Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	
	)	
Universal Service Contribution Methodology	)	WC Docket No. 06-122
	)	
A National Broadband Plan For Our Future	)	GN Docket No. 09-51

Comments of AARP

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About AARP

AARP is a nonprofit, nonpartisan organization with a membership that helps people age 50 and over have independence, choice and control in ways that are beneficial and affordable to them and society as a whole. AARP is greatly concerned about the health, safety and financial security of older Americans, including those living on low and fixed incomes. AARP advocates for affordable and accessible telecommunications services at both the state and federal level.

These comments were prepared with the assistance of Trevor R. Roycroft, Ph.D., a consultant to AARP.

Executive Summary

AARP welcomes the opportunity to comment on the FCC's FNPRM relating to appropriate contribution mechanisms for universal service support. AARP believes that reforming the contribution mechanism is essential. However, AARP is concerned that that the FCC's general approach to transforming universal service support, as expressed in the *Connect America Fund Order*, has failed to address fundamental issues and may hinder the long-needed reform of the contribution mechanism. Specifically, the FCC has failed to address the issue of the appropriate regulatory classification of broadband services. AARP believes that the path forward would be much less risky and controversial if the Commission were to classify broadband Internet access services as telecommunications services.

Older Americans and Contribution Under the Current Regime

Older Americans subscribe to both wireline and wireless telephones at higher combined rates than other age groups. As a result, older Americans shoulder a disproportionate share of the contribution burden under the Commission's current approach to funding universal service.

Older Americans subscribe to broadband services at a lower rate than other age groups. As a result, older Americans have not benefited from the implicit support for broadband associated with the Commission's current approach to funding universal service.

Broadening the contribution base will help to correct the inequities borne by older Americans associated with the current contribution system.

Expanding Broadband Benefits Requires a Broad Contribution Base

The Commission has previously recognized the benefits from the universal service program arising from *network effects*—a larger network generates benefits for all who are connected to it. By expanding the reach of broadband networks, the Commission will cultivate new network effects, and the benefits will extend to all consumers and businesses that connect to the broadband Internet. The contribution base should be expanded to ensure that both the consumers and businesses that benefit from the expansion of supported broadband facilities—i.e., from the network effects of expanded broadband—contribute to the universal service fund.

There are two general "ends" to the broadband Internet—mass-market broadband connections utilized by residential end-users and small businesses, and connections utilized by the firms that provide or sell content and/or services over the Internet. These firms connect through high-speed dedicated access services, data center services, and/or content delivery networks. Under the Commission's new approach to universal service funding, last-mile broadband connections will receive support, and benefits will emerge for mass-market broadband customers. However, given the expanded reach of broadband that will result from the *Connect America Fund Order's* approach to support, businesses will gain new opportunities to provide their content or services to end users, and the services that they utilize to connect should be assessed.

When defining the contribution base, all of the services associated with these "ends" of the broadband Internet should be assessed. That is, all mass-market broadband services should be assessed, and all telecommunications and information services associated with the delivery of content and services should be assessed. The result of this approach will be a broad contribution base, and a smaller assessment factor.

The FNPRM's Proposed Case-by-Case Assessments

With regard to the specific case-by-case services that the Commission identifies as candidates for assessment, AARP believes that each should be assessed:

Enterprise Services

Enterprise services, such as those identified by the Commission, benefit from the expanded network effects associated with supporting broadband and should be assessed. For example, VPN services enable customers to establish secure connections utilizing broadband infrastructure, including supported last-mile broadband facilities. An employee of a company utilizing VPN services will be able to access the VPN over any broadband connection. Similarly, the user of a managed enterprise-grade dedicated IP hosting service will be able to reach more broadband end-users as a result of the Commission's new focus of expanding broadband access and improving broadband quality. Because enterprise services benefit from the expanded network effects arising from expanded broadband, they should be assessed.

Text Messaging Services

Text messaging services represent a hybrid of PSTN and emerging broadband applications. Because text messaging relies on the North American Numbering Plan for addresses, text messaging is already a beneficiary of the network effects that have been generated to date from the Commission's legacy universal service policies. However, as technology has changed, text messaging has branched out to leverage broadband infrastructure that will now be supported due to the Commission's change in focus. Given the objective of establishing a contribution base using the criteria of identifying all services that will benefit from the network effects that will arise from expanded broadband availability, text messaging should be assessed.

One-Way VoIP

The Commission has already recognized, in its *Interconnected VoIP Order*, that an interconnected VoIP firm, like Vonage, provides interstate telecommunications and should be assessed. The Commission found that this was the case whether the interconnected VoIP provider actually terminated any calls on the PSTN:

> We emphasize that interconnected VoIP service offers the capability for users to receive calls from and terminate calls to the PSTN; the obligations we establish apply to all VoIP communications made using an interconnected VoIP service, even those that do not involve the PSTN.

If the Commission has already decided that VoIP services that do not touch the PSTN are assessable, then it should certainly assess one-way VoIP providers that terminate calls on the PSTN.

Broadband Internet Access

The Commission will now support broadband, as specified in the *Connect America Fund Order*. Given this shift in support, it is absolutely essential that broadband services are assessed. It is highly inequitable for broadband services to receive support while broadband customers do not contribute to the fund. Furthermore, failure to assess broadband will make the fund more difficult to sustain. If the envisioned transition away from the PSTN comes to pass, and the Commission fails to assess broadband access services, the contribution base will be constrained, and the achievement of the Commission's broadband deployment goals will be undermined.

Assessment of Broadband Will Not Adversely Affect Broadband Demand

The FNPRM raises concerns about the potential impact of assessing broadband access services on consumer subscription. The impact on broadband subscription arising from the assessment of broadband revenues will depend on the price elasticity of demand for broadband services.

Evidence indicates that broadband services have inelastic demand, thus lessening the impact of universal service assessment on subscription. For example, broadband consumers have faced ongoing price increases for broadband services. For rate increases to be profitable, it must be the case that broadband demand is inelastic. Observed price increases for broadband services, occurring in markets that have duopoly or monopoly characteristics, indicate that broadband service providers are confident that the demand for broadband is *inelastic*. That broadband demand is inelastic is also supported by academic research regarding broadband price elasticity. Researchers studying OECD data find short-run price elasticity of demand for broadband Internet access of -0.43. Elasticity of this magnitude does not suggest a substantial response in demand due to a universal service assessment.

Consumer purchase decisions for broadband will also be affected by the decreased assessment of the telecommunications services that are the sole source of contribution today. If the Commission takes steps to ensure pass-through of decreased universal service assessments, the decreases of the effective prices for those telecommunications services that are currently shouldering the entire burden of the fund will influence consumer purchase decisions with regard to broadband. For example, consumers who purchase voice and broadband services in a bundle could see no net change in their monthly bill. By expanding the contribution base to include all services that benefit from the supported platform, the result will be a smaller contribution from each service, and the offsetting impact of reductions in the assessment on telecommunications services would make demand suppression from the assessment of broadband less likely.

Furthermore, it is important that the Commission not lose sight of the *Connect America Fund Order's* objective of expanding broadband availability. Potential negative influences on broadband subscription resulting from the assessment of broadband services will also be offset by expanded subscription arising due to expanded availability. Those consumers for whom broadband becomes available for the first time will begin to subscribe to broadband services. The impact on broadband subscription from new broadband availability is likely to be positive and substantial.

Revenues Should Continue as the Basis of Assessment

The use of a revenue-based method continues to be the best approach to assess contribution. Assessment based on revenues will promote administrative efficiency as identifying revenues associated with assessed services has less potential for gaming than connections-based or numbers-based alternatives. Assessing revenues will logically link the purchases made by consumers with the assessment, and will generate a more equitable outcome as those consumers who can afford to purchase more expensive services will contribute more than those consumers who cannot. As noted earlier, in addition to mass market broadband services, the contribution base should also be expanded to include an assessment on the revenues associated with the information and telecommunications services that enable suppliers of content and/or services to benefit from the supported broadband infrastructure.

Using a connections-based or numbers-based approach is an unreasonable and patently unfair approach to assessment. Each of these alternatives has elements of a "head tax," which is regressive and fails to account for substantial differences in usage of services that are provided over supported facilities. Assessment based on connections ignores the qualitative differences in connections that are better captured in service prices, and thus in revenues. Furthermore, a numbers based approach is based on a technological component (the North American Numbering Plan) that may not persist in its current importance.

Jurisdictional Issues

When considering whether the assessment of the contribution must be on interstate revenues alone, the *Texas Office of Public Utility Counsel* (*TOPUC*) is certainly the elephant in the room. In the *TOPUC* decision, the Fifth Circuit determined that the Commission could only assess interstate revenues to support its universal service objectives. Whether *TOPUC* continues to make sense is less than clear. AARP believes that the State Members' observation that *TOPUC* is wrongly decided has merit. However, the practical question becomes whether the Commission wants to add another layer of uncertainty to the overall process of reforming universal service. If the Commission decides to go forward by violating the provisions of *TOPUC*, an already complicated puzzle gets more complicated. Given the existence of safe harbor provisions, traffic studies, and other rules under which the Commission currently operates, AARP believes that it makes more sense to abide by *TOPUC*, and to continue to assess interstate revenues.

When reforming the universal service program, the Commission must take care to not adversely affect the ability of the states to separately establish universal service funding mechanisms, including mechanisms designed to extend the reach and quality of broadband. The Commission should not classify services or revenues as interstate unless there is compelling evidence that the services or revenues are associated with the interstate jurisdiction. It is appropriate for the Commission to establish an empirical basis for the jurisdictional division of traffic by using traffic studies, and to establish safe harbor provisions based on the evidence.

Broadband Traffic has a Growing Intrastate Component

Content and service providers, by using content delivery networks, have pushed content closer to end users. The incentives to push content closer to end users are directly related to the size of the files that will be delivered to end users (either through download or streaming), and large amounts of Internet traffic are now being delivered to customers from locations that are closer to the end user, and in many cases within the same metropolitan area (and state) in which the end-user resides.

Given the growth in IP video traffic that is pushed closer to users, it is no longer a reasonable assumption that mass market broadband traffic is predominantly interstate. While traffic studies are needed to determine safe harbor percentages, given the relative size of the types of files (video and other rich content) that content providers are pushing closer to end users, it is reasonable to conclude that the share of data that is downloaded over supported broadband connections will have a substantial and growing intrastate component.

Recovery of the Assessment from Consumers

AARP believes that it is appropriate to continue to require a separate line-item on consumer bills associated with the USF contribution. The transition envisioned by the Commission—expanding the contribution base to include broadband and other services—will result in contributions being reduced for current consumers of telecommunications services (who currently pay the USF surcharge), and going up for other customers (those who currently do not pay a USF surcharge). It is not reasonable to trust service providers to flow-through these changes absent a line item. Consumers who pay the current surcharge should see the line item decrease as the contribution base expands. Allowing the line-item approach to continue would help ensure that service providers do not roll the decreased contribution into some other service charge that keeps the customer bill from decreasing, as it should. In addition, consumers who do not now pay the surcharge should be aware of the source of changes in their overall bill. AARP also supports the requirement of a dedicated area of the customer bill that identifies the assessable portion of the bill, the contribution factor, and the total assessment for the customer.

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Introduction

1. AARP respectfully submits these Comments for the FCC's consideration, and thanks the Commission for the opportunity to participate in this important docket regarding universal service in the broadband era. AARP welcomes the opportunity to comment on the FCC's FNPRM relating to appropriate contribution mechanisms for universal service support.[1] While AARP believes that reforming contribution mechanisms to support universal service is essential, AARP is concerned that that the FCC's general approach to transforming universal service support, as expressed in the *Connect America Fund Order*,[2] has failed to address fundamental issues and may hinder the long-needed reform of the contribution mechanism. Specifically, the FCC has failed to tackle the most fundamental issue of all—the appropriate regulatory classification of broadband services.

2. While reforming the contribution base is an essential step in the overall process of universal service reform, AARP is concerned that the FCC's efforts to move ahead with the reform of the contribution base to support the deployment of broadband services will run afoul of the law, precisely because the FCC continues to leave the issue of whether broadband services are telecommunications services off the table. The law defines universal service as a telecommunications service, not an advanced or information

[1] *In the Matter of Universal Service Contribution Methodology; A National Broadband Plan for Our Future*. WC Docket No. 06-122, GN Docket No. 09-51. Further Notice of Proposed Rulemaking. April 30, 2012. (Hereinafter, *FNPRM*).

[2] *In the Matter of Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing an Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up; Universal Service Reform – Mobility Fund*. WC Docket No. 10-90, GN Docket No. 09-51, WC Docket No. 07-135, WC Docket No. 05-337, CC Docket No. 01-92, CC Docket No. 96-45, WC Docket No. 03-109, WT Docket No. 10-208. Report and Order and Further Notice of Proposed Rulemaking, November 18, 2011. (Hereinafter *Connect America Fund Order.*)

service.[3] The law is also clear that universal service support can only go to "telecommunications carriers." Under §214(e)(1) recipients must be eligible telecommunications carriers (ETCs) which must be common carriers.[4] The law also states that "[a] *common carrier* designated as an eligible telecommunications carrier under paragraph (2), (3), or (6) shall be eligible to receive universal service support in accordance with section 254 of this title."[5] Thus non-telecommunications carriers and non-common carriers cannot receive universal service funds to deploy broadband.

3. With regard to the specific issue raised in the instant FNPRM, the law also specifies that USF contributions come from telecommunications carriers and services:

> Every telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service. … Any other provider of interstate telecommunications may be required to contribute to the preservation and advancement of universal service if the public interest so requires.[6]

4. This review of the law supports the proposition that the services supported by the universal service fund must be telecommunications services; that universal service support must go to telecommunications carriers; and that the funds needed for the USF program must come from telecommunications carriers and providers of telecommunications.

5. Once the contribution is generated, how the Commission will utilize the funds will be controversial, but the controversy could be dispensed with by classifying broadband as

[3] 47 U.S.C. § 254(c)(1) states that "[u]niversal service is an evolving level of telecommunications services…."
[4] "[O]nly an eligible telecommunications carrier designated under section 214(e) of this title shall be eligible to receive specific Federal universal service support…."47 U.S.C. § 254(e).
[5] 47 U.S.C. § 214(e)(1) (emphasis added).
[6] 47 U.S.C. §254(d).

telecommunications. By failing to designate broadband service as a telecommunications service, the Commission continues to leave the waters unnecessarily muddy. This lack of clarity leaves the Commission's policy direction overly vulnerable. While the ultimate status of the path laid out by the FCC in the *Connect America Fund Order* is risky and certainly is not settled, AARP provides the following comments.

Older Americans and the Current Contribution Mechanism

6. As a preliminary matter, AARP believes that it is important for the Commission to appreciate the current contribution profile of older Americans. Older Americans continue to rely heavily on wireline telephones, however, they also subscribe to wireless technology in large numbers. Table 1, below, reports data regarding the presence of both wireline and wireless telephones in households by age group, based on the National Health Interview Survey.[7] The data in Table 1 shows that older Americans in the 50 and above age groups rely on both wireline and wireless to a greater extent than other age groups.

Table 1: Combined Wireless and Landline Telephone Subscription (2011)	
Householder's Age Group	Percent with Both Wireless and Landline
Up to 29	23.59%
30-39	43.54%
40-49	57.67%
50-54	63.63%
55-59	64.75%
60-64	66.79%
65-69	69.14%
70-74	66.43%
75 and Above	65.97%

[7] Table 1 is based on the microdata for 2011 released with the NHIS wireless survey. That data is available at: http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm

7. Because both wireline and wireless services are currently assessed services, older Americans are likely to shoulder a disproportionate share of universal service support under the current regime. Thus, AARP believes that it is essential that the reform of the universal service contribution base should result in an appropriate reduction in the burden currently borne by older Americans.

8. Furthermore, broadband adoption among older Americans continues to lag the adoption rates of other demographic groups. Table 2 shows the most recent data on broadband adoption from the Pew Internet Project:[8]

Table 2: Age Demographic Information from Pew Internet Project on Broadband Adoption	
Age Range	Broadband Adoption Rate
18-29	80%
30-49	75%
50-64	65%
65+	31%

As the Commission has elsewhere noted, the current universal service program has provided implicit support for broadband deployment.[9] Given the disproportionate share of the current contribution burden falling on older Americans, much of the supported expansion of broadband that has already occurred as a result of funding that has been provided by older Americans. As the FCC attempts to direct the support explicitly to broadband, unless the contribution base is appropriately broadened, older Americans will bear an unreasonable burden supporting a service that they have yet to fully embrace.

[8] Pew Internet, "Home Broadband 2010," p. 7. http://pewinternet.org/Reports/2010/Home-Broadband-2010.aspx

[9] For example, in the *Connect America Fund Order* the Commission discusses supported fiber builds by rural companies in Nebraska. *Connect America Fund Order*, ¶212.

The Benefits of Expanded Broadband Extend Beyond Mass-Market End Users and Point to the Appropriateness of a Broad Contribution Base

9. As noted in the *National Broadband Plan*, technological change has either transformed, or promises to transform telecommunications infrastructure in the United States:

> Increasingly, broadband is not a discrete, complementary communications service. Instead, it is a platform over which multiple IP-based services—including voice, data and video—converge. As this plan outlines, convergence in communications services and technologies creates extraordinary opportunities to improve American life and benefit consumers. At the same time, convergence has a significant impact on the legacy Public Switched Telephone Network (PSTN), a system that has provided, and continues to provide, essential services to the American people.[10]

10. In the *Connect America Fund Order* the Commission made clear that the future direction of its universal service program should not be limited by past perspectives on the purpose of support, and describes a transformative process with regard to the technological platform that will be supported:

> In today's communications environment, achievement of these principles requires, at a minimum, that carriers receiving universal service support invest in and deploy networks capable of providing consumers with access to modern broadband capabilities, as well as voice telephony services. *Accordingly, as explained in greater detail below, we will exercise our authority under section 254 to require that carriers receiving support—both CAF support, including Mobility Fund support, and support under our existing high-cost support mechanisms—offer broadband capabilities to consumers.*[11]

As the highlighted portion of this passage indicates, the mandate envisioned by the Commission is the application of universal service funds to expand consumer access to broadband. The direction advanced in the *Connect America Fund Order* logically links with the technological transformation that is underway in telecommunications networks.

[10] *National Broadband Plan*, p. 59.
[11] *Connect America Fund Order*, ¶65.

11. To date, universal service funding has supported the public switched telecommunications network (PSTN). These comments will refer to the newly supported broadband technology as the "Public Broadband Internet."[12] The benefits of a Public Broadband Internet will be far reaching—residential customers will certainly benefit from the expansion and increased availability of broadband. However, businesses will also benefit. Expanded broadband will result in online commerce reaching a broader market. Firms such as Netflix, Google, and Amazon.com all benefit from expanded last-mile broadband services. The current scope of online commerce is limited by the number of households that are connected to high-quality and affordable broadband services. Businesses will also benefit from broadband through the expansion of work-at-home opportunities, as shifting a portion of the workforce into the home office saves resources and may increase productivity.[13] Thus, as a general proposition, the retargeting of universal service support directly at broadband will generate *network effects* associated with broadband Internet access.

12. As the Commission noted in the *Connect America Fund Order*, *network effects* associated with telephone services have long provided social benefits, and advanced the objectives of the Communications Act:

> Network effects arise when the value of a product increases with the number of consumers who purchase it. For example, telephone service to an individual subscriber becomes more valuable to that subscriber as the number of other

[12] While it is likely that the PSTN will ultimately be replaced by an all-broadband network, for the foreseeable future, there will be a hybrid of the narrow-band PSTN and supported public broadband networks.

[13] A recent Stanford/NBER study points to benefits to the firm of working from home: "Does Working from Home Work? Evidence from a Chinese Experiment," Nicholas Bloom, James Liang, John Roberts and Zhichun Jenny Ying. March 2012. http://www.stanford.edu/~nbloom/WFH.pdf See also: "O2 releases the results of the UK's biggest ever 'flexible working' pilot," *Mobile Europe*, 02 April 2012. http://www.mobileeurope.co.uk/news/press-wire/9253-o2-releases-the-results-of-the-uks-biggest-ever-qflexible-workingq-pilot

> people he or she can reach using the telephone increases. . . .This likewise advances the Act's directive to "make available, so far as possible, to all people of the United States . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communications service."[14]

13. By expanding the reach of broadband networks, the Commission will cultivate new network effects, and the benefits of these network effects will extend to consumers and businesses. In light of the expansion of network effects, the contribution base should be expanded to ensure that both consumers and businesses who will benefit from the expansion of supported broadband facilities contribute to the universal service fund. As the Commission noted in the *2006 Contribution Methodology Order* with respect to the benefits of network effects leading to the appropriateness of contribution:

> The Commission has previously found it in the public interest to extend universal service contribution obligations to classes of providers that benefit from universal service through their interconnection with the PSTN. . . . As the Fifth Circuit explained, "Congress designed the universal service scheme to exact payments from those companies benefiting from the provision of universal service." Like other contributors to the Fund, interconnected VoIP providers are "dependent on the widespread telecommunications network for the maintenance and expansion of their business," and they "*directly benefit[] from a larger and larger network.*" It is therefore consistent with Commission precedent to impose obligations that correspond with the benefits of universal service that these providers already enjoy.[15]

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[14] *Connect America Fund Order*, ¶1336.

[15] *In the Matter of Universal Service Contribution Methodology, Federal-State Joint Board on Universal Service, 1998 Biennial Regulatory Review – Streamlined Contributor Reporting Requirements Associated with Administration of Telecommunications Relay Service, North American Numbering Plan, Local Number Portability, and Universal Service Support Mechanisms, Telecommunications Services for Individuals with Hearing and Speech Disabilities, and the Americans with Disabilities Act of 1990, Administration of the North American Numbering Plan and North American Numbering Plan Cost Recovery Contribution Factor and Fund Size, Number Resource Optimization, Telephone Number Portability, Truth-in-Billing and Billing Format, IP-Enabled Service.* WC Docket No. 06-122, CC Docket No. 96-45, CC Docket No. 98-171, CC Docket No. 90-571, CC Docket No. 92-237 & NSD File No. L-00-72, CC Docket No. 99-200, CC Docket No. 95-116, CC Docket No. 98-170, WC Docket No. 04-36, Report and Order and Notice of Proposed Rulemaking, June 27, 2006, ¶43. Footnotes omitted, emphasis added. Hereinafter "*2006 Contribution Methodology Order*."

Substitute "Public Broadband Internet" for PSTN as the supported service and it is reasonable to impose contribution obligations on the entities that "directly benefit from a larger and larger network." The contribution base should assess all entities that benefit from the larger and larger network.

The State Members' Proposal

14. The FNPRM raises a proposal made in comments made by the State Members of the Joint Board in the *CAF* proceeding.[16] The State Members also recommend that the assessment of contribution be broad-based:

> State Members recommend that the Commission broaden the federal universal service contributions base to *include all services that touch the public communications network.* By "public communications network" we mean the *interconnected communications network that uses public rights of way or licensed frequencies for wireless communications.* The same contribution base should be used to generate support for High Cost programs and for Schools and Libraries, Health Care and Low Income programs. This proposal would better match the realm of services that benefit from universal access to the services that must contribute to that universal access.[17]

AARP agrees with the general spirit of the State Members' proposal, as it reflects an approach consistent with the assessment of all entities that benefit from the expanded broadband access network. While the State Members frame the definition of the contribution base as networks that traverse public rights of way or use licensed frequencies in the public airwaves, a better conception of the contribution base is *all services that enable end users, as well as service and content providers, to benefit from*

[16] FNPRM, ¶81.
[17] Comments By State Members of the Federal State Joint Board on Universal Service, *In the Matter of Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing an Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up; Universal Service Reform – Mobility Fund*. WC Docket No. 10-90, GN Docket No. 09-51, WC Docket No. 07-135, WC Docket No. 05-337, CC Docket No. 01-92, CC Docket No. 96-45, WC Docket No. 03-109, May 2, 2011, pp. 118-119.

the network effects associated with the supported services, both PSTN and broadband. This would include wired and wireless mass-market PSTN and broadband services; services that enable businesses to connect to the Public Broadband Internet, either to make their products and services available to the public, or to otherwise manage their operations. Assessable business/enterprise services should include enterprise services, network access services, data center services, and/or content delivery services that are used to deliver content and services to end-users connected to the Public Broadband Internet.

15. The State Members go on to discuss the need to segregate some services that benefit from expanded broadband availability from contribution:

> State Members recognize that some line drawing is needed between the services that should contribute to universal service and those that should remain exempt. We do not claim to have fully defined that line at this time. We do recommend, however, that broadband and services closely associated with the delivery of broadband should make a contribution. This change is essential if universal service funds are going to be used to build broadband facilities. Broadening the contribution base matches well with a broadening of the distribution purposes of the fund to include the total network deemed essential for universal service in the future.
>
> The USF surcharge should apply to all broadband services such as DSL, Cable Modems, and wireless broadband. The surcharge may also include services, such as ISP service, that are traditionally bundled with those broadband services. Generally, we do not intend that pure content delivered by non-telecommunications carriers over broadband facilities should contribute. For example, data services such as Westlaw or Lexis should not be required to contribute. We recognize, however, that many difficult line drawing problems arise when the same company sells broadband service and the content, particularly when the two are bundled.[18]

AARP also does not recommend that the FCC extend the contribution base to specifically include retail information services like Westlaw or Lexis that rely on supported services.

[18] *Id.* p. 119.

However, it is imperative that all content delivery services—the telecommunications or information services that enable the supply of over-the-top information services be assessed. This point is discussed further below.

Goals of the Contribution Methodology

16. The FNPRM identifies three goals for the reform of the contribution mechanism: Efficiency, Fairness, and Sustainability.[19] AARP believes that these general goals are reasonable. With regard to efficiency, AARP finds that the stated objectives described by the Commission have merit. The Commission states that it will pursue the development of rules that:

> [O]perate clearly within the evolving structure of the marketplace, and (2) [close] loopholes. Many stakeholders encourage the Commission to adopt reforms that would simplify the USF contribution system and limit undue provider discretion. Stakeholders also have urged the Commission to avoid any changes to the contribution system that would increase its complexity. Clearer, simpler rules that can be applied in new situations could deter gaming of the system and save consumers, companies, and the government money.[20]

However, with regard to increased complexity, AARP urges caution, as some complexity may be unavoidable. As will be discussed further below, the Commission must begin to collect contribution from services and service providers that have not contributed in the past. This essential modification necessarily increases the complexity of the system, as compared to the current regime where services and service providers that benefit from support are immune from contributing to support. The Commission should expect that complexity will be a fact of life for some time given the need to expand the contribution base, and ongoing technological change.

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[19] FNPRM, ¶22.
[20] FNPRM, ¶23.

17. The FNPRM also identifies the goal of fairness, pointing to the objectives of competitive neutrality, and fairness to consumers. Fairness to consumers will require careful consideration. For example, the Commission indicates that it is still considering "connections-based" and "numbers-based approaches for assessment.[21] Assessing contribution based on connections or numbers would be patently unfair to some consumers, as it would fail to distinguish between high and low-volume customers. As will be discussed in more detail in a later section of these comments, a connections-based or numbers-based approach in a broadband world will also be unfair to consumers who rely on the supported broadband platform to receive only voice services provided by the broadband platform owner.

18. The FNPRM also identifies sustainability as a goal. AARP believes that reform should result in a sustainable program, and expanding the contribution base is the best way to ensure sustainability.

Who Should Contribute?

19. The FNPRM seeks comment on the scope of the contribution base. AARP has previously recommended that broadband services be assessed to support universal service objectives.[22] Now that the FCC is attempting to reform universal service funding so that support for broadband services will be the primary orientation of the program, it is all the more critical that broadband services be assessed. However, the assessment of mass-market broadband services alone would be an overly narrow and unbalanced approach to supporting a broadband universal service regime.

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[21] FNPRM, ¶80.

[22] Comments of AARP *In the Matter of High-Cost Universal Service Support Federal-State Joint Board on Universal Service*, WC Docket No. 05-337 CC Docket No. 96-45 Notice of Proposed Rulemaking April 17, 2008, p. iii.

The Contribution Base and the "Ends" of the Public Broadband Internet

20. The *Connect America Fund Order* sets out to change the target of support from narrow-band voice to broadband. The broadband networks that will be supported are the last-mile networks that reach end-users. These last-mile broadband facilities represent one "end" of the Public Broadband Internet.[23] [24] However, it is also important to consider the connections of the large-scale content and service delivery businesses that utilize the Public Broadband Internet to reach end-users. These entities reside at the other "end" of the Public Broadband Internet. The firms that deliver content and/or services to their customers will also benefit from supported last-mile broadband, but they typically do not originate their content and services on supported broadband facilities. To deliver the content and services that consumers want, commercial Internet content and service providers rely on various access and content delivery services to deliver content and services to end-users. Some might purchase high-capacity circuits to connect to an ISP who then delivers the content and/or services.[25] Others may utilize data center services

[23] These networks have also been deemed "eyeball networks." See, Faratin, Clark, Bauer, Lehr, Gilmore, and Berger, "The Growing Complexity of Internet Interconnection," *Communications & Strategies*, no. 72, 4th quarter 2008. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1374285

[24] For consumers to get benefits from these last-mile broadband facilities, the owner of the last-mile facilities must also have sufficient "second mile" and "middle-mile facilities." *Connect America Fund Order*, ¶111. The Connect America Fund Order seeks comment on whether and/or how support should be provided for these additional broadband facilities. *Connect America Fund Order,* ¶1035.

[25] ISP services may be provided where the content/service provider "brings their own" high-capacity connection, or by an ISP that has its own last-mile high-capacity facilities.

that place the company's content in the ISPs data center.[26] Another method is to utilize a content delivery network like Akamai, LimeLight, or Level 3 to deliver content and/or services close to the customers who are connected to last-mile broadband networks.[27]

21. In addition, some services may come directly from the owner of the broadband facility. Telephone and cable companies currently deliver voice, data, and video services using a shared broadband facility.[28] These firms may serve as their own content delivery networks.

22. Without the benefit of access to last-mile broadband network, which is supported by the universal service mechanism, none of these providers would be able to provide their content and/or sell their services. Accordingly, the services that enable these providers to reach their customers should be assessed.

23. In summary, there are two general "ends" to the Public Broadband Internet—mass-market broadband connections (that will now be explicitly supported by the Universal Service Fund), and services associated with commercial high-speed access services, data center services, and/or content delivery networks. When defining the contribution base, all of the services associated with these "ends" of the Public Broadband Internet should

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[26] This approach may employ collocation of the company's servers or managed hosting.
[27] Recently some major content providers, such as Netflix and Google, have made announcements that they intend to develop their own content delivery networks. See,"Google gets into the Content Delivery Network business," *ZDNET,* July 28, 2011. http://www.zdnet.com/blog/networking/google-gets-into-the-content-delivery-network-business/1301
"Netflix building its own content delivery network 'Open Connect'," CBSNews, June 5, 2012. http://www.cbsnews.com/8301-501465_162-57447637-501465/netflix-building-its-own-content-delivery-network-open-connect/
[28] At present, not all broadband providers have migrated to a unified IP-based platform. But there can be no question that the unified IP platform is the wave of the future. For example, Comcast's recent IP video product that offers video on demand through gaming devices like the Xbox illustrates a shifting business model oriented toward the IP platform. "Comcast: Xbox 360 On Demand streams won't count against data caps," *ars Technica*, March 26, 2012, http://arstechnica.com/gaming/2012/03/comcast-xbox-360-on-demand-streams-wont-count-against-data-caps/

be assessed. That is, all mass-market broadband services should be assessed, and all telecommunications and information services associated with the delivery of content and Internet services should be assessed.

"Provider of Interstate Telecommunications and "If the Public Interest So Requires"

24. The FNPRM requests comment on both the proper interpretation of the term "provider of interstate telecommunications" and whether the public interest warrants exercising the Commission's permissive authority.[29] Specifically, the FNPRM asks:

> [T]he Commission has previously held that "provide" is broader than "offer." Under this view, an entity may both "provide" and "offer" telecommunications, but an entity may also provide telecommunications without offering telecommunications. Many participants in today's marketplace do not separately offer telecommunications to end users, but instead offer integrated services that include both telecommunications (i.e., transmission) and non-telecommunications components. For such integrated services, however, the service provider still "provides" telecommunications as part of the "offering." The D.C. Circuit has upheld the Commission's interpretation. In light of the marketplace changes over the last decade, should the Commission revisit its interpretation of what it means to "provide" or to be a "provider of" telecommunications?[30]

> [I]s it in the public interest to exercise permissive authority over a provider of telecommunications if the telecommunications is part of a service that competes with or is used by consumers or businesses in lieu of telecommunications services that are subject to assessment? In the past, the Commission has stated that the principle of competitive neutrality dictates that it should assess contributions from entities that are not mandatory contributors, but benefit from access to the PSTN. Is that consideration relevant in today's marketplace?[31]

25. The Commission has answered these questions for interconnected VoIP services. With regard to the scope of the Commission's permissive authority, the Commission noted in the *Interconnected VoIP Order*:

[29] FNPRM, ¶35.
[30] FNPRM, ¶33.
[31] FNPRM, ¶35.

> Section 254(d) states that the Commission may require "[a]ny other provider of interstate telecommunications" to contribute to universal service, "if the public interest so requires." Pursuant to the Act's definitions, a "provider of interstate telecommunications" provides "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." Unlike providers of interstate telecommunications services, however, providers of interstate telecommunications do not necessarily "offer" telecommunications "for a fee directly to the public." The Commission has previously used this permissive authority to require private carriers and payphone aggregators to contribute to the Fund.[32]

26. In the *Interconnected VoIP Order* the Commission determined that interconnected VoIP offerings were providers of interstate telecommunications,[33] and offered the following definition of interconnected VoIP services:[34]

> We extend universal service obligations to providers of interconnected VoIP services, as previously defined by the Commission. The Commission has defined "interconnected VoIP services" as those VoIP services that: (1) enable real-time, two-way voice communications; (2) require a broadband connection from the user's location; (3) require IP-compatible customer premises equipment; and (4) permit users to receive calls from and terminate calls to the PSTN. We emphasize that interconnected VoIP service offers the capability for users to receive calls from and terminate calls to the PSTN; the obligations we establish apply to all

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[32] *In the Matter of Universal Service Contribution Methodology, Federal-State Joint Board on Universal Service, 1998 Biennial Regulatory Review – Streamlined Contributor Reporting, Requirements Associated with Administration of Telecommunications Relay Service, North American Numbering Plan, Local Number Portability, and Universal Service Support Mechanisms, Telecommunications Services for Individuals with Hearing and Speech Disabilities, and the Americans with Disabilities Act of 1990, Administration of the North American Numbering Plan and North American Numbering Plan Cost Recovery Contribution Factor and Fund Size, Number Resource Optimization, Telephone Number Portability, Truth-in-Billing and Billing Format, IP-Enabled Services.* WC Docket No. 06-122, CC Docket No. 96-45, CC Docket No. 98-171, CC Docket No. 90-571, CC Docket No. 92-237, NSD File No. L-00-72, CC Docket No. 99-200, CC Docket No. 95-116, CC Docket No. 98-170, WC Docket No. 04-36, Report and Order and Notice of Proposed Rulemaking, June 27, 2006, ¶38, footnotes omitted. Hereinafter "*Interconnected VoIP Order.*"

[33] *Interconnected VoIP Order,* ¶¶39-42.

[34] The Commission had previously defined interconnected VoIP in the *VoIP 911 Order. In the Matters of IP-Enabled Services E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36 and 05-196. First Report and Order and Notice of Proposed Rulemaking, June 3, 2005, ¶24. Hereinafter, "*VoIP 911 Order.*" The definition offered in the *Interconnected VoIP Order* is slightly different in that it addresses calls that do not involve the PSTN.

> VoIP communications made using an interconnected VoIP service, *even those that do not involve the PSTN.*[35]

It is important to note that in the *Interconnected VoIP Order* the Commission included all VoIP communications, "even those that do not involve the PSTN." Thus, the Commission effectively asserted its authority over Internet-only VoIP, which is important as on the broadband infrastructure that will be supported under the Commission's new approach to universal service funding, a packet is a packet. There is no fundamental technological difference between a packet carrying voice information or a packet carrying video information. As a result, the public interest requires that the Commission utilize a broad perspective when establishing the contribution base.

27. As the FNPRM notes, the economics literature points to the desirability of including the broadest set of services in the contribution base.[36] The narrow scope of the contribution base associated with the Commission's current approach is necessarily distortionary and inconsistent with the public interest. Consumers of assessed telecommunications services are implicitly providing support for broadband services. Implicit support has long been recognized as a distortionary outcome, resulting in the 1996 Act's prohibition on implicit support for universal service objectives.[37] In this current environment of implicit support for broadband, the Commission has little ability to ensure carrier accountability for the

[35] *Interconnected VoIP Order,* ¶36, footnotes omitted, emphasis added.
[36] FNPRM, ¶99, citing to Mankiw, Weinzierl, and Yagan, "Optimal Taxation in Theory and Practice," *Journal of Economic Perspectives*, Vol. 23, No. 4, Fall 2009.
[37] "After the date on which Commission regulations implementing this section take effect, only an eligible telecommunications carrier designated under section 214(e) shall be eligible to receive specific Federal universal service support. A carrier that receives such support shall use that support only for the provision, maintenance, and upgrading of facilities and services for which the support is intended. *Any such support should be explicit and sufficient to achieve the purposes of this section.*" ¶254(e) of the Communications Act of 1934, as Amended. Emphasis added. See also, ¶254(k).

broadband infrastructure that is supported.[38] This lack of oversight and accountability can only exacerbate distortions. Furthermore, as discussed earlier, broadband is a "two-way street." Mass-market consumers certainly get benefits from broadband connections, but so do the firms that provide content and/or services to consumers utilizing a broadband connection. Thus, as discussed above, the contribution base should also be expanded to include an assessment on the revenues associated with the information and telecommunications services that enable suppliers of content and/or services to benefit from the supported broadband infrastructure.

28. In summary, there is no question that the services that these comments will identify as assessable services either provide interstate telecommunications or interstate telecommunications services. Given the IP-based broadband platform that the Commission intends to support with future universal service contributions, the "provider of interstate telecommunications" and competitive neutrality issues are equally relevant for the transitional and post-PSTN environment. Competitive neutrality dictates that the Commission should assess contributions on entities that benefit from access to the supported broadband platform. Thus, the Commission should begin assessing these services. By taking a broad approach, the Commission will ensure competitive neutrality, and will also remedy the current unbalanced and inequitable approach of assessing only telecommunications services.

Determining Contribution Obligations on a Case-by-Case Basis

[38] "With respect to broadband, the component of the Universal Service Fund (USF) that supports telecommunications service in high-cost areas has grown from $2.6 billion in 2001 to a projected $4.5 billion in 2011, but recipients lack any obligations or accountability for advancing broadband capable infrastructure. We also lack sufficient mechanisms to ensure all Commission-funded broadband investments are prudent and efficient, including the means to target investment only to areas that require public support to build broadband." *Connect America Fund Order*, ¶7.

29. The FNPRM addresses a case-by-case approach to the assessment of specific services, and requests comment on the following rule:

> Providers of the following are subject to contributions:
> * * *
> Enterprise communications services that include a provision of telecommunications;
> Text messaging service;
> One-way VoIP service; and
> Broadband Internet access services.[39]

Enterprise Communications Services

30. The FNPRM notes that for some enterprise services, the Commission

> [H]as classified data transmission services that have "traditionally" and "typically" been used for basic transmission purposes, such as "stand-alone ATM service, frame relay, gigabit Ethernet service, and other high-capacity special access services," as telecommunications services.[40]

31. The FNPRM goes on to note that it has not formally addressed such services as Dedicated IP, VPNs, and WANs for determining USF contribution obligations. Enterprise services such as those identified by the Commission benefit from the expanded network effects associated with supporting broadband. For example, VPN services enable customers to establish secure connections utilizing broadband infrastructure, including supported last-mile broadband facilities. An employee of a company utilizing VPN services will be able to access the VPN over any broadband connection.[41] Alternatively, data center services, such as managed hosting or collocation provide telecommunications and enable access to the Public Broadband Internet:

[39] FNPRM, ¶40.
[40] FNPRM, ¶43.
[41] See for example, product descriptions at:
http://www.verizonbusiness.com/Products/networking/internet/vpn/vpnremoteaccess.xml ;
http://www.business.att.com/enterprise/Service/network-services/ip-vpn/remote-access/
http://www.business.att.com/enterprise/Family/network-services/ip-vpn/

> Whether you need a single server or thousands, an enterprise-wide solution or support for specific applications or regions, AT&T managed hosting services can help. We work with your staff in a flexible way that makes sense for your organization to deliver a solution tailored to your needs. A range of managed hosting services feature:
>
> . . .
>
> - *Direct connections to the global AT&T IP network….*[42]

By directly connecting to the broadband Internet through an ISP data center, the user gains access to the benefits of expanded network effects from supported broadband services.

32. The FNPRM points to comments filed by BT Americas, Inc. on universal service contribution methodology.[43] While disputing the classification of MPLS–based services as telecommunications, the BT Americas, Inc. comments point to the satisfaction of the criteria for assessment of providing access to the Public Broadband Internet:

> BT's managed MPLS-based services offer access to information, tools, applications, and communications on corporate intranets and *the public Internet via telecommunications in the same manner that broadband providers offer access to information via telecommunications*.[44]

If the Commission exercises its permissive authority over broadband providers and broadband services, it follows that the Commission can and should exercise its permissive authority over managed MPLS-based services, and other enterprise services. The types of enterprise services discussed in the FNPRM certainly will benefit from the expanded availability of broadband.

[42] http://www.business.att.com/enterprise/Family/hosting-services/enterprise-managed-hosting/ emphasis added.
[43] FNPRM, ¶42.
[44] BT Americas, Inc. June 8, 2009 Comments in WC-06-122, p. 4.

33. Furthermore, the June 8, 2009 BT Americas, Inc. Comments do not reject outright the assessment of enterprise services, only the *assessment of enterprise services without a sufficient clarity of purpose*:

> Customers understandably would be confused by and resistant to paying any additional USF charges on MPLS-based services*, and especially will be resistant to doing so if the Commission is not clear as to the source of this obligation.*[45]

34. At the time BT Americas, Inc. provided the above-cited comments, the Commission had not yet released the *National Broadband Plan*, nor had the Commission released the *Connect America Fund Order*. These pronouncements by the Commission certainly have provided a clear statement of purpose of the assessment of universal service obligations. The Commission should take a broad perspective regarding the assessment of enterprise services, which will discourage gaming and establish a broad contribution base that will impose, given the *Connect America Fund Order's* cap on the size of the fund, a stable and reasonable assessment. Enterprise services should be assessed.

Text Messaging Providers

35. The FNPRM asks whether text messaging, short messaging service, multimedia messaging service should be assessed, however, the FNPRM also notes that it may already be the case that some service providers are already assessing text messaging revenues.[46] The FNPRM requests information from service providers as to whether or not they are currently assessing text messaging revenues.[47] The FNPRM goes on to ask

45 BT Americas, Inc. June 8, 2009 Comments in WC-06-122, p. 11.
46 FNPRM, ¶49.
47 FNPRM, ¶55.

whether the Commission should clarify policy with regard to text messaging by applying its permissive authority and assessing text messaging services.[48]

36. Text messaging services represent a hybrid of PSTN and emerging broadband applications. Because text messaging relies on the North American Numbering Plan for addresses, it is a beneficiary of the network effects that have been generated to date from the Commission's legacy universal service policies. However, as technology has changed, text messaging has branched out to leverage the Internet and broadband infrastructure that will be supported by the change in focus in universal service funding now pursued by the Commission. Given the objective of establishing a contribution base using the criteria of identifying all services that will benefit from the network effects that will arise from expanded broadband availability, text messaging should be assessed. The increased availability of fixed and mobility broadband services will provide additional benefits to text messaging users.

37. The FNPRM raises questions regarding the relationship between text messaging services and voice services, specifically whether text messaging services are substitutes for voice services.[49] While casual empiricism suggests that text messages may be a substitute for voice calling, other research points to a more complex relationship between texting and voice calling. Evidence from a recent Pew Internet survey indicates that text messaging and voice calling are highly correlated:

> Calling and texting are highly correlated, with cell owners who text often also making a large number of voice calls, and vice versa:
>
> - Cell owners who send or receive 0-10 texts on a normal day, make or receive an average of 8.2 voice calls

[48] FNPRM, ¶51.
[49] FNPRM, ¶52.

- Cell owners who send or receive 11-20 texts on a normal day, make or receive an average of 13.6 voice calls
- Cell owners who send or receive 21-50 texts on a normal day, make or receive an average of 18.6 voice calls
- Cell owners who send or receive more than 50 texts on a normal day, make or receive an average of 30.2 voice calls.[50]

This evidence suggests that heavy text users are also heavy voice users, and it certainly is possible that should the texting option be eliminated that voice calling would increase, and vice versa, indicating a potential substitute relationship between voice and texting. Other research indicates that whether voice and text are substitutes is related to the size of the wireless carrier's network.[51] The potential for a substitute relationship argues in favor of assessing text messaging revenues.

38. The FNPRM also raises the issue of whether the assessment of text messaging would introduce a distortion due to "over-the-top" texting alternatives that run using a data plan on a smartphone.[52] While it is possible that the over-the-top alternative to text messaging will grow in the future, it does not seem likely that an assessment on carrier-provided text messaging for supporting universal service objectives will be the only factor in influencing consumer choice. Consumer choice of over-the-top texting alternatives has also been influenced by the decision of carriers to repeatedly increase text messaging prices.[53] Verizon's recently announced shared data plans, that effectively bundle texting

[50] Pew Internet, "Americans and Text Messaging," September 19, 2011, pp. 6-7.
[51] "Text and voice: complements, substitutes or both?" K. Andersson, Ø Foros and F. Steen. *Industrial and Corporate Change*, (2009), Volume 18, Issue 6, pp. 1231-1247. http://icc.oxfordjournals.org/content/18/6/1231.full
[52] FNPRM, ¶50.
[53] For a summary of price increases through 2008, see letter from Senator Herb Kohl, (D-Wisc) to the four major carriers:

> Your four companies are the nation's leading wireless telephone companies, collectively serving more than 90% of the nation's wireless subscribers. Since 2005, the cost for a consumer to send or receive a text message over each of your services has increased by

with voice and data, represent another price increase for consumers who are not heavy text users.[54] If anything, the carrier price increases indicate that text messaging service has inelastic demand, making the imposition of an assessment less likely to cause substantial decreases in demand for text messaging services.

39. Regardless of whether text messaging is a substitute for voice services, text messaging services should be included in the contribution base. Text messaging benefits directly from supported services, as the addressing scheme used by text messaging services is based on the PSTN's addressing scheme (i.e., the North American Numbering Plan). As such, there is less ambiguity with regard to the relationship between text messaging and currently supported services. Furthermore, should the Commission believe that text messaging must be addressed through permissive authority, the transmission of the bits that make up text messages are not fundamentally different from other data

100%. Text messages were commonly priced at 10 cents per message sent or received in 2005. As of the end of the month, the rate per text message will have increased to 20 cents on all four wireless carriers. Sprint was the first carrier to increase the text message rate to 20 cents last Fall, and now all of its three main competitors have matched this price increase. (http://www.kohl.senate.gov/newsroom/pressrelease.cfm?customel_dataPageID_1464=1920)

For more recent rate increases, see, for example, " AT&T streamlining individual messaging plans August 21st, leaving unlimited as the sole survivor," *engaget,* August 17th 2011, http://www.engadget.com/2011/08/17/atandt-streamlining-individual-messaging-plans-august-21st-leavin/

[54] "It looks like it's good (Verizon's plan) for people who are real heavy voice and messaging users," said Pacific Crest analyst Steve Clement. "For folks who don't care about voice and messaging, I don't think the plans are that good because they force you to pay a bit more for unlimited quantities of something you don't want." "Verizon hikes data fees in pricing revamp," *Reuters.com*, June 12, 2012. http://www.reuters.com/article/2012/06/12/us-verizonwireless-pricing-idUSBRE85B0M820120612

telecommunications services.[55] As discussed above, other data services should be assessed, and text messaging is no different.

One-Way VoIP Providers

40. The FNPRM discusses one-way VoIP providers (i.e., VoIP providers that only terminate calls on the PSTN), and asks whether these service providers should also be assessed a universal service contribution.[56] The Commission has recognized in its *Interconnected VoIP Order* that an interconnected VoIP firm, like Vonage, provides interstate telecommunications. The Commission found that this was the case whether the interconnected VoIP provider actually terminated any calls on the PSTN:

> We emphasize that interconnected VoIP service offers the capability for users to receive calls from and terminate calls to the PSTN; the obligations we establish apply to all VoIP communications made using an interconnected VoIP service, even those that do not involve the PSTN.[57]

41. If the Commission has already decided that VoIP that does not touch the PSTN is assessable, then it should certainly assess one-way VoIP calls to the PSTN. As discussed elsewhere in these comments, the Commission has recognized that the PSTN in its legacy state is likely to be gradually phased out, and replaced by an IP-based broadband network. As a result, AARP believes that one-way VoIP should be assessed. If the transition to an all-broadband network occurs as envisioned, one-way VoIP will phase-out naturally over time as all calls will eventually originate and terminate on the Public Broadband Internet. However, given the benefits that one-way VoIP users and providers will receive from the expanded availability of broadband services today, there is every reason to include these services in the assessment base.

[55] For example, other than the character limit, a text message and an e-mail message are, from a technological perspective, virtually identical.
[56] FNPRM, ¶¶57-64.
[57] *Interconnected VoIP Order*, ¶36.

Broadband Internet Access Service Providers

42. The FNPRM seeks comment on assessing broadband Internet access service providers. AARP believes that given the general direction described by the Commission in the *Connect America Fund Order*, the *Interconnected VoIP Order*, and elsewhere in the FNPRM, that it is absolutely essential that broadband access services providers be assessed. If the envisioned transition away from the PSTN comes to pass, and the Commission fails to assess broadband access service providers, the contribution base will be constrained, and the achievement of the Commission's broadband deployment goals will be undermined.

Will Assessing Broadband Reduce Broadband Subscription?

43. The FNPRM raises concerns about the potential impact of assessing broadband access services on consumer subscription.[58] As will be discussed further below, evidence indicates that the impact of assessment will be negligible. The Commission should be more concerned about the lack of competition in residential broadband access markets, which has resulted in ongoing price increases for broadband services. Most consumers have the "choice" between telephone-company-provided DSL and cable modem service—a duopoly market structure. However, given the lack of investment by telephone companies, which continue to offer antiquated copper-based DSL technology, the only game in town for large numbers of Americans when it comes to high-quality broadband is their cable company—resulting in, for all practical purposes, a monopoly market structure.[59] For those few consumers who have the choice between cable and

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[58] FNPRM, ¶68.
[59] See, for example, Susan Crawford, "The Looming Cable Monopoly," 29 Yale L. & Pol'y Rev. Inter Alia 34 (December 2010). http://yalelawandpolicy.org/sites/default/files/YLPRIA29_Crawford.pdf

something better than legacy ADSL (e.g., FiOS or a fiber overbuilder), the market is at best a duopoly.

44. Should the Commission have doubts regarding market power in residential broadband access markets, recent experience with rate increases illustrates a pattern of pricing that is entirely consistent with monopoly or duopoly practice. A summary of recent news items regarding broadband pricing increases is provided below:

- January 2012, Comcast announces its second price increase in ten months in the Boston, MA area. Overbuilder RCN indicates that its prices are also rising.[60]
- January 2012, Comcast and AT&T U-Verse announce rate increases in the Champaign-Urbana, IL area.[61]
- For AT&T U-Verse high speed Internet customers who ordered their current speed before June 12, 2011, effective with the February 2012 billing statement, the monthly price for Basic will increase from $19.95 to $25, Express will increase from $30 to $33, Pro will increase from $35 to $38, Elite will increase from $40 to $43, and Max will increase from $45 to $48. Customers paying a monthly high speed Internet equipment fee for the Residential Gateway, the amount will increase from $4 to $6.[62]
- In early 2012 Cox's Preferred Internet tier increased from $49.99 to $53.99 a month.[63]
- In the Las Vegas area in 2010 Cox announced that its "Preferred" Internet service would see a price increase from $44.99 to $46.99, and that its "Premier" Internet service prices would go from $57.99 to $59.99.[64]

60 "Comcast raising cable rates twice in 10-month period," *Boston.com*, January 17, 2012. http://articles.boston.com/2012-01-17/business/30636158_1_cable-rates-rcn-customers-cable-service
61 "Comcast, AT&T U-Verse rates to increase," *The News Gazette*, January 10, 2012. http://www.news-gazette.com/news/arts-and-entertainment/internet/2012-01-10/comcast-att-u-verse-rates-increase.html
62 "Rate Increases for One and All: AT&T, Comcast, Cox, DirecTV — Up, Up and Away," *Stop the Cap,* January 10, 2012. http://stopthecap.com/2012/01/10/rate-increases-for-one-and-all-att-comcast-cox-directv-up-up-and-away/
63 "Rate Increases for One and All: AT&T, Comcast, Cox, DirecTV — Up, Up and Away," *Stop the Cap,* January 10, 2012. http://stopthecap.com/2012/01/10/rate-increases-for-one-and-all-att-comcast-cox-directv-up-up-and-away/
64 "Cox Communications announces price increases, Consumers to pay more for several cable, phone and Internet services," *Las Vegas Sun*, February 3, 2010.

- In the Orange County area in 2010 Cox announced broadband Internet price increases, with the "Starter" service going from $19.95 to $22.99; the "Value" service going from $28.99 to $31.99; the "Preferred" service going from $44.99 to $46.99; and the "Premier" service going from $59.99 to $61.99.[65]

45. For these rate increases to be profitable, it must be the case that broadband demand is inelastic. Rate increases of this magnitude indicate that broadband service providers are confident that broadband demand is price inelastic. This fact is also supported by academic research regarding broadband price elasticity. Researchers studying OECD data find short-run price elasticity of demand for broadband Internet access of -0.43.[66] This value is similar in magnitude to earlier work done by Rappaport, Taylor, and Kridel, who found elasticity for cable-based broadband to be inelastic across most price ranges.[67] These elasticity values do not support the proposition that a universal service assessment will result in demand suppression that should concern the Commission.

46. The FNPRM also raises the State Members of the Joint Board's recommendation that both telecommunications and information services be assessed, specifically noting that if most of the revenues reported on FCC Form 499, line 418 were assessed, the result would be a contribution factor of about two percent.[68] Given the elasticity estimate discussed

http://www.lasvegassun.com/news/2010/feb/03/cox-communications-announces-price-increases/

65 "Cox raising cable TV, HD and Internet prices in Orange County," *Orange County Register,* January 29th, 2010. http://gadgetress.freedomblogging.com/2010/01/29/cox-raising-cable-tv-hd-and-internet-prices-in-orange-county/34775/

66 "Price and Income Elasticity of Demand for Broadband Subscriptions: A Cross-Sectional Model of OECD Countries," Richard Cadman and Chris Dineen, February 2008. http://spcnetwork.eu/uploads/Broadband_Price_Elasticity.pdf

67 "Willingness to Pay and the Demand for Broadband Service," Paul Rappoport, Lestor D. Taylor, and Donald J. Kridel. Mimeo, 2002. http://www.economics.smu.edu.sg/events/Paper/Rappoport_3.pdf

68 FNPRM, ¶69.

above, an assessment of 2% might dampen demand for broadband by about 0.86%.[69] However, this calculation does not account for the offsetting assessment decreases associated with currently assessed services or broadband stimulation effects arising from new broadband availability.

47. The ultimate impact on broadband subscription resulting from assessing broadband services is complex. If the Commission takes steps to ensure pass-through of the reduced assessment on currently-assessed voice services, the decrease in the expenditure for voice telecommunications services will influence consumer purchases of broadband services. Consumers who purchase both voice and broadband services may not see an increase in their overall bills. Consumers who purchase à la carte will see a decrease in bills for telecommunications services and an increase in the bill for broadband services. Consumers who purchase voice and broadband services in a bundle could see no net change in their monthly bill. AARP believes that by expanding the contribution base, as discussed above, to include all services that benefit from the supported platform, will result in a smaller contribution from each service, and the offsetting impact of reductions in the assessment on telecommunications services would make demand suppression from the assessment of broadband less likely.

48. Furthermore, it is important that the Commission not lose sight of the *Connect America Fund Order's* objective of expanding broadband availability. Potential negative influences on broadband subscription resulting from assessments on broadband services will also be offset by expanded subscription due to expanded broadband availability.

[69] This calculation utilizes the -0.43 elasticity value discussed in the previous paragraph.

Those consumers for whom broadband becomes available for the first time will begin to subscribe to broadband services.[70]

49. The FNPRM asks whether all forms of broadband Internet access should be assessed.[71] There is no reason to exclude any technology from assessment. Broadband Internet access delivered over any technology platform will benefit from the expansion in broadband availability that will result from the Commission's new approach to universal service. Similarly, the FNPRM also asks whether enterprise broadband Internet access should be assessed. As is discussed above in these comments, enterprise services should be assessed. By establishing a contribution base that is as broad as possible, the Commission will be able to impose smaller assessments. In addition, by expanding the contribution base to include both mass market and enterprise services, there will be no need to "differentiate between mass market broadband Internet access, and other forms of broadband Internet access,"[72] thus simplifying the administration of the assessment. Failure to expand the contribution base will generate an inferior outcome as the migration away from PSTN services will result in a decreasing contribution base.

The FNPRM's "Broader Contribution Base" Approach, with Modifications, Could Be Workable

50. The FNPRM advances an alternative approach to the case-by-case approach to exercising permissive authority over specific services—a general rule where "providers of interstate telecommunications" must contribute. Specifically, the FNPRM proposes the following rule:

[70] It is likely that broadband subscription in areas where broadband becomes available for the first time will move to the levels experienced at the regional or national level, thus the Commission can expect a substantial increase in subscription in those areas.
[71] FNPRM, ¶70.
[72] FNPRM, ¶70.

> Any interstate information service or interstate telecommunications is assessable if the provider also provides the transmission (wired or wireless), directly or indirectly through an affiliate, to end users.[73]

To economize the discussion of this rule, AARP will refer to this as the "provider provides transmission" rule. With some modifications, the "provider provides transmission" rule has potential as a mechanism to streamline the classification of services that will be subject to assessment.

51. With regard to the focus of the proposed rule on *end users*, the Commission must provide clarification. In the FNPRM the Commission references the 1997 *Universal Service Order* as providing the definition of end user.[74] In that order the Commission defined end user in the following terms:

> [W]e conclude that contributions will be based on revenues derived from end users for telecommunications and telecommunications services, or "retail revenues." Unlike retail revenues, however, end-user telecommunications revenues include revenues derived from SLCs. End-user revenues would also include revenues derived from other carriers when such carriers utilize telecommunications services for their own internal uses because such carriers would be end users for those services.[75]

52. Thus, end users are defined strictly as users of telecommunications and telecommunications services. The scope of end user services is not consistent with the support or assessment of broadband services. Furthermore, as was discussed earlier, services that provide access to the other "end" of the Internet connection, e.g., the high capacity telecommunications or information services that are used to connect businesses to the broadband Internet. To address the "end user" issue, the rule should be revised to read:

[73] FNPRM, ¶75.
[74] FNPRM, ¶241.
[75] *Universal Service Order,* FCC 97-157, ¶844.

> Any interstate information service or interstate telecommunications is assessable if the provider also provides the transmission (wired or wireless), directly or indirectly through an affiliate, to any entity that connects to the PSTN or Public Broadband Internet.

53. The FNPRM also raises the issue of how the “provider provides transmission” rule should be applied to “non-facilities-based providers.” Allowing non-facilities-based providers to avoid assessment would invite gaming. Therefore, all providers—facilities-based and/or reseller—that satisfy the provisions of the “provider provides transmission” rule should be assessed. To make it clear that non-facilities-based providers will be assessed, the “provider provides transmission” rule should be clarified to read as follows:

> Any interstate information service or interstate telecommunications is assessable if the provider also provides the transmission (wired or wireless), using its own or any acquired facilities, directly or indirectly through an affiliate, to any entity that connects to the PSTN or Public Broadband Internet.

As the FNPRM notes, the Commission’s contribution methodology has never exempted non-facilities-based telecommunications providers from their obligation to contribute.[76] There is no reason to deviate from this established and reasonable approach.

54. In light of the discussion above, the proposed modifications to the “provider provides transmission rule” could result in a more generalized approach to determining whether a service should be assessed.

Machine-to-Machine Communications

55. In its discussion of the “provider provides transmission” rule, the FNPRM also raises the issue of machine-to-machine communications, and questions who the customer and who the provider is when machine-to-machine communications exist. The FNPRM provides an example of an electronic bookseller:

[76] FNPRM, ¶83.

> [S]uppose that Bookseller A sells an electronic reading device to Ms. Smith. The price of the device includes a 3G wireless connection that allows Ms. Smith to connect to Bookseller A's servers at any time and purchase e-books. Bookseller A, in turn, purchases the wireless bandwidth for the connection from Carrier B. In this instance, should we consider Ms. Smith to be the "user" of the service provided by Bookseller A? Alternatively, is Bookseller A the "user" of the service provided by Carrier B? Under the former view, would Bookseller A be viewed as "providing telecommunications" to Ms. Smith, and therefore a contributor on that service? Or should Carrier B be viewed as the entity that is providing telecommunications to Bookseller A, and therefore the contributor?[77]

In this example the 3G wireless connection is "used" by the Bookseller to sell books to the owner of the e-reader, thus, the Carrier B would be the entity that is providing telecommunications to the Bookseller, and Carrier B should be assessed on the revenues that it receives from the Bookseller. If the story was modified so that Ms. Smith purchased a 3G-enabled tablet that allowed her to download e-books, so that Ms. Smith purchased telecommunications directly from a wireless carrier, the assessment would be handled in the same manner as if she was purchasing any wireless broadband Internet access service, i.e., carrier revenues would be assessed, with the potential for Ms. Smith to see a line-item on her bill relating to the universal service assessment.

56. In summary, while AARP does not oppose the determination of contribution obligations on a case-by-case, the FNPRM's more general approach, with the modifications proposed above, could provide a more flexible approach for the identification of services. The application of this rule, however, would still require Commission determinations regarding whether services are assessable.

How Should Contribution Be Assessed?

57. The FNPRM addresses three general approaches to the assessment of contributions for the Universal Service Fund—Revenue-based contribution; Connections-based

[77] FNPRM, ¶89.

contribution; and Numbers-based contribution. The FNPRM discusses the jurisdictional aspects of revenues and connections,[78] and generally identifies the difficulties associated with interstate and intrastate distinctions. The FNPRM also offers a more tentative discussion of jurisdictional considerations associated with numbers.[79] As will be discussed in detail below, AARP believes that revenues continue to be the appropriate target for assessment, and that jurisdictional allocations of revenues continue to be reasonable.

Revenue-Based Contribution

58. The use of a revenue-based contribution method continues to be the best approach to assess contribution. As will be discussed further below, alternatives based on connections and/or numbers do not provide a reasonable basis for assessing contribution given the direction taken by the Commission to support broadband.

59. Assessment based on revenues has less potential for gaming. Assessment based on revenues will logically link the purchases made by consumers with the assessment, and will generate a more equitable outcome as those consumers who can afford to purchase more expensive services will contribute more than those consumers who cannot. In addition to retail mass-market services, the contribution base should also be expanded to include an assessment on the revenues associated with the information and telecommunications services that enable suppliers of content and/or services to benefit from the supported broadband infrastructure.

Apportioning Revenues from Bundled Services

60. The FNPRM seeks comment on a revised apportionment rule:

[78] FNPRM, ¶¶121-132 and ¶¶266-267.
[79] FNPRM, ¶¶330-331.

> If an entity bundles non-assessable services or products (such as customer premises equipment) with one or more assessable services, it must either treat all revenues for that bundled offering as assessable telecommunications revenues or allocate revenues associated with the bundle consistent with the price it charges for stand-alone offerings of equivalent services or products (with any discounts from bundling assumed to be discounts in non-assessable revenues).[80]

AARP believes that this approach is unduly complex and introduces the potential for gaming. As noted by questions posed in the FNPRM, the proposed approach has the potential to generate problems:

> How would such a rule be enforceable if the provider does not offer stand-alone equivalent services? Would we need a separate rule to address such circumstances? If so, how should that rule be structured?[81]
>
> How could we prevent contributors from gaming a stand-alone option to minimize their assessable revenues?[82]

By opening the door for contributing entities to base their contribution on an allocation revenues from the bundle "consistent with the price it charges for stand-alone offerings of equivalent services or products (with any discounts from bundling assumed to be discounts in non-assessable revenues),"[83] the FNPRM makes the assessment of contribution unnecessarily complex. The Commission should establish a service "contamination rule" for bundled services,[84] i.e., the entire revenues associated with a bundle that includes *any service* subject to assessment should be assessed.

80 FNPRM, ¶106.
81 FNPRM, ¶107.
82 FNPRM, ¶108.
83 FNPRM, ¶106.
84 The FCC established the "contamination rule" for special access circuits that specified that if a circuit had traffic that was at least 10% interstate, that the entire circuit was interstate. *MTS and WATS Market Structure, Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board,* CC Docket Nos. 78-72 and 80-286, Decision and Order, FCC 89-224, 4 FCC Rcd 5660 (1989); see 47 C.F.R. § 36.154(a) (private lines and WATS lines treated as subcategory 1.1 if less than 10% interstate traffic, and otherwise treated as subcategory 1.2).

61. With respect to bundled offers, the FNPRM seeks comment on the impact on the overall contribution base, and the impact on consumers with lower telecommunications expenditures, such as consumers who purchase basic service alone, and who do not use much long-distance service.[85] Given the emphasis that carriers place on the sale of bundled services, the assessment of bundled revenues on a combined basis can only expand the contribution base. As a result, à la carte basic service customers should see a reduced assessment, as services which have avoided contribution to the supported service to date will now contribute.

62. The Commission requests comment on the following matters that relate to the assessment of bundled service offerings:

1. Would a contribution methodology that assesses the full retail revenues of bundled services that contain "telecommunications," as that term is defined in the Act, without safe harbors or the ability to present individualized showings, conform to the statutory requirements?
2. Given the growth in bundled service offerings over the last decade, would adopting such a bright-line rule make the contribution base more stable and thereby serve the public interest?
3. Would it further the principle of "equitable and non-discriminatory" contributions by reducing potential competitive distortions among providers and service offerings that apportion revenues using different methodologies?
4. Would a simplified approach that assesses the total bill for bundled services promote administrative efficiency and reduce compliance and enforcement expenditures?
5. Would it be appropriate to adopt such an approach even if the Commission chose not to make every component of a bundled service individually assessable, or would that create market distortions and discourage bundled offerings?[86]

63. With regard to item (1), as the Commission discusses elsewhere in the FNPRM, the statutory provisions allow for contribution to be collected from "every telecommunications carrier that provides interstate telecommunications services," and also specifies that "any other provider of interstate telecommunications may be required

[85] FNPRM, ¶110.
[86] FNPRM, ¶113.

to contribute to the preservation and advancement of universal service if the public interest so requires."[87] The relevant statute thus identifies two general categories of entities that may be assessed: "telecommunications carriers that provide interstate telecommunications services," and, if the public interest so requires, "any other provider of interstate telecommunications." The statutory provisions do not appear to limit in any way the Commission's ability to assess the contribution on the full retail revenues of the bundled offering. With regard to item (2), there is no question that the adoption of a bright-line rule would have a stabilizing impact on the contribution base. By eliminating contributor-defined exemptions the potential for gaming is reduced, and a more predictable contribution flow will be established. For item (3)'s "equitable and non-discriminatory" issue, the assessment on the full retail revenues would represent a marked improvement. Apportionment of bundled service revenues is necessarily an arbitrary process, as bundle prices do not present any consistent method to "reverse engineer" the discounts that are implicitly associated with any specific service that is contained within the bundle. There is also no question that assessing the full retail revenues of the bundled service offering would favorably address item (4)'s objectives of administrative efficiency. A single target of the full retail revenues associated with the bundle will eliminate or reduce the certification of compliance, and also have a favorable impact on the need for enforcement actions. With regard to (5)'s concern regarding the discouragement of bundled service offerings, it seems highly unlikely a firm would abandon bundled offerings due to the ability to avoid contribution by selling assessable and non-assessable components on an à la carte basis. Bundling is a profit-improving

[87] Communications Act of 1934, as amended, §254(d).

market segmentation strategy.[88] Bundling enables price discrimination with relatively low information requirements, as consumers will self-select bundled offerings that best reflect their willingness to pay for the combined services. Furthermore, by establishing the largest contribution base possible, by assessing the full retail revenues of bundles, as well as the other services identified in these comments, the contribution factor would be kept to a minimum.

Jurisdictional Issues with Bundles

64. As will be discussed in more detail below, the ability of states to establish an intrastate contribution base continues to be an important issue. Bundled services are likely to contain components that have both interstate and intrastate elements, for example, a bundle might include voice and broadband Internet access. Each of these services may have intrastate and interstate components. The Commission should collect information from carriers on the interstate and intrastate components of their bundled service offerings and develop generic safe harbor percentages, or allow carriers to submit traffic studies associated with bundle components.[89]

65. In conclusion, given the growing importance of bundles in generating revenues for service providers, the Commission should assess all revenues from bundled offerings. To determine the jurisdictional division of bundled service the Commission should establish a safe harbor standard based on traffic studies for representative bundles.

Assessment of Interstate/Intrastate Revenues

[88] See, for example, T. Nagle and R. Holden, *The Strategy and Tactics of Pricing, 3rd Ed.* Prentice Hall Marketing Series, 2002, Chapter 9.
[89] See below for further discussion of safe harbors with regard to broadband Internet access.

66. When considering whether the assessment of the contribution must be on interstate revenues alone, the *Texas Office of Public Utility Counsel*[90] decision is certainly the elephant in the room. In the *TOPUC* decision, the Fifth Circuit determined that the Commission could only assess interstate revenues to support universal service programs. Whether *TOPUC* continues to make sense is less than clear. AARP believes that the State Members' observation that *TOPUC* is wrongly decided has merit.[91] However, the practical question becomes whether the Commission wants to add another layer of uncertainty to the overall process of reforming universal service. If the Commission decides to go forward by violating the provisions of *TOPUC*, an already complicated puzzle gets more complicated. Given the existence of safe harbor provisions, traffic studies, and other rules under which the Commission currently operates, AARP believes that it makes more sense to abide by *TOPUC*.

67. When reforming the universal service program, the Commission must take care to not adversely affect the ability of the states to separately establish universal service funding mechanisms, including mechanisms designed to extend the reach and quality of broadband. The Commission should not classify services or revenues as exclusively interstate unless there is compelling evidence that the services or revenues are associated with the interstate jurisdiction. It is appropriate for the Commission to establish an empirical basis for the jurisdictional division of traffic by using traffic studies, and to establish safe harbor provisions based on the evidence.

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90 Texas Office of Pub. Util. Counsel, et al. v. FCC, 183 F.3d 393, 428 (5th Cir. 1999), (hereinafter, *TOPUC*).

91 FNPRM, ¶130, citing State Members of Joint Board *CAF* Comments at 121-124.

68. With regard to the assessment of interstate revenues, the Commission has previously taken conflicting approaches. For example, with special access, the Commission designates any circuit with more than 10 percent interstate traffic as interstate.[92] With interconnected VoIP and wireless, the Commission has established "safe harbor" allocations for interstate traffic, or has allowed traffic studies.[93] For the reasons discussed below, the safe harbor/traffic study approach will also be reasonable for mass-market broadband connections.

Broadband Internet Traffic is Increasingly Localized, and has a Growing Intrastate Component

69. While the Commission has previously concluded that ISP-bound traffic is interstate,[94] changes in how Internet content is delivered have undermined the reasonableness of this conclusion. The changes that have undermined the interstate presumption are summarized in the following discussion:

> Initially, the World Wide Web was constructed rather statically. Similar to remote login sessions that dominated the Internet before, web sites were each served from a single server placed on hosting sites connected to the Internet. To reach this site a user's request had to cross not only his ISP's domain but also often numerous transit domains between the user and the server.
>
> Nowadays, the appearance of the Web has changed drastically. Over the past years, access bandwidths of wired and wireless Internet connections have been steadily increasing. This enabled new concepts in the Web. Pages are today often set up dynamically using server- as well as client-side scripting languages and extensively employ multimedia content. As a result, the demand on the servers increased up to the point that no single server could serve all requests to a web site anymore.

[92] *MTS and WATS Market Structure, Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board,* CC Docket Nos. 78-72 and 80-286, Decision and Order, FCC 89-224, 4 FCC Rcd 5660 (1989); see 47 C.F.R. § 36.154(a) (private lines and WATS lines treated as subcategory 1.1 if less than 10% interstate traffic, and otherwise treated as subcategory 1.2).
[93] FNPRM, ¶123 & ¶125.
[94] FNPRM, ¶133, including footnote 255.

> This led to the development of various load balancing measures. In the early days of content distribution, downloads (e.g. large software packages) were predistributed to a set of mirror servers. Any interested user could now manually choose a mirror closest to his location and download from that server.
>
> Content Delivery Networks (CDN), such as Akamai, Limelight, or the Google network, which have shifted into focus in the recent years, evolved from this mechanism. By setting up dedicated DNS servers in their domain and evaluating the IP address of the requesting users' DNS resolver, a mirror server is selected by factoring in geographical closeness, costs, load, or other factors. *Content in the CDN is replicated to data storage in relative closeness to or even inside of access networks of Internet Service Providers.* Thus, the load on carrier networks is reduced.
>
> *To fulfill the purpose of content delivery well and serve content consumers with acceptable performance even when there is high demand, those networks have to spread out into or near almost every ISP.* This resulted in the emergence of huge overlay networks and increasing portions of Internet traffic originating from inside them.[95]

70. As summarized above, content providers, by using content delivery networks, have pushed content closer to end users. Given that the incentives to push content closer to end users are directly related to the size of the files that will be delivered to end users (either through download or streaming), large amounts of Internet traffic are now being delivered to customers from locations that are closer to the end user, and in many cases within the same state that the end-user reside. For example, Akamai describes the configuration of its "Accelerated Network Partner" service as follows:

> Akamai servers are located at the edges of the Internet and deliver all media types, including HTML, graphics, and downloadable files. *With Akamai serving this rich content from servers located geographically close to end users*, Akamaized Web sites load in a flash — up to 10 times faster. Network providers who want to offer this kind of performance simply agree to co-locate Akamai servers in their facilities, at no cost.[96]

[95] Albert Rafetseder, Florian Metzger, David Stezenbach, and Kurt Tutschku, "Exploring YouTube's Content Distribution Network Through Distributed Application-Layer Measurements: A First View," *Proceedings of the 2011 International Workshop on Modeling, Analysis, and Control of Complex Networks*. (Emphasis added.) www.itc23.com/fileadmin/ITC23_files/papers/a5.pdf
[96] http://www.akamai.com/html/partners/network_program.html (Emphasis added.)

71. Similarly, Limelight Networks describes the geographic nature of Internet traffic associated with one of its customers, the Dallas Cowboys:

> It comes as no surprise that the Dallas Cowboys have been at the forefront of developing an engaging fan experience for its website. *According to the team, only 25% of the site's network traffic can be tracked to the Dallas-Fort Worth area.* The majority of viewership comes from a global network of fans that rely on the site for up-to-the-minute information, as well as access to behind-the-scenes sports entertainment….
>
> To deliver these visuals smoothly, the Cowboys leverage the Limelight high-speed private network backbone, which bypasses the often congested and unpredictable public internet. *Further, the Limelight globally distributed delivery centers allow the Cowboys to cache much of its site content close to each user.* Thus, regardless of their location, fans can view the site's video clips instantly without suffering delays or buffering. Limelight maximizes performance so that fans can enjoy all of the site's rich content, even during intense traffic spikes.[97]

72. Netflix, which is introducing "Open Connect," its own CDN for its video services, states the following in a frequently asked question section for ISPs regarding the deployment of its caching servers:

> What if I have large concentrations of Netflix traffic in one or more of my metro regions?
>
>> *Depending on your traffic profile, it may be more efficient to install Open Connect appliances in one or more metro network areas. Typically, this makes sense for individual markets serving a population of 100,000 or more broadband subscribers.*[98]

73. All of the above quotations point to large data files (video and other rich content) being moved to localized caching servers. In large metro-area markets the incentives to move content closer to end users are stronger still, making it more likely that large volumes of content are delivered from within state boundaries. A customer requesting an IP video from Netflix, for example, might send a few bytes upstream to request the start of play

[97] http://media.limelight.com/documents/DallasCowboys_cs_1211.pdf (Emphasis added.)
[98] https://signup.netflix.com/openconnect/faq (Emphasis added.)

for a movie. These bytes might cross state lines to reach Netflix's customer-facing order processing servers, and thus be classified as interstate traffic. However, as a result of the customer's request, *megabytes or gigabytes* of video locally originated content will flow over the customer's broadband connection, as the content is sourced from a local Netflix content server.[99] Thus the bulk of the data traffic in this example is intrastate.

74. As a result, given the growth in video traffic that is pushed closer to users, it is no longer a reasonable assumption that mass market broadband traffic is predominantly interstate. While traffic studies are needed to determine safe harbor percentages, given the relative size of the types of files (video and other rich content) that content providers are pushing closer to end users, it is reasonable to conclude that the share of data that is downloaded over broadband connections will have a substantial and growing intrastate component.

75. As mentioned above, some content/service providers are establishing their own CDNs. If CDN services offered by third parties such as Akamai are assessed, so should the self-provided CDN services. To the extent that these self-provided CDNs are established through the use of enterprise telecommunications or information services that are purchased from third parties, the assessment of those enterprise telecommunications or information services should be sufficient.[100]

[99] Using Netflix minimum 500 kbps connection speed, a 2-hour standard definition video would result in 450 megabytes of data being transmitted. High definition video would generate substantially higher data volumes. See, https://signup.netflix.com/HowItWorks .

[100] Content delivery networks are "virtual" networks that are defined by software. The key element in the network are the distributed content servers. These services are then connected to sourcing servers using conventional data transport facilities/services, such as those provided by Level 3 to Netflix (which led to the late 2010 dispute between Level 3 and Comcast). For a further discussion of the architecture of content delivery networks see: Nygren, E., Sitaraman, R., and Sun, J. "The Akamai Network: A Platform for High-Performance Internet Applications," ACM SIGOPS Operating Systems Review, Vol. 44, No.3, July 2010. Available at: http://www.akamai.com/dl/technical_publications/network_overview_osr.pdf

76. In summary, the Commission should not presume that broadband traffic is exclusively interstate. Changes in the organization of the Internet suggest that large quantities of last-mile broadband traffic are sourced from locations that are relatively close to end users, thus pointing to a substantial intrastate component of broadband traffic. Traffic studies are needed to determine safe harbor percentages, thus enabling both state and interstate contribution bases.

Assessing Contribution Based on Connections

77. The FNPRM raises the possibility of assessing contribution based on "connections." AARP does not believe that the Commission should pursue a connections-based approach because a connections-based approach is patently regressive and unfair, is inconsistent with the evolution of technology, and inconsistent with the Commission's overall objectives of supporting a converged and integrated broadband platform.

78. A contribution mechanism based on connections is patently unfair to consumers who choose to purchase fewer services—a connections-based approach is similar to a "head-tax" or "poll-tax," and is more likely to be regressive. Of course, a connections-based approach would offer a favorable outcome to consumers who purchase a larger number of services, or more expensive services.

79. The problems of a connections-based approach are clearly illustrated by the definitions of connections proposed in the FNPRM. First, the FNPRM proposes a "facilities based" definition.[101] The FNPRM asserts that the facilities-based definition focuses on the physical facility—either the wire or wireless channel—that is provided by the contributor, and further states that the assessment will not be based on the services

[101] FNPRM, ¶231.

offered over the connection.[102] The FNPRM indicates that "a physical line to a residential home would be assessed as on 'assessable connection' even if it provided multiple assessable services to the customer." However, according to the FNPRM, the "facilities-based" approach does not do away with the evaluation of "assessable services." The FNPRM offers the following definitions of "facilities-based" connections:

> Connection. A facility that provides end users with access to *any assessable service*, whether circuit-switched, packet-switched, wireline or wireless, leased line or provisioned wireless channel.
>
> Connection. A wired line or wireless channel used to provide end users with access to *any assessable service*. [103]

Thus, under this approach, in order to qualify a "connection," the Commission will need to determine whether or not the connection provides "any assessable service." This approach is less than desirable as it opens the door to gaming on the part of the connection owner as to whether it considers the service enabled by the connection is an assessable service. As a result the connections based approach is a step in the wrong direction.

80. The FNPRM also posits another definition of connection, a "service-based" definition:

> Connection. An assessable service provided to an end user.[104]

This approach would not correct the regressive nature of a connections-based approach. A lower-income customer might subscribe to both basic wireless and basic wireline service, resulting in a relatively low month bill. A higher-income customer might buy high-end versions of wireless and wireline service and pay a high bill. Both would be assessed the same amount under the service-based connections approach, unless the

102 FNPRM, ¶231.
103 FNPRM, ¶232, emphasis added.
104 FNPRM, ¶237.

Commission factored in revenues. If the Commission were to take that step, it would be better to dispense with the connection and focus on the revenues alone. Furthermore, the Commission would need to certify which assessable services are provided over a connection, which would increase administrative costs.

81. A connections-based approach also falls short when considering the appropriateness of assessing all entities that benefit from the supported broadband network. Assessing large users or enterprise customers based on "connections" would further tip the balance against small users. If a content/service supplier connects to the Internet using a high capacity circuit, absent some sort of distillation of the overall bandwidth into "equivalent connection channels," the large user would be assessed at the same rate as a residential customer who purchases ADSL from their local telephone company. Such an outcome is certainly not reasonable.

82. The FNPRM discusses the potential for creating alternative classifications for a "per-unit" assessment of connections, however, the approach identified is unbalanced and unfair. The FNPRM points to the potential to assess residential, wireless, and single-line business connections at a flat rate, and to then make up the shortfall in USF revenues from multiline business customers.[105] It is notable that the FNPRM's discussion is couched in terms of a "PSTN-only" fund. For example, "single-line" and "multi-line" business makes little sense if one is thinking about assessing broadband connections. One small business might purchase a 5Mbps connection, another small business might purchase a 50 Mbps connection and a third might purchase something in between. Which of these is the single-line customer, and which is a multi-line customer?

[105] FNPRM, ¶250 and ¶255.

83. The FNPRM also points to previously-identified “tier structures” (based on data speeds) as being a method of classifying the relative size of business connections. These too fail to provide a reasonable basis for classification. For example, the FNPRM notes that there is an issue with speed tiers based on whether the “actual” or “advertised” speed is utilized.[106] Sorting out the performance of millions of broadband connections for assessment purposes would be an administrative nightmare.

84. Alternatively, the FNPRM also notes that in the past commenters have stated that there may be little correlation between connection speed and actual data usage, suggesting that a usage-based calibration is appropriate.[107] The potential to calibrate connections based on usage illustrates another pitfall of a connections-based approach. Because many broadband services are either sold without a usage charge, or are sold with usage caps that affect a relatively small number of users, assessing contribution based on usage would introduce customer confusion. If it utilized a usage-based assessment, the Commission would effectively introduce a usage-based charge where none had previously existed. This disadvantage also argues against the use of a connections-based approach.

85. The FNPRM also raises the issue of exempting Lifeline customers, in whole or in part, from a connections-based regime. If the Commission chooses to go down the flawed and inequitable connections-based contribution path, exempting Lifeline customers provides a small degree of offset to the overall inequitable nature of a connections-based approach.

86. With regard to the FCC’s proposals, the connections-based and numbers-based approaches are troubling. In the past, carriers have argued for moving away from a

[106] FNPRM, ¶259.
[107] FNPRM, ¶263.

revenue-based approach because of alleged declines in interstate revenues, which were then linked by carriers to a growing contribution factor. However, this argument overlooked the root causes of the growing contribution factor—an out-of-control funding process that was supporting competition from wireless ETCs. While there have been some declines in interstate revenues since 2008,[108] this trend is simply not relevant if the contribution base is correctly expanded to include revenues from services, such as broadband and enterprise services, that have grown dramatically during that same period, and which are projected to continue to grow at a rapid pace.[109]

Numbers-Based Assessment

87. The FNPRM seeks comment on a number-based methodology, under which providers would potentially be assessed based on their count of numbers associated with the North American Numbering Plan.[110] AARP does not believe that a numbers-based approach is consistent with the direction that the Commission is moving with regard to universal service reform. A numbers-based approach is not technologically neutral. Some services that should be assessed, such as broadband or enterprise services, do not have numbers. This would unfairly exempt entities that benefit from universal service programs from

[108] FNPRM, ¶20.

[109] "The US telecom market generated $367bn in service revenue in 2010, an increase of 3.1% over 2009. Burgeoning growth in mobile broadband, the relatively inelastic nature of demand for pay-TV and continued growth in fixed broadband will offset the ever-shrinking fixed circuit-switched market. We expect the market to grow at a 3.1% CAGR over 2011-2016, reaching $443bn in 2016. *Mobile data will be the largest contributor to growth over the next five years. While it was the fourth-largest service segment in 2010 (after mobile voice, fixed voice and pay-TV), our projected 12.7% CAGR over the 2011-2016 period means that it will overtake all three services to become the single largest revenue stream in the US telecom industry by 2016.*" Pyramid Research, USA Intelligence Report *United States: Operators Turn to Mobile Broadband for Growth Opportunities*, emphasis added. http://www.pyramidresearch.com/store/CIRUNITEDSTATES.htm

[110] FNPRM, ¶284.

contributing. Furthermore, a numbers-based approach unfairly burdens low-income subscribers.

88. As has been discussed in detail above, the FCC's decision to explicitly extend universal service support for a broadband platform expands the beneficiaries of universal service support— it is imperative that the Commission expand the contribution base to include broadband service revenues. A numbers-based approach is at odds with this key preliminary step in reforming universal service support. Broadband Internet access is not a numbers-based technology.[111] Broadband internet access services offered by cable and telephone companies do not require a NANPA number to operate. While it is possible that broadband DSL services offered by a LEC will have a number associated with the account, that number is assigned to the voice service associated with the account, not the broadband connection. Similarly, unless a cable broadband customer also takes voice services from the cable broadband provider, there will not even be a NANPA number associated with the customer account. This lack of correspondence between a NANPA number and broadband service is a fatal flaw in the numbers-based approach.

89. The FNPRM points to potential problems with a numbers-based approach. For example:

> As more services migrate to alternative networks that only partially traverse the PSTN, is there a danger that a NANP numbers-based contributions methodology in time could result in declines in the base, and may conflict with our proposed reform goals of ensuring sustainability in the Fund and promoting fairness in the USF contribution assessment system?[112]

From this vantage point, it is difficult to predict the future role that NANPA numbers will play in an evolving and integrated broadband platform. For example, one of the

[111] AARP is aware that it may be the case that some mobility broadband services are associated with a NANPA number. This fact does not correct the larger deficiency of a numbers-based approach.
[112] FNPRM, ¶307.

advantages of the migration to IPv6 is the fact that the new IP address space will be virtually inexhaustible.[113] It is conceivable that over time, given an integrated broadband platform, unification of network addresses to the IPv6 conventions could take place, obviating the need for NANPA numbers entirely. The potential problem of an "eroding base" of numbers compounds the larger problem, discussed above, of the exclusion of services that currently do not utilize NANPA numbers in the first place.

90. The FNPRM also considers and seeks comment on a "hybrid system" where contribution would be based on a combination of numbers, connections, and/or revenues, depending on which alternative would best reflect the capabilities of an entity to be assessed. [114] AARP does not believe that the use of such a hybrid system is a step in the right direction. The Commission should strive to establish a contribution methodology that is not subject to gaming. By creating a "menu of alternatives," as would be the case if the Commission were to pursue a "hybrid system," the Commission would introduce the potential for gaming and an unnecessary layer of complexity, as it would have to then categorize alternative entities into the assessment method of either the Commission's determination, or the entities' choice. The hybrid approach would invite gaming the system, and increase administrative and compliance costs. The Commission should not pursue the proposed hybrid method.

91. The numbers-based approach also suffers from substantial equity concerns, as the numbers-based approach, like the connections-based approach, is likely to be regressive. Under a revenue-based approach, it is likely that the end-user assessment will reflect the magnitude of the customer's bill. As a result, high-volume users, users that purchase

[113] IPv6 will provide 340 undecillion unique IP addresses, i.e., 340 x 10^{36}.
[114] FNPRM, ¶322.

vertical features or service packages, and users that purchase multiple services, will contribute more than small users. A numbers-based assessment has the same format as a "head tax" or "poll tax," and is necessarily regressive—low volume users will pay proportionally more, unless the numbers-based approach is adjusted in some fashion to account for differences in customer usage.

92. Acknowledging this fundamental weakness with a numbers-based approach, the FNPRM asks "Are there modifications that could be made to a numbers-based methodology to make assessment fairer to consumers on low-cost service plans?"[115] Modifying the numbers-based approach to account for differences in customer revenues begs the question of why numbers should be involved at all. Adding revenues to a number-based assessment will make the process of administering the contribution base unnecessarily complex, and increases the possibility of gaming. The Commission should not utilize a numbers-based approach.

How Should Contributions Be Recovered From Customers?

93. In competitive markets, prices do not reflect an itemization of every governmental fee or tax that a firm pays when producing a good or service. The Commission previously expected that as competition increased, carriers would have a more difficult time passing through universal service contributions to consumers as a line item:

> As competition intensifies in the markets for local and interexchange services in the wake of the 1996 Act, *it will likely lessen the ability of carriers and other providers of telecommunications to pass through to customers some or all of the former's contribution to the universal service mechanisms*.[116]

[115] FNPRM, ¶327.
[116] *Universal Service Order*, FCC 97-157, ¶855, emphasis added.

Unfortunately, competition sufficient enough to result in this outcome has yet to emerge. As a result, consumers continue to need adequate protection regarding the recovery of USF contribution.

USF Contributions as a Separate Line Item

94. The FNPRM poses several questions related to the appropriateness of separate line items associated with USF on consumer bills, and seeks comment on whether there should be additional information provided to consumers on the calculation of the assessment.[117]

95. AARP believes that it is appropriate to continue to require a separate line-item on consumer bills associated with the USF contribution. The transition envisioned by the Commission—expanding the contribution base to include broadband and other services—will result in contributions being reduced for current consumers of telecommunications services (who currently pay the USF surcharge), and going up for other customers (those who currently do not pay a USF surcharge). It is not reasonable to trust service providers to flow-through these changes absent a line item. Consumers who pay the current surcharge should see the line item decrease as the contribution base expands. Allowing the line-item approach to continue would help ensure that service providers do not roll the decreased contribution into some other service charge that keeps the customer bill from decreasing, as it should. In addition, consumers who do not now pay the surcharge should be aware of the source of changes in their overall bill.

96. The FNPRM poses questions related to bill format, specifically whether a rule should be crafted that would require a set location on a customer bill to show the amount of the assessment and the basis for the assessment (e.g., revenues), thus allowing consumers to

[117] FNPRM, ¶390.

verify the accuracy of the assessment.[118] This additional transparency regarding the calculation of the surcharge on the customer bill is also appropriate. As noted in the FNPRM, current practices do not allow consumers to understand the basis for the USF charges appearing on their bills—both the contribution factor and the portion of the bill to which the contribution factor is applied is not evident.

97. AARP believes that a clearly labeled section of the bill that could only contain information relating to the USF assessment makes sense. Inclusion of information on other purported "taxes and fees" should be excluded from this section of the customer bill.

98. The FNPRM requests comment on whether the advertised price of the service should include the USF charges.[119] AARP does not believe that a separate advertising requirement should be imposed for USF charges. There are numerous other taxes and fees imposed by carriers, and singling out USF charges in advertising could add to customer confusion. However, consumers should have, when comparing offers from alternative providers at the point of purchase, accurate information on the monthly price of the service offering, including all taxes and fees. The Commission asks whether it should mandate "that carriers disclose at the time of initial service subscription the amount of the quoted rate or other assessable units that would be subject to assessment?"[120] This requirement makes sense and the Commission should require that rate information include a good faith estimate of the total monthly cost of the service

[118] FNPRM, ¶390.
[119] FNPRM, ¶392.
[120] FNPRM, ¶392.

which includes all additional surcharges, fees, or taxes that will be added to the advertised service price.

99. As previously noted by the Commission regarding USF contributions:

> If contributors, however, choose to pass through part of their contributions and to specify that fact on customers' bills, contributors must be careful to convey information in a manner that does not mislead by omitting important information that indicates that the contributor has chosen to pass through the contribution or part of the contribution to its customers and that accurately describes the nature of the charge.[121]

100. The Commission's approach, summarized above, continues to be reasonable. Furthermore, if consumers of non-telecommunications services (broadband) are assessed, the need for billing clarity requirements should extend to any firm that collects the surcharge. Enforceable truth-in-billing requirements should be imposed on all carriers that levy the USF surcharge.

The FNPRM's Proposal to Eliminate Line Items

101. The FNPRM also raises questions related to the appropriateness of eliminating line items from the customer bill. The FNPRM proposes the following rule:

> Federal universal service contribution costs may not be recovered by contributors as a separate line-item charge on a customer's bill.[122]

102. As was mentioned above, as the Commission expands the contribution base, some consumers, especially those that purchase only voice services, should expect to see a decrease in their assessment, and potentially, their overall bill. Given the lack of competition, trusting "market forces" to assure that the amount of surcharges will be "competed away" or accurately reflected in customer bills is not reasonable. It is more

[121] *Universal Service Order*, FCC 97-157, ¶855.
[122] FNPRM, ¶394.

likely that consumers who would be due a decrease in their overall bill resulting from the expansion in the contribution base would see their bills remain the same while the carrier pocketed the difference. Recovery of USF contributions requires the continued presence and oversight of line-item charges.

Conclusion

103. As the Commission moves ahead with its efforts to reform universal service funding, its primary focus should be on correcting the inequities of the existing approach. While the explicit support for broadband is a new direction, the fundamental principles that have previously guided the Commission can provide policy continuity. The Commission has consistently recognized that because of the network effects associated with supported services, all network users benefit from the supported services. As a result, the Commission should expand the contribution base to include all who will benefit from the expanded broadband platform.