurement is crucial if congressional and FCC decisions are to be based on actual evidence of the effects of universal service

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<sup>49</sup> Broadband Availability Gap, at 92.

<sup>50</sup> Commercial satellite providers currently offer broadband with 1.5 Mbps download/250 kbps upload speeds for approximately \$85 per month, including equipment rental. (See [www.wildblue.com](http://www.wildblue.com) and [www.satelliteinternetbroadband.com](http://www.satelliteinternetbroadband.com).) If households are expected to pay \$40 per month for their broadband, the required subsidy would be \$45 per month. Table 16 of the March 2011 *Internet Access Services* report states that there are 117,671,000 households in the U.S. One percent of these households times \$45 per month times 12 months equals approximately \$635 million per year.

<sup>51</sup> Harry P. Hatry, *Performance Measurement: Getting Results* (Washington, DC: Urban Institute Press, 1999), at 15.

programs. An evidence-based approach requires objective analysis to determine whether, and to what extent, alternative approaches actually cause the intended outcomes—the results that citizens value and that (presumably) motivated the program’s creation.

Regulatory decisions that are not guided by evidence of actual or likely effects are best characterized as “faith-based” regulations. In the absence of actual evidence, the regulator simply takes on faith that undertaking activity X will produce result Y.

In a reply comment filed in 2008, we noted other commenters expressed widespread support for outcome measures.<sup>52</sup> We applaud the commission’s decision to measure outcomes and efficiency, using performance goals clearly linked to the purposes of the program set forth in the 1996 Telecommunications Act. We also applaud the commission’s decision to measure the contribution burden, a cost outcome, as this is crucial for understanding the cost-effectiveness and efficiency of the program. The proposed annual assessment of the performance measures is also a very welcome initiative.

The commission’s decision to pursue outcome measures coincides with the new performance reporting requirements introduced by the GPRA Modernization Act of 2010.<sup>53</sup> The amendments to the Government Performance and Results Act require that agency heads now identify agency priority goals from among that agency’s stated performance goals.<sup>54</sup> Priority goals are subject to quarterly performance reporting and reviews.<sup>55</sup> These reviews require the commission to assess and report on the effect of programs and regulations related to the priority goals.<sup>56</sup>

Broadband was identified as the commission’s first strategic goal in its most recent GPRA performance report,<sup>57</sup> and the focus on implementing the Broadband Plan means it will remain at the top of the list. Indeed, if broadband deployment is not a priority goal, one might question why the commission should subsidize broadband at all! Given broadband’s importance, it will no doubt qualify as a priority goal. The universal service program and related regulations are major contributors to achieving the broadband goal, so the commission will be required to review and report on its progress on a quarterly basis.

#### A. Proposed Performance Measures

Before offering suggestions on the proposed performance measures, we would like to point out a crucial contextual issue that receives little explicit attention in the commission’s discussion of performance measures. Deployment, subscribership, and rates are just intermediate outcomes, not final outcomes of value to citizens. They are means to the ultimate end of improving economic and social opportunities for residents of high-cost areas. As the expert agency that designs the programs, the FCC should bear responsibility for assessing whether increased deployment and subscribership do indeed produce the ultimate public benefits legislators hope they will produce.

High-cost universal service subsidies appear to be based on a straightforward “logic model”: (1) subsidies will increase availability and decrease rates (compared to what they would otherwise be), (2) increased availability and reduced rates will increase subscribership, and (3) increased subscribership will lead to greater economic and social opportunities. For performance measurement, it is incumbent on government

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<sup>52</sup> Maurice McTigue and Jerry Ellig, *Public Interest Reply Comment on Comprehensive Review of the Universal Service Fund Management and Oversight*, WC Docket 05-195 (December 15, 2008), <http://mercatus.org/publication/public-interest-reply-comment-comprehensive-review-universal-service-fund-management-and>.

<sup>53</sup> GPRA Modernization Act, *supra* note 6.

<sup>54</sup> *Id.* § 1120(b).

<sup>55</sup> *Id.* § 1121(b).

<sup>56</sup> *Id.* § 1121(b)(3) and § 1122(b).

<sup>57</sup> Federal Communications Commission, *Fiscal Year 2008 Performance and Accountability Report* (November 17, 2008) at 9 and 49, available at <http://www.fcc.gov/Reports/ar2008.pdf>.

to provide empirical evidence that these linkages in fact exist, not just assert them. An accurate evaluation of the program’s achievements, therefore, must establish whether and how much the subsidies affect deployment and rates, whether and how much the change in deployment and rates affects subscribership, and whether and how much the change in subscribership affects economic and social opportunities.

The FCC should either use this logic model as the basis for establishing performance measures and evaluation methods for the high-cost universal service program, or it should articulate an alternative logic model and explain how it derived its performance measures and evaluation methods from that model. The commission should establish performance measures for each step in the logic model: the effect of subsidies on deployment and rates, the change in subscribership attributable to this effect, and the improvement in economic and social opportunities created by the increase in subscribership. Of course, deployment, rates, and subscribership are easier to measure than the improvement in economic and social opportunities. At a minimum, therefore, the commission should establish measures for deployment, rates, and subscribership, and then establish an evaluation initiative (perhaps in partnership with other federal agencies) to assess the effect of the subsidy-induced increase in subscribership on economic and social opportunities in high-cost areas going forward.

### 1. Deployment and Subscribership

For voice service, the commission has historically used the telephone penetration rate as a proxy for measuring deployment, but the commission asks whether it should develop a new deployment measure.<sup>58</sup> For broadband, the commission proposes to measure deployment—specifically, the number of housing units that gain access to broadband *as a result of* high-cost subsidies.<sup>59</sup> The logic model articulated above suggests that the commission should measure both the change in deployment caused by the subsidies and the change in subscribership caused by the change in deployment. Both of these intermediate outcomes should be measured for voice service and for broadband.

The key challenge in defining these measures accurately is determining whether the subsidy really caused an increase in deployment or subscribership that would not have occurred in the absence of the subsidy. It is extremely tempting to adopt what we have called—in previous comments—“McMeasures,” the equivalent of simply counting the number of people served.<sup>60</sup> These are ostensible “outcome” measures that assume every customer receiving a subsidy, or every customer in an area served by a firm receiving a subsidy, would not have had access to the service in the absence of the subsidy. McMeasures are actually a clever way of converting an input measure—dollars spent—into something that looks like an outcome measure, but isn’t. When an agency uses such measures, there is no way the program could be found to be ineffective, since dollars spent automatically signify measured success. For this reason, McMeasures do not actually indicate whether or not the program is successful.

To determine how much increase in deployment or subscribership a subsidy actually caused, one must compare the level of deployment or subscribership in the presence of the subsidy program with a counterfactual assessment of what would have occurred in the absence of the subsidy program. This is a widely accepted method for assessing the actual effects of a regulation or program. As Winston Harrington et al. note,

To determine the cost (or benefits) of a regulation, one must compare conditions in a world with the regulation to conditions in a world without it. To produce ex ante estimates, both the “with” and the “without” scenarios must be modeled; they cannot be

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<sup>58</sup> NPRM, para. 483.

<sup>59</sup> NPRM, para. 485.

<sup>60</sup> McTigue and Ellig, *supra* note 52, at 8.

observed. For the ex post calculation, the world with the regulation is observed, but the counterfactual is not. To produce an ex post estimate, one must determine the actual outcome empirically and compare it to a hypothetical baseline with the status quo ante.<sup>61</sup>

The Broadband Plan assumes that every location that lacks broadband coverage now will not have broadband in the future unless the broadband is subsidized. That assumption is based on a technical paper's calculation that all areas currently unserved are unprofitable to serve—that is, carriers have already deployed broadband everywhere it is profitable.<sup>62</sup> If this turns out to be true, then counting the number of households with access to (or that choose to subscribe to) subsidized broadband is a reasonable way of measuring the effect of the subsidies on deployment or subscribership. But the claim that all currently unserved areas will receive no broadband service in the absence of subsidies is just a prediction, not a certainty. Some aspects of the model the prediction is based upon may be inaccurate, or costs and technologies may evolve in ways the model does not take into account. The technical paper itself notes, “Over time, it may be the case that several technologies’ capabilities improve, or their costs fall, more quickly than has been calculated.”<sup>63</sup> Even if the predictions of firms’ total costs turn out to be accurate, their average costs could be lower if broadband “take rates” are higher than assumed in rural areas.

For these reasons, the commission cannot merely assume that the prediction offered in the Broadband Plan is the relevant counterfactual for assessing the ex post performance of the subsidy program. Instead, the commission will need to re-estimate the counterfactual case as data on actual costs and deployment in high-cost areas become available. We can think of two imperfect ways to do this:

(1) The commission staff could re-estimate the number and location of unserved households in the absence of subsidies by updating the model used in the Broadband Plan with new information about costs, take rates, and other key variables as they become available. The model's updated deployment and subscribership projections without subsidies could be compared to actual deployment and subscribership in areas served by firms that receive subsidies. The difference between the actual results with subsidies and the projected results without subsidies would reveal the effects of the subsidies on deployment and subscribership.

(2) The limited availability of funding in the transition period may create an opportunity for something close to a controlled experiment. Over a period of years, deployment and subscribership in areas that receive subsidies could be compared to deployment and subscribership in the most comparable areas that do not receive subsidies. The difference would reveal the effects of the subsidies on deployment and subscribership.

These ideas are just a starting point to illustrate what needs to be done. Doubtless the commission's economists could improve upon them.

A similar approach could be used to assess the effect of subsidies on access and subscribership to voice service. In this case, the networks have, for the most part, already been built. The relevant counterfactual, therefore, would be the deployment and subscribership patterns that would have occurred in the absence of the subsidies.

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<sup>61</sup> Winston Harrington, Richard D. Morgenstern, and Peter Nelson, *On the Accuracy of Regulatory Cost Estimates*, 19 J. POLICY ANALYSIS & MGMT 297 (2000).

<sup>62</sup> Broadband Availability Gap, at 26.

<sup>63</sup> *Id.* at 41.

Given the pervasiveness and longevity of the high-cost subsidies (and the various implicit subsidies for high-cost areas that pre-date the current high-cost program), it may be difficult to find reliable data to perform a precise counterfactual estimate of deployment and subscribership in the absence of subsidies. We cannot know for sure the costs and characteristics of networks that were not deployed because subsidized networks crowded them out. However, the deployment and price of unsubsidized satellite telephone may provide one rough-and-ready proxy. Since satellite telephone service already exists in the presence of subsidized land-based networks, surely satellite telephone service would have existed (and, indeed, would likely have been more robust) if these subsidies had never occurred. Thus, current satellite telephone coverage indicates, *at a minimum*, what the availability of voice telephone service would be in the absence of high-cost universal service subsidies.

Commission economists could calculate the effect of the subsidies on voice telephone subscribership by using three pieces of data: the number of voice subscribers in subsidized areas, estimates of the price elasticity of demand for a voice telephone connection (readily available in the scholarly literature), and the percentage price difference between unsubsidized satellite voice service and subsidized land-based voice service.<sup>64</sup> Multiplying these three figures yields an estimate of the number of subscribers who would drop off the voice network if the only unsubsidized alternative available were satellite telephone service at current prices. This is equivalent to estimating the additional number of subscribers caused by the subsidies. This calculation could be performed separately for landline and wireless service.

Our recommended approach is, of course, more complicated than simply counting the number of people receiving subsidies or living in areas served by subsidized firms. But our approach has the advantage of providing a more accurate measure of actual performance.

The commission also proposes an efficiency measure for broadband deployment: the change in the number of homes covered by subsidized networks per million dollars spent.<sup>65</sup> This general approach is sound, because the most meaningful and useful measure for assessing the efficiency of a program in achieving intended outcomes is the outcome measure divided by the cost. The proposed measure will provide an accurate assessment of the high-cost program's efficiency in producing outcomes, *provided that* outcomes are calculated by reference to a relevant counterfactual as described above. We further recommend that the commission calculate an efficiency measure for voice subsidies—the change in the number of homes with access to voice service per million dollars spent on voice subsidies—and also calculate similar efficiency measures for subscribership.

Finally, to enhance transparency and public understanding, we recommend that the commission report the efficiency measures both as the amount of outcome produced per million dollars spent, and as the reciprocal: the cost of the subsidy per household that receives access or subscribes as a result of the subsidy. This cost figure would make it easier for citizens paying universal service assessments to compare the average cost of achieving one unit of successful outcome with other relevant figures, such as their own monthly expenditures on broadband or telephone service.

## 2. Reasonably Comparable Rates

The ratio of prices to income is an intuitively sensible way of defining “reasonably comparable” in light of Section 254's directive that “quality services should be available at just, reasonable, and affordable

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<sup>64</sup> In some cases, the actual cost of landline service may be less than the price of satellite service, but the landline service receives a subsidy because the full-cost price would exceed reasonably comparable rates in urban areas. In these cases, the actual unsubsidized cost of the landline service would be the relevant benchmark price to use in the calculation, instead of the price of satellite service. Landline service in those cases would still exist in the absence of subsidies; the price would just be higher, so subscribership would be lower.

<sup>65</sup> NPRM at para. 485.



rates,”<sup>66</sup> since one’s ability to afford phone or broadband service depends on income. This is why we have recommended such a measure in prior comments.<sup>67</sup> If the commission opts to compare relative prices instead, it could achieve a partial adjustment of the type we suggest by adjusting prices for the relative cost of living in urban and rural areas.

As with availability and subscribership, the real challenge in crafting performance measures for reasonably comparable rates is distinguishing how the subsidy program affects rates, apart from other factors. Thus, comparing an adjusted ratio of urban to rural rates over time will not indicate the effects uniquely attributable to the subsidies. To measure the performance of the subsidy program, we need to compare the ratio of urban to rural rates with the ratio that would exist in the absence of the subsidy program.

As with the availability performance measure, the commission appears to have two possible options for determining the subsidy program’s performance:

(1) Continually update the cost inputs used for the model employed in the Broadband Plan, re-run the model, and use the resulting unsubsidized costs of broadband to calculate the urban–rural price ratio that would exist in the absence of the subsidies. Comparing this ratio to the actual, observed ratio should yield a rough estimate of the subsidy program’s effect on rate comparability.

(2) If not all high-cost areas receive broadband subsidies, identify comparable areas with providers that receive high-cost subsidies and with providers that do not receive high-cost subsidies. Comparing the ratio of rates in subsidized high-cost areas to urban rates with the ratio of rates in unsubsidized high-cost areas to urban rates should yield a rough estimate of the subsidy program’s effect on rate comparability.

For voice service, subsidies are ubiquitous in high-cost areas, and subsidized networks are long established. It is thus harder to ascertain what rates would have been charged in rural areas absent the subsidies, because it is harder to know the costs of the network that would have otherwise been built. Consistent with our suggestion above, the commission might use the rates associated with basic satellite voice service as a proxy for the rates that would be available in rural areas in the absence of voice subsidies. Calculating the ratio of urban rates to satellite rates could be a proxy for the ratio that would exist in the absence of high cost subsidies. Comparing this ratio to the actual ratio should yield a rough estimate of the subsidy program’s effect on the ratio.

The commission also asks for a suggested efficiency measure to accompany this performance measure. After calculating the change in the urban–rural ratio attributable to the subsidy program, commission staff could divide this change in the ratio by the amount of subsidy to determine the outcome per dollar spent (or per million dollars spent). Alternatively, the reciprocal would show how many dollars were spent to produce one unit of change in the ratio.

While this efficiency measure would be technically correct, its meaning might not be very intuitive. Another informative efficiency measure would compare a subscriber’s average rate reduction attributable to the subsidy (calculated from the ratio performance measure described above) with the amount of subsidy per new subscriber attributable to the subsidy program. This would show the percentage of subsidy dollars that actually reach subscribers in the form of rate reductions.

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<sup>66</sup> 47 U.S.C. §254(b)(1).

<sup>67</sup> *McTigue and Ellig*, *supra* note 5.

### 3. Universal Service Contribution

The commission proposes to calculate the average universal service contribution per household as a performance measure for the goal of limiting the contribution burden.<sup>68</sup> This is a sensible and straightforward measure of the contribution. It would be even more informative, and require very little additional work, to separately calculate the average contribution per landline and wireless subscriber (or per account, since many wireless subscribers have family plans with a low price, and hence a low universal service contribution per additional line). This would help the commission and the public understand the relative burden borne by households that have only wireless, only landline, or both types of subscriptions.

The commission also seeks comment on an appropriate efficiency measure for the contribution burden. Since the contribution is a revenue-raising mechanism, the logical efficiency measure would be the estimate of economic deadweight loss associated with the contribution mechanism, analogous to the deadweight loss associated with taxation. The deadweight loss represents the value of output forgone because the tax inhibits production and consumption of whatever is taxed.

Economic research suggests that general taxation usually involves a deadweight loss of 25 to 40 cents per dollar raised.<sup>69</sup> The deadweight loss associated with universal service contributions, however, varies widely—from virtually zero for services whose demand is insensitive to price (such as basic telephone access) to between 40 and 80 cents of every dollar raised for services that are more sensitive to price (such as wireless).<sup>70</sup> To measure the efficiency of the contribution mechanism, the commission should calculate and report the deadweight loss associated with contributions from each major interstate service. If the commission alters the contribution mechanism in the future, it should calculate and report the deadweight loss associated for each service that contributes under the new contribution mechanism. In fact, since the amount of deadweight loss clearly affects the public interest, the commission should consider the estimated deadweight loss associated with alternative contribution mechanisms in a future proceeding to reform the contribution mechanism.

#### B. Annual Review of Performance Measures

The commission proposes to review the performance measures annually and take corrective action if the high-cost subsidy program is not achieving its goals. This is a laudable and, indeed, essential commitment because performance measures are pointless if they are not used to make decisions. The GPRA Modernization Act of 2010, however, requires quarterly reporting and management reviews for high-priority goals.<sup>71</sup> Therefore, the commission should develop a plan for quarterly reporting and reviews.

We recommend that all models, data, and calculations the commission uses to develop its performance measures be made available for public comment, so that stakeholders can replicate the results and suggest ways the commission's analysis might be improved. The information should be released at least six months prior to any commission proceeding that proposes changes in the performance measures or corrective action in the program, to ensure that the public can evaluate the results before the commission proposes changes.

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<sup>68</sup> NPRM at para. 487.

<sup>69</sup> Hausman, *supra* note 38.

<sup>70</sup> See Hausman, *supra* note 37; Hausman, *supra* note 38; Ellig, *supra* note 39; Ellig and Taylor, *supra* note 41; Ellig and Rotondi, *supra* note 4.

<sup>71</sup> GPRA Modernization Act of 2010, § 1121(b).

The commission's reviews should also include an evaluation of evidence that any change in deployment, rates, or subscribership attributable to the program actually resulted in measurable improvements in economic, educational, and social opportunities for households in locations that received the subsidies. If the subsidies do not produce these ultimate results, they are not accomplishing the ultimate goals of the Telecommunications Act and should be restructured or discontinued. The commission's annual review should include explicit recommendations based on evidence of whether the high cost subsidy programs are achieving their ultimate goals.

### III. CONCLUSIONS

Because the Connect America Fund does not yet exist, and because it would subsidize broadband that has not yet been deployed, the FCC has a unique opportunity to design an effective, economical, and accountable program from the ground up. The National Broadband Plan implicitly recognized this opportunity:

Given that the USF is a finite resource, the FCC should work to maximize the number of households that can be served quickly, focusing first on those areas that require lower amounts of subsidy to achieve that goal, and over time addressing those areas that are hardest to serve, recognizing that the subsidy required may decline in the future as technology advances and costs decline.<sup>72</sup>

The proposed 4 Mbps/1Mbps definition of broadband, however, would not result in an effective and economical program. Those speeds are not essential for education, public health, or public safety. They do not represent the speeds subscribed to by a substantial majority of residential consumers. And they would undermine the public interest by imposing an unnecessarily high cost burden on telecommunications consumers. The fastest download speed that evidence unambiguously indicates a majority of household consumers subscribe to is 768 kbps. Perhaps 1.5 Mbps would also qualify, but more extensive analysis of the data is needed before the commission could reach this conclusion.

Outcome-oriented performance metrics are essential to ensuring that the Connect America Fund operates effectively, efficiently, and accountably. Deployment, subscribership, and rate comparability are excellent intermediate outcomes to measure, but the commission cannot know how the subsidies affect these intermediate outcomes unless it compares the observed results against a relevant counterfactual. The commission also needs to assess the effect of increased subscribership on social, educational, and economic opportunities in high-cost areas to determine whether any increase in subscribership attributable to the subsidies is actually producing ultimate outcomes of value to citizens. The contribution burden per household is a relevant measure of cost, and the corresponding efficiency measure would be the economic deadweight loss associated with the contributions. Finally, to comply with the GPRA Modernization Act of 2010, the commission will likely need to report and assess performance quarterly rather than annually.

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<sup>72</sup> Broadband Plan, at 141.