EXECUTIVE SUMMARY

The University of Texas School of Law, through its students, is proud to submit comments on NTIA's, RUS's, and the FCC's request for information in response to the Congress' Recovery Act, which apportions $7.2 billion to establish a Broadband Technology Opportunities Program. The seventeen law students, under the guidance of Professor Lowell Feldman, that make up UT Law's Telecommunications and Technology Class are conducting individual research on how the public interests can best be served by the administration of this broadband grant program. This submission summarizes our collective findings for proposed rules. UT, though its students and faculty, will also be submitting several interrelated public interest grant proposals after the rules are established.

The University of Texas School of Law is fortunate to be on the same campus that houses other schools specializing in Engineering, Technology, and Public Policy. We were able to reach out to these resources for additional feedback on specialized areas. The University collectively intends to participate in the grant program, and it plans to do so only with not-for-profit goals and partners. Our proposed omnibus grant application will include technical grants to support mapping, smart grid, and the development of innovative technology. The proposal will also include an Alternative Dispute Resolution Center and Best Practices Center driven by the Law school, and will propose a "Green-Line"[1] infrastructure investment coordinated by the University to support multiple non-profit service providers that make sustainable investments in Broadband Infrastructure the non-profits will actually own and control.

The key points recurring throughout our comments and recommendations stress the following:

- *Creation of Alternative Dispute Resolution and Best Practices Centers* to resolve potential contractual conflicts between parties, and prevent conflicts by proactively creating resources for "Open Network" management and operations.

- *Definitions of Broadband, Underserved, and Unserved* to be multifaceted and functionally defined as these terms are important to any working set of rules. Specifically, we recommend the creation of a mandatory[2] "Model Terms of Service Agreement" for a broadband service provider to offer to a customer.

- *Promotion of the Recovery Act in a technologically neutral, non-discriminatory, and interconnected manner*[3], so as to promote innovation, non-cost causation use and adoption of new technology used to provide broadband services.

[1] "Green-Line" is opposed to the "Red-Line" effect which is the observed market failure that leads to "Underserved" communities in low-income demographics.

[2] If an infrastructure grant request does not commit to such terms of service they should be barred from receiving the grant

[3] Including the creation of a mandatory model "Interconnection Agreement" for service providers to interconnect with each other and application (like Smart Grid) providers.

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DEFINING UNSERVED, UNDERSERVED, & BROADBAND

Defining Broadband

Broadband History – Changing Definition Over Time

"Fast Internet" has had many meanings over the years since the public first began to have meaningful access in the mid-1990s. When 14.4 kbps dial-up was the norm, 56 kbps dial-up "fast." Increased throughput allowed content providers to switch from a primarily textual medium to one with more media content. Soon, this faster speed was inadequate and slow—it could not keep up with the needs of users to exchange increasing amounts of media. So, consumers began switching to a newer and faster Internet service called broadband.

The definition of the term *broadband* has a cloudy history, with conflicting usages and different bodies providing inconsistent categorizations over time. In the early 1990s (before the commercial and public Internet took hold) one of the base concepts for the "information superhighway" included switched, symmetric 45 megabit per second (Mbps) consumer services that would support "integrated voice, data, and video services."[4] Back then "broadband" was anything over 1.5 Mbps.[5] As consumers began using the Internet in increasing numbers and technology and user needs and demands advanced, regulatory and industry bodies found more precise definitions were needed.[6]

The Telecommunications Act of 1996 mandated that the FCC encourage deployment of advanced telecommunications capability, which is defined "as high-speed, switched broadband telecommunications capability that enables users to originate and receive high quality, voice, data, graphics, and video telecommunications using any technology."[7] In response, in 2000, the FCC defined broadband as access where either upload or download speed equals or exceeds 200 kbps.[8]

Broadband Today and in the Future

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[4] In 1991 the then New Jersey Bell proposed to wire the entire state with "Broadband Digital Service — Switching capabilities matched with transmission capabilities supporting data rates up to 45,000,000 bits per second (45 Mbps) and higher, which enables services, for example, that will allow residential and business customers to receive high definition video and to send and receive interactive (i.e., two way) video signals." *See*, Deloitte & Touche *New Jersey Telecommunications Infrastructure Study*, 1991."

[5] *See*, GAO Report to Congress *INFORMATION SUPERHIGHWAY:An Overview of Technology Challenges*, GAO/AIMD-95-23 p. 10, note 2 and p. 13 (January, 1995) available at http://www.gao.gov/archive/1995/ai95023.pdf.

[6] *See* California Emerging Technology Fund Broadband Internet Access Organizational Definitions – Version 1.10, Appendix A (collecting definitions of broadband).

[7] 47 U.S.C. § 157 (2009). This definition hearkens back to the concepts behind the "information superhighway" more than it does to the Internet and current on and off ramps we discuss today.

[8] FCC 08-89, para. 19 (2008).

Technology has advanced. So too has the content available on the Internet. Today, users have access to videos, online games, books, stores, auctions, music, encyclopedias, Internet communities, and of course, plain old websites. As Internet content and broadband technology progressed, it became clear to many that 200 kbps was far too inadequate to be considered broadband. So, in 2008, the FCC revisited its broadband categorization and rolled out a new tiered definition of broadband, with "Basic Broadband" beginning at 768 kbps.[9]

Even at 768 kbps, the FCC's definition does not necessarily comport with congress's mandate that high speed broadband be able to originate and receive high quality video telecommunications. One group has estimated high quality video telecommunications requires 400 kbps upload and download rates.[10] However, a connection meets the FCC's definition of broadband as long as one of its rates (upload or download) meets or exceeds 768 kbps. The FCC has noted that upload and download speeds are not always identical, and "upload speeds of less than or equal to 200 kbps . . . continue to be a common offering in the broadband services market."[11] Accordingly, the FCC's definition of broadband would allow connections with upload speeds too slow for high quality video teleconferencing.

Moreover, while high quality video telecommunications was the potential future killer app of the Internet in 1996, content and technology have evolved and so should our definition of broadband. Broadband users today watch television online by streaming standard and high definition television to their computers. Standard definition Internet television requires 4 Mbps downstream, and high definition Internet television requires 12 Mbps[12]—both of which fall significantly above the FCC's definition of Basic Broadband.

Rather than setting fixed numerical transfer rates and calling that broadband, regulatory bodies need to see the trend: technology evolves quickly and so does available Internet content. Thus, a fixed numerical definition of broadband is likely to be obsolete within a short period of time. Because broadband means "fast" throughput for things like Internet access, and speed is relative, what is considered broadband today may no longer fit the broadband definition tomorrow.

Defining Broadband Using Content, Application, Symmetry and Quality Metrics

Rather than setting fixed numerical targets, NTIA and the FCC should take a page from congress's book and define broadband in terms of a content metric and add necessary application and symmetry requirements that ensure an "Open Internet." Congresses' clear intent was to require an "Open Internet" in BTOP and it inherently recognizes the public good associated with interconnected "open" networks as the current and future touchstone for innovative development in the communications infrastructure. As noted above, instead of setting fixed transfer rates in the 1996 Amendments to the Communications Act, congress set its "high-speed" or broadband metric based on the content the network would support, and the most bandwidth intensive

[9] *Id* at fn. 66.

[10] California Emerging Technology Fund Broadband Internet Access Organizational Definitions – Version 1.10, Table 3.

[11] FCC 08-89 at para. 20.

[12] California Emerging Technology Fund Broadband Internet Access Organizational Definitions – Version 1.10, Table 3.

content listed was high quality video telecommunications.[13] Thus, as video telecommunications have evolved and consumed more bandwidth (teleconferencing images today are much higher in quality than in 1996), congress's high-speed definition required no modification.

While the "Need to Track Speed" is clearly relevant and has already been captured by the FCC in Form 477, it cannot be the only measure. Broadband should be defined in terms of (1) the most bandwidth intensive content frequently accessed by end users; (2) the requirement that broadband connectivity be application and protocol agnostic, and (3) that broadband have some element of symmetry and quality of service built into the network operations design.[14] Where streaming video telecommunications was 1996's metric for effective broadband, today's metric should be ability to symmetrically stream high-quality video. As technology advances and the average quality of videos on the Internet increases—requiring greater bandwidth—this definition will not need to be modified. Rather, networks once considered broadband that fail to keep pace with developments in content will fall back into the underserved or unserved categories, signaling that the time is appropriate to update those networks without any re-classification of broadband needed by the FCC.

Today's Broadband Speed Definition

The ability to stream high quality video is today's baseline appropriate metric because, like video teleconferencing in 1996, video streaming is starting to take off among end users and consumes large amounts of bandwidth. Today, YouTube is one of the most popular sites on the Internet. However, advances in digital video recording and streaming continue daily. Sites like Hulu.com and NBC.com now offer standard definition streaming of television programs which people are increasingly accessing over broadband. In fact, these sites even offer some limited high definition television streaming. As standard definition streaming becomes more main-stream, the "high quality video" metric will not need modification—it will simply adjust. Then, as high definition video replaces standard definition as the norm, no additional FCC of NTIA action will be needed.

This is not to say that the proposed metric will always remain viable. Video telecommunications was an appropriate metric 13 years ago, but would be insufficient today where users expect to be able to stream other videos in qualities much greater than that of typical video telecommunications. Content metrics will need to be changed to keep pace with content innovation—just not as often as an arbitrary numerical broadband target would need modification to remain practical.

For example, in a few years when telemedicine has gained more traction, the appropriate broadband metric very likely may be whether a connection is capable of supporting real-time high quality imaging sent to the doctor on one end and precise movements sent to a "doctor

[13] 47 U.S.C. § 157(c) (defining high-speed as "switched broadband telecommunications capability that enables users to originate and receive high quality, voice, data, graphics, and video telecommunications.").

[14] Indeed consumers correctly do not think of "Pay-per View Digital Cable" as "broadband" because it is a proprietary protocol that is not open or agnostic in its application. Thus even though it technically "streams video" it is not broadband. Alternatively if the video is streamed in an open application technology agnostic manner, the network will begin to inherit a common carrier like public trust. It is this common carrier like trust which should now required by BTOP grant recipients.

robot" treating the patient on the other end of the connection. Further, as computing power and complex graphics calculations move from the desktop computer into the "cloud," all computer users will require greater connectivity at faster speeds.[15] Who knows what data intensive content will be the Internet's future? Perhaps there will be high demand for real-time 3-D holographic data streaming.

To limit broadband to a numerical definition would unnecessarily cage innovation and allow implementation of technology today which may be obsolete tomorrow. Rather, by implementing an evolving definition, broadband providers can determine upcoming trends and can implement the requisite bandwidth earlier instead of having to redo a network when the FCC or NTIA changes a numerical definition.

Finally and very importantly, congress for the very first time recognizes that the more a network is used the better off we are. The reason for this is that as more people use the network, more information is being spread over the network. This increased information now increases the positive effects of the network for any individual user—creating more useful information for all. In response to this congressional recognition of the positive network effect, NTIA and the FCC should for the first time require Broadband Pricing (only for those who receive public monies) to follow actual cost causation principals. Thus content and application type charges, end user restrictions, and any other network management practice that utilizes discrimination as a means to increase profits should simply not be afforded the public money until they change their business practice and re-gain the public's trust.[16]

Today's Requirement that Broadband Connectivity be Application and Protocol Agnostic

As simple as it sounds, this simply means that the network manager may not, through management of the network, favor one application over another. In addition, it cannot operate its network as a "Application Hunter" for pecuniary gain, block certain applications, or distort the use of certain applications. A network provider, however, can manage its network by charging users based upon cost, but it cannot claim nor can it create artificial scarcity that targets "valuable applications" in order to garner greater profits. Current examples[17] of this type of "Application Hunting" found in the industry today include attempts to stifle video and music distribution applications and non-geographic voice applications and protocols. Often such "hunting" schemes are veiled in the company's desire to create lawful management, but in fact this is a desire to vertically integrate content markets with network providers. ALL LAWFUL CONTENT is lawful. Networks today are not operated by copyright policemen, nor should they

[15] For example, IBM, Microsoft, and Google all offer or plan to offer lightweight desktop applications which rely heavily on processing within centralized servers. Similarly, the new trend in computer gaming is to do all the heavy lifting of calculating the next frame on a server and simply send the image to the end user's device, rather than performing complex calculations in the device itself.

[16] In fact we recommend the creation of model terms of service and model interconnection agreements that embody the "Open Network" principles. Large incumbent carriers continue to be free to develop "private closed networks" they simply can not tap into AARA money to do so. Sticking strictly to this open policy will help ensure that the public monies are focused on networks and technologies that need to fill the gap for the clear market failure that has created our digital divide between the haves and the have nots (unserved and underserved).

[17] Future applications that could be "hunted" include Smart Grid applications, security applications, search engine applications, collaborative work product applications, and medical applications.

be. An Open Internet will insure diversity of application and content, not just today but into the future.

In addition, it seems that many current broadband providers have targeted charging applications that are "heavy users." As we discuss below in the answer to the "Pricing Question," use should be promoted. Reasonable network management should mean that charges follow a cost causation basis, not a pure usage basis.[18] Indeed use of broadband is good for society, as there are positive network effects related to even general use. Thus the creation of artificial scarcity to create large profits should be discouraged. We must remember that many goals of this act tacitly acknowledge market failure, and thus there is an implied social contract created for the recipients of grant money. The more NTIA does to define the goals of this social contract the better.

Today's Symmetry and Quality of Service Requirements

As noted above, broadband providers often offer upload speeds that are significantly slower than download speeds. Because much of the value of the Internet comes through innovation at its edge, a connection that severely limits upload speed should not be deemed a broadband connection even if the download bandwidth is sufficient to provide high quality streaming video. Similarly, a connection that meets the broadband definition for some traffic but—due to deep packet inspection or other content-based limitations on speed—dramatically slows other types of traffic should not be deemed broadband. To meet the definition of broadband discussed above, both the upload and the download speeds for all types of traffic must meet the broadband content metric, though the speeds need not be equal. With upload and download speeds set at broadband specified speeds, people operating at the edge of the network will now be able to more easily implement new ideas and advanced services.

Incorporating These Requirements into a Model Terms of Service Agreement

We propose that the NTIA articulate symmetry, interconnection, and other requirements by requiring that applicants conform to a model Terms of Service Agreement.

For example, when we talk about symmetry, we are talking about the consumers' expectations when purchasing broadband. These expectations can be best codified by incorporating them into the model terms of service agreement; e.g. to promote symmetry, the model agreement should require that grant applicants agree to provide static IP addresses and that there be absolutely no restrictions on use including resale of service. These conditions involve no additional cost to provide, but they are more useful in hosting communication on a long term basis.

Additionally, we would require grant recipients to:

1. Interconnect their Broadband with other broadband networks via a model Broadband Interconnection Agreement;

[18] Examples would be not charging on pure bandwidth used but use combined with the time of day that is congested. This is classic "Step Function" pricing which includes types of offering that have "Free Nights and Weekends" as an example. Again, our observation is that markets are in fact failing to provide such offerings in an unrestricted manner; thus the need to condition grant monies on such "openness" conditions.

2. Participate in a best practices center that will continue to develop model interconnection and terms of service agreements;

3. Promote an open Internet that is technically designed to be supported by smart grid applications. [19]

These model agreements would be a compilation of standard business practices required of the grant applicants. A party that doesn't want to participate in those standard practices should therefore be barred from receiving the grant money.

Practical Economic Thresholds and Waivers

Unfortunately, current technology capable of meeting the above definition of broadband (i.e. a connection capable of streaming high quality video) is not always easy or cost effective to implement. In areas where the cost of providing a user broadband is greater than 1.5 standard deviations above the nationwide mean per user cost of implementing broadband, a slower alternative definition of broadband may be used. In this case, broadband can be defined as a connection capable of quickly accessing websites and e-mail, but not necessarily capable of more advanced services like streaming video.

For example, a small community in a mountainous region may be difficult to reach by cable or fiber, and it may not have adequate signal strength from a ground based wireless provider. While a great deal of money could be spent to run a cable or fiber to the community, or to add a new wireless tower which would yield a stronger signal, these solutions may cost too much per additional user served. Thus, in this case, it may be appropriate to supply the town with satellite broadband, which generally has less bandwidth than other technologies but may be far easier and less expensive to implement.

It is important to note that such waivers do not affect the "Open" Terms or Service described above.

Defining Underserved

Underserved Background

Merriam Webster defines "underserved" as "provided with inadequate service." In its basic form, the word has no technology connotation—it is simply "inadequate service." Under this premise, care should be applied when defining underserved to remain objective and analyze all aspects that "service" can encompass including, not only broadband service, but more importantly social, welfare, and educational service that will forward the goal of the Broadband Initiatives to provide broadband access to the largest segment of the population in the quickest time frame. In defining underserved from the non-technological perspective, certain questions need to be addressed, such as: "what demographic variables should represent underserved?" "should retail pricing be addressed in the definition?" and "do take rate percentages for current subsidy

[19] In our broadband omnibus application, we will be requesting broadband funds for smart grid.

programs show trends that such programs are not reaching underserved populations?" For the purpose of defining underserved for the Broadband Initiatives, we will concentrate on the non-technological aspects that quantify underserved.

A Frame of Reference - Underserved Demographics

A compilation of demographic statistics allows some insight into the composition of the underserved population. Studies compiled by the Pew Internet American Life Project indicate that broadband adoption rates from 2005 to 2008 have varied greatly across demographics. Income indicates the largest discrepancy in broadband adoption.[20] While almost 55% of adult Americans now have a broadband connection at home, only 25% of low-income Americans—household incomes of $20,000 or less—reported having broadband at home. Unsurprisingly, approximately 85% of Americans with household incomes over $100,000 reported broadband access. Age also represents a divide in broadband adoption. Only 50 % of older Americans—those between the ages of 50-64 years old—reported broadband at home and only 19% of Americans over 65 reported having broadband. However, 70% of Americans aged 18 – 49 reported broadband at home. Education level tells a similar story. Only 28% of Americans with less than a high school education reported a broadband connection at home and adoption was only 40% for those Americans with only a high school education. The percentages increased greatly for those Americans with some college education (66%), with and the highest adoption rate found among those with a college degree (79%). Community type is also a significant indicator of broadband adoption. Only 38% of Americans living in rural communities reported a broadband connection, compared to 57% for urban and 60% for suburban communities. The one demographic that does not indicate large disparities is ethnicity—57% White, 56% Hispanic, and 43% African American.

While demographic studies indicate large disparities of broadband adoption across income, education level, age, and community type, these statistics represent only one aspect in defining underserved. Affordability of broadband service and the overall desire to subscribe to broadband indicates another aspect in defining underserved. Statistics from the Pew Internet Project (noted previously) show that almost one-third of the population not subscribing to broadband service believes it to be too expensive. Given that a large portion of the underserved population resides in low-income households, this number is not surprising. Subscribers to basic home broadband reported an average monthly bill of $33 for Internet service while dial-up subscribers reported an average bill of $19.70. But cost of subscription is not the only issue concerning new user subscription to broadband. Many dial-up customers simply aren't interested in switching to broadband. Data collected from 2002 thru 2008 shows that approximately 60% of dial-up users aren't interested in switching. This data introduces a wrinkle to the task of defining underserved. Nonetheless, providing lower cost broadband subscription rates would certainly impact the number of dial-up users willing to switch and thus, must remain an aspect of the definition.

Beyond Demographics – Low Participation in Current Subsidy Programs

Finally, a major aspect impacting the definition of underserved involves the actual take rates of social program subsidies for the underserved population. The assumption that all federal

[20] John B. Horrigan, *Home Broadband Adoption 2008*, Pew Internet & American Life Project (July 2008), *available at* http://www.pewInternet.org/Reports/2008/Home-Broadband-2008.aspx.

subsidies are realized by the entire underserved population is without basis. Analysis of the federal Lifeline Program for telephone service indicates interesting trends in take rates of the program. While participation in the program has grown to over 7 million subscribers, actual participation levels for eligible households remains relatively low.[21] Take rates in 2003 indicated that 14% of the eligible population received Lifeline/Link-up support.[22] However, it has been noted by the Federal-State Joint Board on Universal Service that Lifeline/Link-up participation almost tripled from 2002 to 2003 in those states that implemented outreach initiatives designed to increase telephone participation and penetration.[23]

Social stigma may be one reason for low participation but it is certainly not the only reason.[24] Design and implementation of the program may also account for such low percentages. While the federal government establishes several methods for registering for the program, states can exercise their rights to determine additional eligibility requirements and, more alarmingly, can determine which *services* are eligible for aid. Given this wide range of eligibility, one answer to low subscription rates might be that eligible households are just unwilling to wade through the bureaucratic red tape associated with registration. Thus, a solution to addressing take rate percentages for the underserved population could be to preface eligibility only on federal requirements—usually participation in at least one federal program including Medicaid, Food Stamps, the Low Income Home Energy Assistance Program, Supplemental Security Income, or Federal Public Housing Assistance. Acceptance of federal broadband subsidies will only be hindered by allowing the states to impose additional eligibility requirements or determine which broadband services are eligible. As such, underserved subsidies will certainly be impacted by defining broadband service itself.

Combining demographic statistics, retail rates, and take rates of current subsidy programs, we believe that defining underserved should address two issues: 1) creation of subsidies that target those portions of the population having the lowest broadband adoption in their homes and insuring that the subsidies actually reach that population, & 2) targeting underserved populations with education and training programs to educate them on Internet and computer use. Three categories should be established for each community type—rural, urban, and suburban. Within each of these categories, granularity must be addressed to understand user behavior and adoption rates. While overarching statistics paint a picture of underserved—lower income, lower education levels, and possibly older than 50—hard data needs to be collected on a more granular basis to insure that the actual underserved population of each category is reached. One solution may be a compilation of data based on zip codes or census tracts.

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[21] Mark Burton et al, *Understanding Participation in Social Programs: Why Don't Households Pick Up the Lifeline*, 7 B.E. J. Econ. Analysis & Pol'y 1 (2007), *available at* http://www.bepress.com/bejeap/vol7/iss1/art57.

[22] *Id*. at 5.

[23] Federal-State Joint Board on Universal Service, Recommended Decision, FCC 03J-2, CC Docket No. 96-45 at ¶ 48. (Apr. 2, 2003).

[24] Several parties have made constructive comments over the years proposing reforms the existing application of Universal Service Funds, including a USFON Inc. request that explicitly allows for a wholesale relationship between low income housing projects for both broadband and phone service all at a price that is LESS than current retail subsidy on an individual subscriber basis. The current system is so controlled by incumbents that any "reform" that does not directly benefit an incumbent party is ignored or summarily dismissed without substantive consideration or discussion.

Criteria defining underserved for each community category should be based on the granular mapping data (in accordance with the modern mapping techniques described herein) for each service area that addresses "inadequate service" under the aforementioned aspects of low broadband subscription percentages, retail cost rates, and subsidy take rates. These same criteria should be used in determining an appropriate subsidy rate for each area.

Underserved Definition

Our proposed underserved definition is:

> the portion of population that has home-based access to broadband service (in accordance with the "broadband" definition described herein) that does not subscribe to such service.

Under the Broadband Initiatives, one of the goals is providing service to the largest portion of the population in the shortest time frame. Thus, projects that seek to provide home-based access to underserved populations should be prioritized under a multi-priority scheme using both community type and demographic statistics. Although data suggests that rural communities have the lowest percentage of broadband subscription, this portion of the population is also the least densely populated. ***In order to further the goals of the Broadband Initiatives, we believe that rural and urban underserved populations should receive equal priority in project selection.*** The scheme, with highest priority listed first, should be as follows:

1. Rural/Urban, below the poverty level (state basis), Age 18-49
2. Rural/Urban, income below the poverty level (state basis), Age 50 and above
3. Suburban, below the poverty level (state basis), Age 18-49
4. Suburban, below the poverty level (state basis), Age 50 and above
5. All other projects, regardless of community type or age that seek to provide service to remaining underserved populations

Meeting the Demands of Education / Training & Addressing Take Rates

While the priority scheme above addresses project selection priorities for home-based service, it does not address the low take rate percentage problems that similar communication subsidy programs have incurred in the past. Given this potential disconnect between eligible households and actual take rates, ***we recommend that projects which seek to incorporate education or training services into their plans should receive the highest priority within each of the five categories previously described.*** While it has been noted previously that eligibility for the program should be based primarily on federal guidelines, states should nonetheless be allowed some deference in determining appropriate subsidy rates in cooperation with the federal government. This should not include, however, states gaining the ability to define which broadband delivery services should be eligible for the subsidies.

Defining Unserved

The Need:

The need for broadband service in unserved areas, particularly rural areas, is evident when compared to the generally increased use and reliability of Internet service. Chart 1 supports this.[25] Other data, contained in Chart 2, showcases the rapid increase in adults using Internet service.[26] This growing percentage of use by adults, which approaches 80%, has not been met with equivalent growth in broadband service—see Chart 3.[27]

Summary of Definition:

Relying on information from the NTIA comments period, a basic definition of "unserved" is, "areas with only dial-up or satellite Internet service."[28] This basic definition is inadequate, however, the concept should in addition require that broadband service must be sustainable, interconnectable, reasonably convenient, and foremost, technologically, economically, and pragmatically accessible. Each of these terms warrants further explanation:

Technologically Served:

By technologically served, we mean that the broadband service must physically be in a given area and must be functional. An area is not considered technologically served if it provides broadband service that is done through dial-up or satellite. Dial-up speeds are not adequate to meet the threshold definition of "broadband;" satellite is similarly inadequate because of the intermittency and unreliability of the signal. The PSTN currently has a reliability requirement that sits around 99.5%. In order to be technologically sufficient, broadband service must have a percentage requirement that is roughly equivalent: 90% for the initial infrastructure, with percentage increases reviewed on an annual basis.

Economically Served:

"Economically unserved" means areas where the technology may exist, but the people cannot afford service. This requirement would ensure that a reasonable and substantial part of those in the unserved area had the financial means to acquire service. This percentage could be assessed on a case-by-case basis, and should include *all* households in the unserved area, not just those that currently subscribe to Internet service or those currently seeking broadband. Expanding the determination to all households takes into consideration the economic viability of all future users. Given the explosive growth in users, this method makes sense (see again Chart 2 on the increase in Internet usage among adults). Looking only at those currently with Internet service, or those currently seeking broadband would be to look at those who already *have* economic access. Those without service presently, and those not seeking broadband actively, are likely those who cannot afford it. It therefore would be a great fallacy to leave these people out of the determination of economic access, considering they are the very people this requirement is aimed at assisting.

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[25] Horrigan, J. B., and A. Smith. "Home Broadband Adoption 2007." Pew Internet & American Life Project (June). http://www. pewInternet.org/ppf/r/141/press_release.asp.

[26] Pew Internet & American Life Project Surveys. March 2000-December 2007. http://www.pewInternet.org/trends/Internet_Adoption_3.18.08.pdf

[27] *Id.*

[28] March 17 video, session 2, NTIA website.

The solution to solving the problem of economic access is outside the purview of this document; however, it is clear that the existence of broadband is not enough to satisfy—people must have an actual ability to afford access to it.

Pragmatically Served:

Pragmatic access to broadband goes in line with economical access, in that it deals with situations where the technology and infrastructure may exist but people still face barriers to use. Pragmatic barriers are a lack of knowledge on how to a) obtain service, b) install service in one's home, or c) use the broadband services. Information and training must be made available to those who face a pragmatic barrier to use.

Convenience of Access:

It is not vital to the definition of unserved that those in currently unserved areas have in-home access to broadband service. Analogizing to the PSTN, pay phones bridged the gap in Universal Service in predominantly rural areas where people were unserved. While less convenient than in-home phone service, the pay phone satisfied the needs of those in the unserved areas. Likewise, it is only necessary that people in presently unserved areas have similarly reasonable access to broadband service. A reasonable radius must be created—one which takes into account the viability of getting to and from locations that possess broadband. Community centers and libraries would be prime examples of locations that would serve as the center of the radius; all those falling within the radius would be considered "served."

Importantly, access to these broadband centers must span the age groups. Put another way, it needs to be ensured that all age groups have access to broadband service, meaning that broadband service must be available in locations which service each age group. For example, community centers, libraries, and Internet "cafes" could feasibly serve all age groups, while schools would only service younger age groups. Similarly, senior homes would only be considered to service older age groups. In order to be considered "served," an area must have locations within a given radius that provide broadband access to all age groups; this requirement may be satisfied by one location or multiple.

Sustainability and Interconnection:

Providing broadband service to unserved areas is not about a rigid set of protocols or redundancy. Key factors, in addition to those above, are sustainability and interconnection. Sustainability means that the broadband network needs to be structured such that it allows itself to be maintained properly; this includes the ability to be updated at reasonable intervals to stay on par with overall standards of broadband service and quality provided in suburban, urban, and other traditionally served areas. Sustainability also means that there is a way to financially maintain the network once the initial grants run out. This problem could be solved by creating annual grants to support the network on a demonstrated-need basis.

Interconnection is a main priority; installing a local loop capable of providing broadband is useless without the ability to interconnect. The Internet is founded upon the idea of sustainability and survivability; it is a concept predicated upon the ability of computers to connect through an ISP to a network of host computers. This is the primary function of the Internet and is therefore a necessary requirement of broadband. Thus, the access to broadband necessarily means that

access should be to the "open Internet," and not one of the proposed "private Internets" run by private carriers. The goals of providing broadband service most certainly indicate that (among other things) broadband access is necessary for businesses, emergency services, and education. These basic broadband goals would be greatly hindered by a private Internet that supplied access only to a limited, restricted number of information sources.

The ownership of the broadband network in the unserved area is not of particular importance at this point, provided that the sustainability and interconnection requirements are met.

See Appendix A for Charts on the Unserved Definition.

PROPOSED ALTERNATIVE DISPUTE RESOLUTION AND BEST PRACTICES CENTERS

Alternative Dispute Resolution ("ADR")

The national and historical scale of the project before the NTIA is unprecedented. As such, we recommend that by design, the NTIA should ensure that disputes that will inevitably arise during this process don't hold up broader grant programs. No doubt, the technology and brevity involved in some of the grant proposals the NTIA will receive will challenge traditional notions of what our government is capable of producing and managing. Our studies have shown that over the past century, law in the field of telecommunications trails technology by 10-15 years. The President and Congress's ambitious agenda -- and indeed our country's needs -- cannot withstand any such timeline. By including a working Alternative Dispute Resolution (ADR) process in its BTOP grant program, the NTIA can ensure that we will have law in this ambitious project trailing technology by 10-15 days instead of years.

As a practical matter, we want to ensure that forum shopping is avoided and that disputes are resolved by an informed, capable, and efficient ADR system. As an example of efficiency, NTIA could require that parties agree ahead of time to a three-person panel to be called upon in 24 hours to resolve disputes to prevent construction and infrastructure deployment from being needlessly delayed.

Therefore, we suggest that the inclusion of an ADR component should be a criterion when NTIA evaluates grant applications. That is, grantees who choose to accept NTIA funds agree to submit to a formal ADR process when conflicts or disputes arise in the course of carrying out their grant proposal. Any entity that does not agree to a rapid ADR process should be barred from receiving NTIA funds as part of this program. The three main arenas in which we see such conflicts arising is: 1) among grant recipients; 2) between grantees and the entities they work with in implementing their project (ex. subcontractors, local or national service providers, entities providing structural or implementation components of putting out the broadband network, etc.); and 3) between grantees and non-grant recipients. As President Obama's memo on Transparency and Open Government (http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment/) emphasizes, *Government should be collaborative*. That is, "Executive departments and agencies should . . . cooperate . . . with nonprofit organizations, businesses, and individuals in the private sector." Accordingly, we suggest that the NTIA approve grants based on collaborative processes and avoid parties who choose to shun ADR fora in favor of traditional judicial processes that may delay implementation of a national broadband rollout.

We also suggest that the NTIA encourage and prioritize projects that involve ADR processes and techniques outside of simply resolving traditional two-party disputes. Community consensus-building processes have often proven to be effective tools in community planning. We envision that implementation of BTOP grants will require a substantial degree of community

involvement, particularly in building out infrastructure in unserved and underserved communities. A community consensus-building process, guided by an ADR professional, would seek to build strong public involvement, develop partnerships between people with diverse interests, and give the community a stake in the implementation of the BTOP. This would not only serve to advance President Obama's goal of developing a collaborative, participatory government, but could also improve the sustainability of the projects developed under the grant program.

In addition to nominally stating that its grant program should include an ADR component, NTIA should develop real metrics for adjudging when disputes arise. Ostensibly, this would prevent contractual disputes such as labor matters, liens, etc., that are best handled by local judicial fora from bogging down a streamlined ADR system. NTIA should also define the frameworks by which such disputes should be resolved. Due to the specialized nature of ADR in general, as well as the short timeline in which NTIA seeks to begin disbursing funds, we believe that relatively loose standards should be set by the BTOP program rules, with grant applicants who seek funds to implement the ADR system proposing the framework and content of such a system. The level of knowledge required to establish such a system cannot be underestimated. However, a dispute resolution forum absent expertise in the BTOP program is worthless compared to a system with dispute resolution designed alongside the BTOP framework. As such, we recommend that grant recipients be sought specifically for implementing the ADR component of NTIA's BTOP grant program.

Best Practices

Another key factor for ensuring quick and effective implementation of the BTOP grant program will be providing resources for involved parties to guide them in determining the best practices for operating their networks. These best practices would help grant recipients build and operate their networks in a way that is consistent with our ideals of an open Internet. We recommend that the NTIA set aside a portion of BTOP funds for developing a Best Practices Clearinghouse that would develop technical standards and model contractual agreements through a collaborative process involving both industry and community participants.

The Best Practices Clearinghouse would educate not just direct recipients of BTOP funds, but also end-users and members of the above-mentioned dispute resolution system. We envision the Best Practices Clearinghouse establishing independent standards that will also be a valuable resource in settling contractual disputes that arise from contractual obligations. These standards can also smooth over initial negotiations between parties.

Little is known by the public about the network management practices that broadband providers currently use. A Best Practices Clearinghouse would publish ideal standards for managing the traffic on a broadband network. These standards would cover both equipment (example: what's the best router to buy) and network management practices (example: how to deal appropriately manage congestion). NTIA should determine if these management best practices are mandatory for recipients of BTOP funds. Regardless, these best practices would also serve as guidance for all providers of broadband in the US, whether or not they receive BTOP funds. As an example, an open Internet requires that network management be both protocol- and application-agnostic.

A Best Practices Clearinghouse would collect and analyze network management practices of existing network operators, and determine what changes were necessary to ensure an open Internet. It could also provide easy-to-use tools for consumers so they can test their connections and see, for example, if their ISP is throttling their traffic. Though this function is currently offered through other websites, the Best Practices Clearinghouse can act as a driver for further development of consumer tools as technology evolves.

Best practices should extend beyond mere technical specifications. Having standard, predictable relationships between the parties involved in the BTOP is perhaps more important than knowing what is the best router to buy. To this end, we suggest that the Best Practices Clearinghouse also develop and provide model agreements and contracts. These model agreements would improve the quality of the BTOP and speed up its deployment by significantly reducing transaction costs and setting standards developed around the principles of an open Internet. One example of this would be providing recipients of BTOP funds with a Model Terms of Service (TOS) Agreement that protects end-user rights. Similarly, a Model Interconnection Agreement for peering rights would simplify negotiations between BTOP parties who need to peer with existing networks. Again, irrespective of a determination as to the binding nature of published best practices on recipients of BTOP funds, these model agreements would serve as guidance for all broadband providers.

JOINT BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM REQUEST FOR INFORMATION

In response to the Congress' Recovery Act, which apportions $4.7 billion to establish a Broadband Technology Opportunities Program, The University of Texas School of Law, through its Telecommunications and Technology Class and under the guidance of Professor Lowell Feldman, submit the following comments to the NTIA's request for information. These comments were drafted primarily from the student the University of Texas School of Law with support and expertise drawn from multiple departments at the School of Engineering and the Lyndon B. Johnson School of Public Policy.

NTIA Questions

1. ***The Purposes of the Grant Program:*** *Section 6001 of the Recovery Act establishes five purposes for the BTOP grant program.*

    a. Should a certain percentage of grant funds be apportioned to each category?

    It is not necessary to set a specific percentage of money that should be attributed to each purpose of the program. There are several reason for this. First, a number of the grants will hopefully advance several of the goals of the act simultaneously. Second, creating fixed percentages which must be met will limit NTIA's flexibility to award grants to the best, most innovative programs and will create additional complexities for NTIA decision makers when examining projects which advance more than one purpose of the goal. Third, with such broad purposes for the BTOP grant program as providing access to unserved areas, schools, libraries, and other organizations, as well as stimulating the demand for broadband, economic growth, and job creation, it seems that an apportionment of the grant funds would be an overwhelming task and should be avoided as it may undermine the directive of the BTOP.

    However, to make sure all of the purposes of the grant are respected by NTIA and no one type of project receives all the money, it would be useful to set minimum levels of funding, either in percentage or dollar amounts, that each of the purposes must at least receive. These minimums could be in the 5 – 10% of funding range, which would prevent any goal from being ignored but still give NTIA flexibility in awarding grants.

    Congress did not prioritize the goals of the Act, and therefore each should be treated as equally important. However, this question should perhaps be addressed in light of the applications actually received: percentages set in stone beforehand may result in the rejection of valuable projects.

    b. Should applicants be encouraged to address more than one purpose?

    Certainly applicants should be encouraged to address more than one purpose if they

are capable of doing so. In fact, it would be very efficient to have broadband capability for a general geographic area that could be utilized by the underserved, unserved, and hospitals. This would also help prevent grantees from possibly seeking out only the purposes that seem more profitable and discouraging progress toward other goals of the program.

With this in mind, Applicants should be mindful of aligning their proposals with the success of their business models and not attempt to garner more funds by attempting to encompass more than one purpose. For applicants that do choose to address more than one purpose, heightened scrutiny under both technical and economic feasibility should be applied to determine if the applicant has a reasonable probability of achieving its proposed goal. Factors to be considered should be weighted more heavily on the applicants pre-funding technical and economic capabilities rather than only those proposed in the application.

Ultimately, however, Applicants should be dealt with on a case-by-case basis, and great ideas that only address one purpose (e.g., underserved populations only or hospitals only) should not be discouraged.

c. *How should the BTOP leverage or respond to the other broadband-related portions of the Recovery Act, including the United States Department of Agriculture (USDA) grants and loan program as well as the portions of the Recovery Act that address smart girds, health information technology, education, and transportation infrastructure?*

Projects that encompass goals addressed by other broadband-related portions of the Recovery Act should be encouraged. However, care should be taken to avoid double funding for projects that seek to address the same population target or deployment technologies. Creation of a standard project application should require the applicant to provide not only the scope of their project (preferably defined by codes created by the NTIA), the region/area the project will be created in (similar standardized NTIA codes), and any other grants from *other* programs that the applicant has applied or plans to apply for.

2. ***The Role of the States:*** *The Recovery Act states that NTIA may consult the States (including the District of Columbia, territories, and possessions) with respect to various aspects of the BTOP. The Recovery Act also requires that, to the extent practical, the BTOP award at least one grant to every State.*

a. *How should the grant program consider State priorities in awarding grants?*

Certain states and municipalities already have broadband or wireless programs in place. First, the grant program should focus on those states that are most deficient regarding broadband infrastructure. Second, the program should take advantage of existing infrastructure by encouraging states to improve it, including asking all state programs to adopt the open Internet standards ultimately adopted by NTIA. Overall, NTIA and RUS should communicate with states on state priorities in order to

determine where a grant awards will be put to the best use.

b. What is the appropriate role for States in selecting projects for funding?

The appropriate role of the states in selecting funding recipients should be limited. Aside from the coordination suggested above, they should not have a major role in the decision process itself. However, they can and should be active in the application process. There are several reasons for this:

(1) This is a federal program with federally mandated goals. It is not a state aid program or a program designed to be administered by the states. Congress clearly contemplated federal agency administration of the dispersal of this money. This said, if a state or state institution has a specific grant request, there should be a presumption that it is in the public interest.

(2) Historically, states and state regulators have been subject to regulatory capture at the hands of large incumbent telecoms firms and have not been good at advancing the general public interests and have not shown an overall aptitude to be experts, especially in the deployment of advanced technology infrastructure.

(3) State agencies are presumably able to apply for this money. Allowing states a seat at the table which allocates this money will have the effect of steering money to these state sponsored projects, potentially to the detriment of more innovative private non-profit and for profit ventures. Again, a better role for the state and state agencies (such as the University of Texas) would be to work with other non-profits to coordinate projects and to ask for Grant money directly.

(4) Inconsistencies can also develop if we allow States in the selection process.

States do have an important role in providing data to NTIA which can be used in the evaluation of grant applications. Currently there is no national broadband deployment map and little reliable national data on broadband usage. However, a number of states have collected information of this kind. NTIA will be hard pressed in the short term to find any data on which it can make rational decisions regarding grant allocations aside from the claims of the grant applicants. Thus, leveraging what state level data exists will be necessary. This information may be prevalent in the application process itself, and states should openly and immediately make public all information they already have about their existing knowledge of broadband infrastructure.

c. How should NTIA resolve differences among groups or constituencies within a state in establishing priorities for funding?

The NTIA simply must do the work in reviewing among competiting applications and determine which application is in the pubic interest. Just because an application is from a state does not mean it should be granted, but just because multiple applications may come from various state entities does not mean it should be denied.

d. How should NTIA ensure that projects proposed by States are well-executed and produce worthwhile and measurable results?

Although there should be a presumption of public interest, programs proposed by states should be otherwise subject to the same criterion of judgment as all other programs. Whatever criteria are developed in regards to reporting, sustainability, RoI, and other metrics of success should be applied neutrally to state run and non-state run programs. This does not ignore the fact that state programs may be able to leverage other state resources, but the state will need to prove the worth of its programs on the same playing field as all other applicants. Please also read our answer to 9(a) for a more detailed description on how all not for profit entities should be evaluated.

NTIA must monitor the progress of such projects on its own. NTIA must require periodic reports from the state or state agency overseeing the project. NTIA can then measure progress against similar initiatives in other states to determine the success of the project. NTIA could provide some of the grant funds up-front for a particular project, and require that certain benchmarks are met before the remaining funds are released.

In the case of the University of Texas' forthcoming grant proposals, we are requiring collaboration among our many colleges, we already have tight internal controls over spending of monies, we have an established ability to openly report progress back to NTIA, and we have tied into other ongoing stimulus efforts. We are happy to work with NTIA if they would like to use our internal process as a model for other state requests for funding.

3. ***Eligible Grant Recipients:*** *The Recovery Act establishes entities that are eligible for a grant under the program. The Recovery Act requires NTIA to determine by rule whether it is in the public interest that entities other than those listed in Section 6001(e)(1)(A) and (B) should be eligible for grant awards. What standard should NTIA apply to determine whether it is in the public interest that entities other than those described in Section 6001(e)(1)(A) and (B) should be eligible for grant awards?*

In order for the American people to get the most benefit for the stimulus funds allocated to broadband deployment, all parties should be eligible to bid for the BTOP funding and show how a project can meet the purposes of the BTOP as established by Congress. BTOP eligibility standards should be flexible to bring the most qualified and most diverse group of applicants to the table. The standard for grant award is supposed to promote the purposes of the Recovery Act in a technologically neutral manner, so there should not be a limitation on the type of technology used to provide broadband services. Instead of focusing on application entity type, NTIA should evaluate (1) the value of the proposed project to the American people, and (2) the applicant's ability to use the funds to achieve the project's objective.

The most important considerations that are in the public interest are price and usability. Any entities that will be able to provide broadband to both institutional and residential

customers at a reasonable price might be in the public interest. Also, the quality and reliability of broadband service should be considered as a goal in the public interest. Therefore, if the entity can provide cheaper, more reliable broadband than a state or non-profit in a particular area, then it would be in the public interest to provide a grant to that entity for this defined purpose. The entity may be in a better position to expand or upgrade existing infrastructure. They may be able to do it more cheaply, and also provide area jobs in implementing such a grant. Once again, however, they must prove that they can do it better than any competing state or non-profit. It is clear that both states and non-profits are to be favored over for profit business.

4. ***Establishing Selection Criteria for Grant Awards:*** *The Recovery Act establishes several considerations for awarding grants under the BTOP. In addition to these considerations, NTIA may consider other priorities in selecting competitive grants.*

   a. *What factors should NTIA consider in establishing selection criteria for grant awards? How can NTIA determine that a Federal funding need exists that private investment is not displaced? How should the long-term feasibility of the investment be judged?*

   Factors NTIA should consider:

   1. *Advancement of the Goals of the Act.* The primary focus should be on expanding access, lowering cost and increasing adoption in socioeconomically disadvantaged areas, whether urban or rural. The Act's purpose of advancing non-discrimination should also be given high priority. We would recommend using these standards as a veto standard, i.e. any grant application that does not respect non-discrimination should be rejected immediately. The primary reason to give this purpose of the act such high priority is that respecting non-discrimination is absolutely essential to ensuring that the projects funded today will be open and accessible to the innovations of tomorrow. Many commentators have suggested that the broadband grants should be viewed as "down payment" on the Internet infrastructure of the future. If the money made available through the Act is to actually serve that purpose, non-discrimination must be respected.

   2. *Ease of adoption to existing content delivery modes* (fiber, cable, wireless, twisted pair, etc). NTIA should consider the existing broadband infrastructure in the area of the grant proposal.

   3. *Return on Investment* (different metrics will need to be applied for different entities. For instance, the RoI of a library computer center is very hard to compare to the RoI of new network backbone infrastructure. But comparing similar types of grant applications may allow for the development of useful RoI metrics). The criteria for grant awards should include a proposed project's area and demographic coverage, costs and efficiency, along with equality and sustainability of the broadband offering.

   4. *Innovation.* We should avoid pouring money into outdated technologies.

5. *Length of time required to deploy the technology.*

6. *Retail savings to customers compared to other technologies.*

7. *Synergies/leveraging other projects or private investment.*

8. *Job Creation Potential*. This should not only count the number of people who will be employed physically installing infrastructure. It should also take account of the fact that Internet access is itself an engine of job creation. The effect of Internet access on job growth is hard to quantify. However, priority should be given to projects which seek to not only expand Internet access, but deploy it creatively to best encourage further job growth. This would include projects that train out of work people how to use the Internet to search for a job or increase their education and qualifications as well as projects which create Internet based jobs directly, such as distributed in-home call centers in rural areas.

For determining the level of Federal funding needed that will not displace private investment, the NTIA will need to analyze a private entity's current financial status including: credit rating, stock valuation, and long term investment plans

Long-term feasibility should be judged based on recurring costs that current grant monies may not encompass. These costs should be focused on maintaining longevity of proposed projects through business plans that anticipate long term profitability and sustainability with the following costs:

1. Labor

2. Infrastructure – maintenance, future deployment, interconnectivity of current and new delivery technologies, etc.

3. Services – power and form factor issues, maintenance, development R&D, etc.

4. Applications – maintenance, development R&D, etc.

5. Training/Education – Addressing payment of teachers, maintaining facilities, and educational tools/technology, etc.

b. What should the weighting of these criteria be in determining consideration for grant and loan awards?

Long-term feasibility should be the biggest factor in determining consideration for a grant. It would be a waste of money and resources to attempt a broadband expansion or upgrade where it would most likely fail or be short-lived.

The next important criterion would be job creation, which really grows out of long-term feasibility. Initial job creation for building or upgrading any lines will most likely be the result of every grant awarded, but jobs created within that community and greater access to the job market should be heavily weighted in grant applications.

Consumer cost is also an important factor, and is not mutually exclusive of the other criteria. If people cannot afford the broadband, then it will certainly be short-lived. They also will not be able to utilize it in order to compete in the job market. However, since underserved areas are most likely underserved for a reason, the cost issue could possibly be mitigated by some sort of subsidization by the government in order to achieve the more important goals of long-term feasibility and job creation. The idea of the entire program is to provide an initial investment up-front, and then allow any increase in productivity for a community to be self-sustaining later on.

c. How should the BTOP prioritize proposals that serve underserved and unserved areas? Should the BTOP consider USDA broadband grant awards and loans in establishing these priorities?

Prioritizing underserved and unserved areas first requires developing a workable definition of what constitutes an underserved or unserved area or population. Several roundtable participants point out that this definition may need to vary depending on the type of consumer in the area in question. The definition of underserved for a small business, library or community college should be different than the definition for an individual home user. This means that unserved and underserved should not focus on geographic areas but instead at underserved users. This brings in people in urban neighborhoods where service exists but is not well adopted. These areas should count as "underserved."

Once you have a functioning definition of unserved and underserved, identifying and giving priority to projects in those areas wont be difficult. Karen Twenhafel of TCA, Inc. suggested that "priority be given to applications that seek to bring services to serving areas where the penetration rate of those serving areas are 15 percent or below that of the national average for those services, be it broadband, be it wireless services, or whatever the service is." If an area has been this historically underserved, it was unable to reap the benefits of policy objectives in the past, and the stimulus money should go there first.

The BTOP should absolutely consider USDA grants in setting these priorities since significant overlap will waste resources that could be used in other areas (that don't get USDA funding).

d. Should priority be given to proposals that leverage other Recovery Act projects?

Only if the leveraging of other Recovery Act projects also advances the goals of the BTOP, i.e. projects should not be given priority simply because they mention that they will work with some other agency which is also getting money. But if grant applicants can show that by working with another recovery act program they can create greater RoI for both programs than either could on its own, then they should absolutely be given priority.

With this in mind, the goal of this money is to support the quickest broadband

coverage to the largest portion of the population. Those projects which project meeting these goals in the most cost effective manner should be given priority. Any priority to proposals that leverage other Recovery Act projects are likely to be proposed by larger corporations. Indirect priority to such companies would be in some level of conflict with Section 6001(h)(3) (small and disadvantaged businesses).

In addition, we should only allow such a priority if expanding on other projects will be cheaper for consumers, create more jobs, and achieve all the other goals of the Act to a greater degree than a proposal that does not leverage other Recovery Act projects. The broader goals of the program overall should always take precedence over individual circumstances. One overall goal of the program would most likely be keeping the costs of implementing any proposal down, so in this sense proposals would be aided by any leveraging. Also, it is possible that proposals leveraging other projects would not require as much grant money as those that didn't, so this would be an incentive for the NTIA to prioritize these types of projects to a degree.

e. Should priority be given to proposals that address several purposes, serve several of the populations identified in the Recovery Act, or provide service to different types of areas?

Absolutely, if these multiple purposes, populations, or areas can be served by the program efficiently. This is where cost and quality become issues. If two separate proposals would be cheaper and more effective than one proposal covering two different areas, then that one proposal should not get priority. The efficiency, cost, and effectiveness of the BTOP overall should be the primary concern in granting individual awards.

f. What factors should be given priority in determining whether proposals will encourage sustainable adoption of broadband service?

A basic market analysis about existing and potential broadband users in different areas should provide the biggest factors. Factors to consider include:

1. Long term feasibility of investments

2. Year to Year operating requirements of the project (i.e. is the project a capital intensive project with minimal ongoing upkeep needs or does it require ongoing expense such as staff in a training center)

3. Population density

4. Current broadband capability

5. Current broadband usage, and potential broadband usage by those who don't currently use it

Therefore, estimated consumer price and quality, and consumers' willingness to adopt that level and price and quality, will be the most important factors.

g. *Should the fact that different technologies can provide different service characteristics, such as speed and use of dedicated or shared links, be considered given the statute's direction that, to the extent practicable, the purposes of the statute should be promoted in a technologically neutral fashion?*

The statute must be applied in a technology neutral way while stilling encouraging service of a certain speed or nature. This will in part be accomplished through the definition of what speed constitutes unserved and underserved areas. Any technology which provides a speed below that which counts as underserved will obviously not be encouraged by the Act, but this will apply to any and all technologies below this speed limit and, similarly, all technologies able to provide service above that speed limit should be able to get grant money. Similar criteria could be developed for other technological capabilities that NTIA determines are "must haves" in the network of the future. This criterion should maintain the goal of technological neutrality by requiring commercially reasonable licensing of any technology that NTIA deems necessary. This criteria can also change with the times to keep up with technological growth in the area.

h. *What role, if any, should retail price play in the grant program?*

Retail price should play an enormous role in the grant program. Without reasonably affordable prices in relation to the population or entity being served, a grant reward will be a waste since it will not be sustainable long-term and will not provide increased accessibility. In many urban areas, the problem is not a lack of service but instead that service is too expensive or for some reason the population is not sufficiently motivated to purchase service. In determining whether a grant program focused on increasing urban adoption will create sustainable RoI, looking at retail price and the effect of the program on retail price must be part of the determination.

In addition, 80% of the program costs will be covered by Federal funding. This benefit should be passed onto the consumers in a manner that results in the lowest consumer cost required for long-term profit sustainability. Any "actual" costs considered should be meted by the portion of Federal funding (80%) awarded to the program.

As we state above, only retail pricing that is based upon cost causation should be allowed. This is public money, and thus these networks built must have at its base a public "common carrier" like obligation. This common carrier like obligation is at the heart of an "open network" and it is the basic promise not to discriminate against and among users and applications. By requiring price to be tied to cost we are insuring the network and its use will be in the public interest as opposed to private interests.

5. ***Grant Mechanics:*** *The Recovery Act requires all agencies to distribute funds efficiently and fund projects that would not receive investment otherwise.*

a. *What mechanics for distributing stimulus funds should be used by NTIA and*

USDA in addition to traditional grant and loan programs?

NTIA should use similar methods that other commissions have used on previous federal grants. If a program involves subsidies that will be passed onto consumers, however, Federal guidelines stating eligibility for these subsidies should be promulgated. These eligibility requirements should not be altered at the state level.

b. How should these mechanisms address shortcomings, if any, in traditional grant or loan mechanisms in the context of the Recovery Act?

Aside from traditional grant mechanisms, subsidy mechanisms have been hindered by state eligibility requirements that often increase the difficulty to receive such subsidies or narrowly define which services are eligible for these subsidies. Such practices need to be avoided for NTIA projects under the Broadband Initiatives. Additionally, many shortcomings of other grant programs are related to regulatory capture of those programs. To avoid such capture we recommend the creation and use of Best Practices and Alternative Dispute Resolution centers. Universities are prime places to create such centers. If possible NTIA should contractually bind grant recipients to partake actively in such centers.

As stated above UT will propose to create a center, and we wish to collaborate with other Universities for additional centers. In earlier eras, Universities help lead the general planning and acceptable use related to the Internet and we view BTOP as a way to re-inject Higher Education into a steering force for the continued evolution of the Internet.

6. ***Grants for Expanding Public Computer Center Capacity:*** *The Recovery Act directs that not less than $200,000,000 of the BTOP shall be awarded for grants that expand public computer center capacity, including at community colleges and public libraries.*

a. What selection criteria should be applied to ensure the success of this aspect of the program?

Ideally, the nation would have easily accessible public computer centers with broadband access in every community. However, neither $200,000,000 nor $7 billion is likely enough money to support such a lofty goal indefinitely. Thus, at a minimum, a public computer center's sustainability should be a criterion. If an area already has high penetration rates of broadband in the homes, e.g. 90 or 95%, a public computing center may go underutilized and the funds could likely be used more effectively elsewhere.

Also, ubiquitous broadband nationwide is the dream; however, such widespread access will not be achieved even after implementation of all the broadband initiatives of the American Recovery and Reinvestment Act of 2009 (ARRA). Thus, after implementation, if a public computer center would still not be able to access broadband, this public computer center should not receive any of the ARRA funds.

A major broadband hurdle for poor areas is not connectivity, but rather availability of

affordable technology. As one commentator pointed out at a NTIA hearing, when faced with a choice between buying a HP laptop and paying one's electric bill, the laptop is going to lose 100% of the time. Thus, some of the community center funds should be focused on setting up centers in poor areas, where residents cannot afford technology necessary to take advantage of broadband.

We believe that the best way for NTIA to utilize this grant money is through non-profit IT organizations to provide technology support, training and broadband access to non-technology focused community organizations and non-profits. IT focused organizations would apply for grant money on behalf of these smaller non-IT focused communication centers. These IT organizations would then set up broadband facilities, with the allocated grant money, at non-IT focused community centers. For example, in Texas, organizations such as Austin Free-Net, NPower, SeniorNet, and Technology for All already provide similar services to non-profit organizations throughout Texas. We envision that organizations with minimal IT experience and staff restrictions[29] will struggle with the grant application process. While these IT organizations would work with smaller non-IT focused community centers, we encourage Libraries, Community Colleges, and other more sophisticated parties to apply directly to NTIA for grants.

The benefits we see with channeling funds to these organizations include:

1. Sophistication/Knowledge
2. Regulatory Knowledge and Experience – the ability to apply for both expansion and adoption grants
3. Scale
4. Efficiency
5. Cost
6. Uniformity

b. What additional institutions other than community colleges and public libraries should be considered as eligible recipients under this program?

Private institutions which are community oriented (churches, shelters, half-way homes, etc) could likely adequately provide a computer center to the communities they serve. However, in cases where the institution requires a paid membership to access its services (e.g. the YMCA), the institution should not be able to condition access to the computer center on the purchase of a comprehensive membership of the institution's services (though computer access need not be free either).

Further, one example provided in the NTIA panel discussion of a place where a computer center could be implemented is the auditorium where they were meeting. Buildings such as this are often used for evening performances, but sit underutilized during the day. Thus, institutions seeking to add a computer center in this type of

[29] Examples of these organizations could include: Senior Activity Centers, Homeless Shelters, Immigrant and Refugee centers, Low Income Housing, Neighborhood/After School Centers, and Half-way Houses.

location could effectively turn the location into a dual-use facility.

Lastly, public libraries and community colleges are only two of the many public institutions capable of having a computer center. Any public institution with adequate space should be considered. For example, a local police or fire department could set up a computer center and could simultaneously use the center as a means for local outreach.

7. ***Grants for Innovative Programs to Encourage Sustainable Adoption of Broadband Service:*** *The Recovery Act directs that not less than $250,000,000 of the BTOP shall be awarded for grants for innovative programs to encourage sustainable adoption of broadband services.*

   a. What selection criteria should be applied to ensure the success of this program?

   Sustainability in this regard should focus on two components: economic sustainability and energy/environmental sustainability. Economic sustainability includes forward-looking programs that ensure that broadband infrastructure or equipment that is adopted today is economically viable in the future. Since one of the main goals of the program is to increase broadband access throughout the country, emphasis should be placed on low-cost broadband access that is community-owned and operating on a viable business model. Taking a set of principles that guides USFON Inc., a volunteer non-profit company, for example, would be a good starting point for criteria to guide applicants. Their goal is to provide the best service in both broadband and voice to low income communities for the lowest possible price. Further, they believe that the firmware of any equipment should be open-source (to allow for extensibility and future modification by users); equipment platforms should be open to all manufacturers (to encourage competition to find the most cost-efficient solution); communities should own their own networks (to avoid future price gouging by private enterprise); user devices should be as low-cost as possible so they can be affordable for those that need them the most; and applicants should embrace the best that the open-source and closed-source community has to offer.

   On the energy/environmental sustainability side, preference should be given to zero energy offset projects. That is, projects that implement energy-saving and energy-producing measures to eliminate the burden on local power grids. Such projects should also encourage energy and environmental sustainability among end users by utilizing energy-saving processors, environmentally friendly hardware (LED-backlit screens, for example), etc.

   b. What measures should be used to determine whether such innovative programs have succeeded in creating sustainable adoption of broadband services?

   Where a program, once established, cannot continue without the continual injection of outside funds, the program is not sustainable, and any sustainability grants used in connection with that program did not succeed. Also, if a sustainability grant does not

appreciably increase broadband penetration rates over an area's current rates, that grant has not truly increased sustainability and is not a success.

Post-award reporting requirements could include regular showings of economic and energy savings generated by the projects. In terms of broadband sustainability itself, reporting requirements could include figures as to pre- and post-program broadband users.

8. ***Broadband Mapping:*** *The Recovery Act directs NTIA to establish a comprehensive nationwide inventory map of existing broadband service capability and availability in the United States that depicts the geographic extent to which broadband service capability is deployed and available from a commercial provider or a public provider throughout each State.*

    a. What uses should such a map be capable of serving?

    The map should have a consumer, regulatory/government, and commercial function. At the consumer level, end users should be able to access the map and see if a certain geographic region (depending on the granularity of the information) is served by broadband. This would provide functionality similar to AntennaWeb (http://www.antennaweb.org), which allows users to maximize television reception. At the regulatory/government level, the map would show specific infrastructure in a specific location, its type (fiber, copper wire, etc.), capability, current usage (tied in with FCC filings), etc. At the commercial level, it would allow potential market entrants to know what type of service is currently available in an area, who serves the market, and allow it to analyze the viability of introducing further competition into the area.

    The map also needs to convey more information than simply existing broadband capability and availability in the U.S. The map must designate which ZIP codes/ areas are underserved or unserved according to the NTIA. This will help prevent overlap and indicate the areas that potential grantees should focus on with their proposals. In addition, the NTIA should try to work in conjunction with the USDA in order to provide information on where they have grants. This will help avoid overlap, as well as provide illuminate "the big picture".

    b. What specific information should the broadband map contain, and should the map provide different types of information to different users (e.g., consumers versus governmental entities)?

    The map could have minor modifications for government and consumer use (see 'a' above). However, it could serve the government and the public best by having equal access by everyone. This would allow for a more informed application process and the greatest possible transparency, efficiency and effectiveness of the program as a whole. Private applicants may provide the government with better ideas if they are more involved in the process. There should still be a basic registration process in order to have access to certain detailed information used to create the map (exact

locations of certain telecommunications pipelines, etc.) and affiliated information, for security and other reasons.

c. What level of geographic or other granularity should the broadband map provide information on broadband service?

Initially, the map should strive to provide broadband data on a ZIP code level. This may be difficult, but the Census data is currently the best available for population and income. In certain cases, if states can provide a greater level of detail for broadband capability, etc., then they should work with the NTIA and share this information. Any existing discrepancies would have to be worked out as the map and its relevant information are updated over time. As the Recovery Act denotes that the funding is for developing *and* maintaining the map, the level of geographic specificity could be increased over time.

d. What other factors should NTIA take into consideration in fulfilling the requirements of the Broadband Data Improvement Act, Pub. L. No. 110-385 (2008)?

In terms of the mapping requirements set out in sec. 106(e)(10) of the BDIA, the NTIA map should include data rate benchmarks indicating speed tiers of broadband service available in a given area, identify gaps in such service based on availability or unavailability to residential and business customers, and provide a baseline assessment of statewide broadband deployment in terms of households with high-speed availability. This means that the information collected by NTIA grantees should include thoroughput speeds of broadband available in a geographic area, identify to whom broadband service is available in a given area, and sufficient aggregate information to determine broadband penetration on a statewide basis.

Also very important is the requirement that continued network information flow to decision makers so that appropriate network management guidelines can be developed. It is the current lack of detailed information about how networks are managed, what creates congestion, how congestion is best relieved, etc. that is missing. At our proposed best practices centers this type of information can be assimilated and used to create a management best practice.

e. Are there State or other mapping programs that provide models for the statewide inventory grants?

Yes, the Virginia program made use of the Mid-Atlantic Broadband Cooperative (MABC), which, from its website, was created in 2003 to revitalize the economy of Southside Virginia. The program has had significant success: In February 2008, MBC announced a tenfold increase in the capacity of the Southside Virginia Regional Backbone Network. Some lessons from the Virginia plan include: Unless providers in an area are willing to share their data (which usually isn't the case) it will be necessary to assemble the data from a variety of sources in order to complete the picture. Sources of service data include:

- The mapping sections of local broadband roundtable websites.

- Results of a community demand aggregation study (basically doing a broadband census).

- Testing – typing sample phone numbers into provider websites to check availability and recording the results.

- Individual surveys – students and volunteers can provide invaluable assistance in polling residents and businesses on their broadband "status".

- Provider sites (especially for wireless/cellular services) often offer a "coverage map" that depicts where services are generally available. While not an "authoritative" source, these sites can provide guidance and general information.

The expertise of organizations such as the MABC should be tapped for this initiative, while avoiding other firms already linked to for-profit telecommunications providers, such as Connected Nation.

f. Specifically what information should states collect as conditions of receiving statewide inventory grants?

States should collect information on current broadband penetration and providers' growth plans through the foreseeable future. This includes information on location of current broadband infrastructure, capacity and average usage, the number of providers (if any) in a given area, and the population and population density of the area. Further, in areas where broadband is available, states should collect information on connection speed availability. See also 'e' above.

g. What technical specifications should be required of state grantees to ensure that statewide inventory maps can be efficiently rolled up into a searchable national broadband database to be made available on NTIA's website no later than February 2011?

The information collection techniques are really more important than any kind of specific software that the state may use. As long as the categories of information being collected are uniform across states and ZIP codes, they can be easily rolled up into a searchable broadband database that would be administered by the NTIA. The NTIA would have to give out some sort of a database template, with definitions on broadband, income groups, population, etc., with the fields of information the NTIA seeks to collect from the states. NTIA should also work with the FCC and independent standards organizations (such as IEEE) to ensure that information being collected reflects current industry standards and includes detailed information about true broadband penetration.

h. Should other conditions attach to statewide inventory grants?

Since information about broadband penetration is of crucial importance to the entire broadband grant scheme, strict timelines should be enforced. Further, guidelines should be set as to how current the information is or needs to be. Further, if inventory map information is to be collected from private or for-profit sources, strict accounting procedures should be in place to ensure that grant funding is not utilized inefficiently.

i. What information, other than statewide inventory information, that should populate the comprehensive nationwide map?

Information about interstate broadband connections should be included (and thus such information should be required at the statewide level). The map should, at a minimum, include information available on Google Maps (GIS data such as roads, cities, geographic features, etc.). Also, to make the map useful for policy purposes, information on the map should be able to be overlaid with all types of publicly-available information on population density, population trends, and based on consultation with Members of Congress and the FCC, other types of information that would aid in future broadband infrastructure planning.

j. The Recovery Act and the Broadband Data Improvement Act (BDIA) imposes duties on both NTIA and FCC concerning the collection of broadband data. Given the statutory requirements of the Recovery Act and the BDIA, how should NTIA and FCC best work together to meet these requirements?

NTIA and FCC cooperation should avoid duplicative efforts and also avoid omissions based on assumptions about the other agency. This may require a joint task force between NTIA and FCC to meet regularly to ensure that data is being collected in the most efficient manner. The recognition that the work of each agency will be of significant benefit to the other should guide the work of both. The groups should analyze their capabilities and limitations (funding and otherwise) to determine which agency should handle certain aspects of broadband data collection.

9. ***Financial Contributions by Grant Applicants****: The Recovery Act requires that the Federal share of funding for any proposal may not exceed 80 percent of the total grant. The Recovery Act also requires that applicants demonstrate that their proposals would not have been implemented during the grant period without Federal assistance. The Recovery Act allows for an increase in the Federal share beyond 80 percent if the applicant petitions NTIA and demonstrates financial need*

a. What factors should an applicant show to establish the ''financial need'' necessary to receive more than 80 percent of a project's cost in grant funds?

We strongly suggest that there be a waiver of the 80% funding ceiling for applicants from well-established not-for-profit institutions who rely heavily on volunteer hours. More specifically, applicants tied to universities and public interest groups and that rely heavily on volunteerism should be eligible for a full waiver or even get a presumption that waiver is valid. This is because quantifying volunteer hours in financial terms is administratively impractical. For example, a university would have

to keep track of thousands of hours of volunteer work from numerous different academic colleges and affiliated working groups and students and then have to financially quantify these hours. Even if only a group of third-year law students contributed volunteer hours, arguable per-hour rates could range from $60/hour as a clerk to over $200/hour as a junior associate at a large law firm. But a grant application from an applicant like the University of Texas Law School would encompass volunteers from the law school, the engineering school, the public policy school, the communications school, and professors, students, and other faculty, staff and unofficially affiliated professionals and related non-profit groups and other governmental groups. The administrative burden of accounting for such "value" is very large.

In the unfavorable scenario where no waiver process becomes instituted as part of the application process, the NTIA would certainly need to create a formula guiding abovementioned applicants on how to calculate the value of volunteerism and other non-cash contributions -- e.g. what is 4000 hours of various volunteers' time worth? What is the ability to use University owned labs worth? What is the value of University faculty? For purposes of exempting the 80% ceiling NTIA must either state who is eligible for waiver or create a non-burdensome method of detailing the types of contributions we describe.

Additionally, for for-profit entities, some grant requests may warrant exemptions due to:

1) Lack of another reasonable way to secure funding (though not because of past bankruptcy, default, criminal record, or poor credit history)

2) Whether the grant proposal has a high public interest value and seeks to serve a currently unserved or underserved area/population

3) How to account for the willingness of the project partners to provide significant amounts of sweat equity/meaningful in-kind contributions

4) How to account for the long-term sustainability of the project.

b. What factors should the NTIA apply in deciding that a particular proposal should receive less than an 80 percent Federal share?

1) Past failures to meet conditions/stated goals after being a recipient of government funds (e.g. USF funds – i.e. non-open networks of incumbents)

2) Grant proposals that seek to serve currently served areas or populations in a way that is not innovative/substantially more efficient than typical services currently available in those markets

3) Grant proposals from private or for-profit entities that already have high earnings and do not have a need (AT&T and Verizon have huge trailing free-cash flow and EBITA -- even in our economy)

4) Whether 80% funding would lead to overfunding. e.g. where the applicant could reasonably provide more than 20% of its costs, giving that applicant the full 80% allows it to keep money it would have normally used in the provisioning of its program—which essentially amounts to a windfall profit. While the Recovery Act is supposed to encourage economic growth, there is no requirement that an applicant be insulated from all risk or that the applicant needs to make a generous profit. Applicants should be required to show that they cannot reasonably fund any more than 20% to receive the full 80%. If the applicant cannot show this convincingly, then the NTIA should award less than 80%.

5) Many of the same factors involved in part (a) of the question will still come into play. The financial factors should act as an initial threshold question (e.g., if outside sources of funding are available, less money should be awarded).

c. What showing should be necessary to demonstrate that the proposal would not have been implemented without Federal assistance?

This showing should include documented evidence demonstrating the applicant's good faith efforts to obtain funding elsewhere, or supporting a reasonable belief that the applicant would not receive funding based on prior history.

E.g. applications for other sources of funding (business loans, venture capital, state funds, etc.) to demonstrate that either the grantee has maxed out the amount of outside funding available to them or that further funding is simply not available.

E.g. if a state or municipality has sought to implement this project in the past, records showing that perennial budget constraints have kept this from happening.

If the grantee has sought federal assistance in the past (either through another grant program or legislative earmarks), the grantee should provide an explanation as to why such funding has not yet made the project viable.

The documentation should include a signed statement under oath administered and witnessed by a notary public from the presiding officer of the organization.

An informal consideration to be weighed alongside the documentation: In a free market economy, where a need is readily recognizable but unfulfilled, the absence of a program to fulfill that need is a good sign—though not conclusive—that a program would not have been implemented without Federal assistance. In many cases a simple showing that no similar service to the one proposed by the applicant is available may be sufficient to show that the service could not be implemented without federal assistance.

10. ***Timely Completion of Proposals:*** *The Recovery Act states that NTIA shall establish the BTOP as expeditiously as practicable, ensure that all awards are made before the end of fiscal year 2010, and seek assurances from grantees that projects supported by the programs will be substantially completed within two (2) years following an award. The Recovery Act also requires that grant recipients report quarterly on the recipient's use of*

grant funds and the grant recipient's progress in fulfilling the objectives of the grant proposal. The Recovery Act permits NTIA to de-obligate awards to grant recipients that demonstrate an insufficient level of performance, or wasteful or fraudulent spending (as defined by NTIA in advance), and award these funds to new or existing applicants.

a. What is the most efficient, effective, and fair way to carry out the requirement that the BTOP be established expeditiously and that awards be made before the end of fiscal year 2010?

Process applications according to an efficient, prioritized system: As it attempts to sort through applications, the NTIA should be guided by a principle: do the greatest good for the most people. This is a rather nebulous standard; however, the following factors can be used as a guideline:

- The NTIA should consider what percentage of required funds an applicant is contributing itself. If NTIA consistently provides 80% of funds to every project, the money is going to run out very quickly, whereas if an applicant is willing to fund 50% of its project, the NTIA could save the remaining 30% to allocate to another party.

- The NTIA should consider how many individuals will be provided service due to a project. If it would cost $250 million each to (a) provide broadband access to 35 people living in the Rockies, or (b) set up 5 computer centers where 500 low-income people will be able to get broadband access, the latter project would seem to add more value, assuming that overall economic development increases roughly the same amount with each additional person who gains broadband access.

- NTIA needs to focus on projects which serve areas that are currently unserved or underserved, because presumably for-profit firms have saturated the profitable markets and will continue to innovate there in order to get a bigger share of available consumer dollars.

- Lastly, the NTIA needs to consider whether a project significantly benefits public safety services and thereby benefits the community as a whole.

With these guidelines in mind, NTIA should be able to quickly weed out some applications as not being as good as others.

Mandate that state and local government agencies give Recovery Act fund recipients top priority in obtaining necessary permits.

Require that grant applicants have already secured any outside funding required for their project, and require them to submit a signed affidavit that they will be able to start work on the project within 30 days of receiving funds.

b. What elements should be included in the application to ensure the projects can be completed within two (2) years (e.g., timelines, milestones, letters of agreement

with partners)?

Require applicants to make regular ongoing reports. Use timelines and milestones provided in the application to gauge progress; after a certain number of milestones are not met, notice of failure is sent and applicant may petition for an adjustment in the goals upon good cause shown. If additional milestones are also not met (and no good cause is shown), grant funding can be de-obligated. Interim penalties can range from a warning, to loss of some funding, to total withdrawal of NTIA funds. Maybe give NTIA the ability to conduct audits and reviews at its discretion

Similar to other construction projects, make progress payments as the project meets completion deadlines (instead of a lump sum upfront payment, unless applicant demonstrates that this would make the project unfeasible).

11. ***Reporting and Deobligation:*** *The Recovery Act also requires that grant recipients report quarterly on the recipient's use of grant funds and progress in fulfilling the objectives of the grant proposal. The Recovery Act permits NTIA to de-obligate funds for grant awards that demonstrate an insufficient level of performance, or wasteful or fraudulent spending (as defined by NTIA in advance), and award these funds to new or existing applicants.*

a. How should NTIA define wasteful or fraudulent spending for purposes of the grant program?

"Wasteful" or "fraudulent spending" should be defined in reference to the goals of the act, on a sliding scale. The further a grantee deviates from the stated goals of the act and its own stated goals set forth in its application, the more likely the spending of the grant money should be considered "wasteful" or "fraudulent."

Wasteful spending can be any combination of the following:

- Egregiously excess purchases (quantity or price) which are ultimately not used in the project

-Spending on elements that are redundant or that do not directly enhance the quality or level of service

Fraudulent spending is spending that is unrelated to the stated goals of the application, an example of which would be research and development on projects unrelated to the funded one. Fraudulent spending can also be e.g. overpaying a related supplier in a sweetheart deal.

b. How should NTIA determine that performance is at an ''insufficient level?''

(Incorporate the timeliness requirements from 10(b) above.)

The following additional factors should be considered:

-If the quality and reliability of services have remained static or declined.

-If another party can demonstrate that it could reasonably surpass the level or performance currently in existence.

NTIA should require recipients to publicly track their progress online. Recipients should have 90 days to rebut the presumption of insufficient performance.

c. If such spending is detected, what actions should NTIA take to ensure effective use of investments made and remaining funding?

Regional monitors should have the option of developing a remediation plan (with specific directions on how to correct the problems) or recommending the project for de-obligating funds. If the problem continues, another local organization should be allowed to 'step up' to the project if they demonstrate that they can complete it or a substantial portion of it. In egregious cases, the NTIA could force repayment of grant money found to be used fraudulently.

12. ***Coordination with USDA's Broadband Grant Program:*** *The Recovery Act directs USDA's Rural Development Office to distribute $2.5 billion dollars in loans, loan guarantees, and grants for broadband deployment. The stated focus of the USDA's program is economic development in rural areas. NTIA has broad authority in its grant program to award grants throughout the United States. Although the two programs have different statutory structures, the programs have many similar purposes, namely the promotion of economic development based on deployment of broadband service and technologies.*

a. What specific programmatic elements should both agencies adopt to ensure that grant funds are utilized in the most effective and efficient manner?

Applicants should be able to use one form to submit to both agencies (with the option to not fill out the sections for either NTIA or USDA if they choose to only apply for one program). Allow the applicant to suggest which program would be the target of the application, but give the agencies the ability to fund from a different source, or both, if appropriate.

To the extent efficiently feasible, both agencies should use a unified set of standards for determining which proposals are best achieved through grant awards and which are best achieved through loans and guarantees.

The most important programmatic element both agencies should adopt is a seamless form of communication. The best way for the programs to maintain their own separate identities while working together is simple communications. Each agency should designate a liaison whose entire job is to keep the other agency up to date.

b. In cases where proposals encompass both rural and non-rural areas, what programmatic elements should the agencies establish to ensure that worthy projects are funded by one or both programs in the most cost effective manner

without unjustly enriching the applicant(s)?

As mentioned above, communication between the agencies and unified standards should help with efficient allocation of funds from both.

The following procedures may help:

- Requiring applicants to disclose if they have a pending or qualified application for money from another agency (whether it be USDA or some other government program), then checking with the other agencies to make sure an award would not result in duplicate funding.

- If USDA or NTIA reject an application because they judge it to be better suited for the other program, the agency should check with the other to see if they received the same application; if not, the rejecting agency should forward the application to prevent qualified applicants from falling through the cracks.

13. ***Definitions****: The Conference Report on the Recovery Act states that NTIA should consult with the FCC on defining the terms ''unserved area,'' ''underserved area,'' and ''broadband.'' The Recovery Act also requires that NTIA shall, in coordination with the FCC, publish nondiscrimination and network interconnection obligations that shall be contractual conditions of grant awards, including, at a minimum, adherence to the principles contained in the FCC's broadband policy statement (FCC 05–15, adopted August 5, 2005).*

a. For purposes of the BTOP, how should NTIA, in consultation with the FCC, define the terms ''unserved area'' and ''underserved area?''

For comments on 13(a) see the section titled "Defining Unserved, Underserved, and Broadband."

b. How should the BTOP define ''broadband service?''

(1) Should the BTOP establish threshold transmission speeds for purposes of analyzing whether an area is ''unserved'' or ''underserved'' and prioritizing grant awards? Should thresholds be rigid or flexible?

(2) Should the BTOP establish different threshold speeds for different technology platforms?

(3) What should any such threshold speed(s) be, and how should they be measured and evaluated (e.g., advertised speed, average speed, typical speed, maximum speed)?

(4) Should the threshold speeds be symmetrical or asymmetrical?

(5) How should the BTOP consider the impacts of the use of shared facilities by service providers and of network congestion?

For comments on 13(a) and 13(b), see the spotlight section titled "Defining Unserved, Underserved, and Broadband" located at the beginning of these comments.

c. How should the BTOP define the nondiscrimination and network interconnection obligations that will be contractual conditions of grants awarded under Section 6001?

Interconnection is the physical joining of networks for the mutual exchange of information between and among the users of the networks which are joined through such interconnection (i.e., traffic). All grant recipients should not only be required to interconnect with requesting providers if physically and technically feasible, but recipients should also agree not to degrade or discriminate against traffic on the networks. Discriminatory actions include, but are not limited to**,** such acts as blocking and prioritization. One example of blocking would be the prohibition of consumer-end smart grid devices, such as a digital meter, to communicate with energy monitoring facilities via broadband. An example of favoritism would be the allowance of traffic on the network by only a single designated electric company, at the exclusion of all others. These sorts of practices hurt the public interest by taking away choice and freedom, hindering expansion and accessibility, and stifling technological innovation by minimizing resources. To help ensure non-discrimination, protocol-agnostic and application-agnostic forms of network management should be utilized.

One potentially discriminatory method of network management currently being investigated by some companies is traffic prioritization. Careful consideration should be given to the categorization and prioritization of selective transmissions -- smart grids, in particular, are an evolving technology of increasing importance that may not be actively considered by these companies. A great deal of research still needs to be conducted on the technology and as such, the type of traffic is not clearly defined and may thus be ranked a lower priority. This may severely hinder any studies being conducted on the technology and prevent it from reaching the level of effectiveness needed for the public interest. Along the same lines, protocol throttling may have the same effect. It is necessary to ensure that any methods employed by smart grids will not be unfairly disadvantaged, as the technology may rely heavily on the openness principles of broadband.

For the same reasons, it is also vital that networks not disconnect an existing interconnection without notice. In order to ensure proper functionality to the public, smart grids must rely on the fact that a stable connection with the consumer exists and traffic has the ability to flow at all times. Without such a presumption, smart grids are effectively no different than the common electrical distribution system of today. Being able to disconnect without notice has the potential for leaving consumers stranded.

Keeping these ideas in the forefront, it is suggested that NTIA create a "Model Interconnection Agreement" between providers with a guideline that only marginal cost causation be required to be compensatory and a recommendation that a voluntary

bill and keep paradigm be recommended. To this end any "perceived" and "accounted" opportunity cost would not be considered a compensatory cost and would not be an allowed in the Interconnection Agreement between Internet Providers, or Internet Providers and Application Services Providers. These guidelines will help set the minimum expectations among all parties involved and ensure the level of interconnection, service, and quality needed for emerging technologies to be effective.

For additional comments on 13(c) see the section titled "Defining Unserved, Underserved, and Broadband."

i. In defining nondiscrimination obligations, what elements of network management techniques to be used by grantees, if any, should be described and permitted as a condition of any grant?

NTIA should create and update a Model Terms of Service Agreement that should be mandatory for any grant recipient and all affiliates of the Grant Recipient. Such TOS must follow cost causation principals for pricing and may not have any user restriction other than unlawful use. Techniques should be permitted if they still allow for a protocol and application-agnostic network, and if they do not create unreasonable barriers to interconnection. Management techniques should not discriminate to the detriment or, nor to the benefit of, any provider or network element. We propose the creation of University led Best Practices centers and ADR centers to timely resolve disputes related to these issues.

ii. Should the network interconnection obligation be based on existing statutory schemes? If not, what should the interconnection obligation be?

Existing network interconnection schemes fail to achieve their goals because incumbents frequently use administrative procedures to make interconnection prohibitively difficult or expensive. Whatever interconnection obligations are created should have an eye toward eliminating current administrative abuses.

The new interconnection scheme should be more than the existing one to the extent that the existing scheme requires physical interconnecting/noninterference but doesn't hold the interconnector to specific standards of quality/reliability of service . Rules and standards for interconnection should be technology-neutral in order to avoid the messy debate that the access charge regime causes when it comes to ISPs, and to allow for future technologies and providers to arise and interconnect with relative ease.

The NTIA should be able to revoke or redistribute grant money in cases where interconnection commitments are not kept. We propose that Universities be funded to create ADR centers to resolve such disputes and

all grant recipients be bound to participate to resolve disputes. Instead of law trailing technology by 10 to 15 years, we should aim to trail technology by 10 to 15 days. Only at research universities can we aim to achieve this goal.

iii. *Should there be different nondiscrimination and network interconnection standards for different technology platforms?*

Nondiscrimination and interconnection standards should be as technology neutral as possible to avoid becoming obsolete through technological developments or convergence. No one technology should be arbitrarily restricted—this would favor the growth of certain technologies, technologies that may not be the most effective or efficient for current and future use. There should be a balancing test between uniformity/technology neutrality and tailoring standards to actually achieve the purposes of BTOP where a uniform set of standards would not do so when applied to a certain technology. E.g. if incumbents have unfair leverage or are able to use interconnection requirements opportunistically/as a sword, adjust the standards to stop this. Technologies differ and the study of best practices should take that into account and may result in different obligations for different networks.

iv. *Should failure to abide by whatever obligations are established result in de-obligation of fund awards?*

Sometimes, e.g. if the failure demonstrates bad faith noncompliance or significantly hinders/goes against BTOP objectives. Remediation options should be available as well. Enforcement should be generally strict, though, because the interconnection obligations help ensure that future use of the infrastructure by various technologies is maximized.

v. *In the case of infrastructure paid for in whole or part by grant funds, should the obligations extend beyond the life of the grant and attach for the useable life of the infrastructure?*

Yes, to the extent that carriers would otherwise no longer have sufficient incentive to interconnect and behave nondiscriminatorily. This type of system will ensure the sustainability of the infrastructure. If the infrastructure suddenly becomes free from obligations and restrictions, the very purpose for its construction may be undermined. If grants are used to build infrastructure with the aim of providing greater, more enhanced service to the consumers, it logically follows that future providers need to follow the obligations promoting this aim. If the infrastructure can become free from rules and obligations in the future, it may make it unusable, requiring another round of funding to build another usable infrastructure, causing redundancy, gaps in service, and consumer hardship.

Continued obligations should be regularly reviewed. If new facts arise which make continued obligations unduly burdensome or ineffective at achieving the original goals, the obligations should be reconsidered.

d. Are there other terms in this section of the Recovery Act, such as ''community anchor institutions,'' that NTIA should define to ensure the success of the grant program? If so, what are those terms and how should those terms be defined, given the stated purposes of the Recovery Act?

What would constitute an "adequately served area" to the extent that applications to provide new services in these areas would be given lower priority than underserved areas. The definition should exclude applications that add little innovation or new efficiencies to these markets, but should not automatically exclude applications that would add new value.

Community anchor institution is a term which should be broadly defined to include schools, libraries, colleges and universities, community organizations such as shelters, hospitals and clinics, public safety and governmental organizations and business/industrial developments with high demand needs. Community anchor institutions should be any institution which can serve as a substantial base client to the service provider which can provide a revenue stream to support the infrastructure as well as a physical location to terminate high speed lines and serve the surrounding neighborhood. The role of these institutions in creating sustainability can not be overstated.

e. What role, if any, should retail price play in these definitions?

Retail price is important in these definitions to the extent that unreasonable, unregulated, and unmonitored retail prices may cause the entire aim of the program to suffer from economic barriers to access by consumers. Retail price will help determine whether an area is served or underserved. The closer an underserved area comes to being able to afford the retail price, the less it should receive priority as an "underserved" area. Retail price combined with actual, recordable increased levels of access should be indicators of the outer-scope of the definition of an underserved area. (see the discussion of "economically served" in the spotlight section titled "Defining Unserved, Underserved, and Broadband" located at the beginning of these comments).

*14. **Measuring the Success of the BTOP**: The Recovery Act permits NTIA to establish additional reporting and information requirements for any recipient of grant program funds.*

a. What measurements can be used to determine whether an individual proposal has successfully complied with the statutory obligations and project timelines?

Final and intermediate goals should be laid out as part of the grant application process. Final goals should be measured in terms of user experience (# of additional users on project manager's local loop, typical speed, reliability). Intermediate goals

should be expressed in terms of infrastructure goals, such as adding a given amount of fiber to the local loop.

Number of interconnectors. Whether there is evidence that certain interconnectors are being favored over others—e.g. uniformity or discrepancies in the speeds at which different carriers' packets are sent through. Number of complaints filed or lawsuits pending alleging discrimination.

Also important in the consideration is the level of future potential growth and enhancement—if a provider has reached a plateau in its capabilities it will not be able to comply in the future with its statutory obligations.

b. Should applicants be required to report on a set of common data elements so that the relative success of individual proposals may be measured? If so, what should those elements be?

Many of the measurements discussed in 14(a) can be used as common data elements. Network size, the number of customers served, the amount of funding directed toward research and development, the technology implemented, future plans for improvement, and the operating costs of the applicants should all be considered.

Evaluators should keep in mind, however, that it may not be fair to individual applicants to strictly apply the measurement data when those applicants use different technologies and serve markets with different characteristics.

15. ***Please provide comment on any other issues that NTIA should consider in creating BTOP within the confines of the statutory structure established by the Recovery Act.***

Job creation. Not only creation of jobs for network providers, but also creation of jobs for edge providers who need an open network to survive and innovate (e.g. Skype).

Screening Cautions. Great caution should be used when considering any rule that would prioritize grants to incumbents. The screening and assessment of providers should look not focus myopically on current ownership of infrastructure, but also strongly consider future abilities to develop technology, the company's track-record of compliance with rules and regulations, and the overall desire and ability of the company to promote the goals and aims of the program. Additionally, no single company, or set of larger companies, should be permitted to create protocols that stand to restrict interconnectivity or future growth of technology.

NTIA may want to consider qualifying equipment to be an eligible expense. Having infrastructure but lacking a way to connect would be contrary to the goals of the program.

ADR and Best Practices. Please refer to the Section Titled "Proposed Alternative Dispute Resolution and Best Practices Centers."

RUS Questions

2. In what ways can RUS and NTIA best align their Recovery Act broadband activities to make the most efficient and effective use of the Recovery Act broadband funds?

In the Recovery Act, Congress provided funding and authorities to both RUS and the NTIA to expand the development of broadband throughout the country. Taking into account the authorities and limitations provided in the Recovery Act, RUS is looking for suggestions as to how both agencies can conduct their Recovery Act broadband activities so as to foster effective broadband development. For instance:

a. RUS is charged with ensuring that 75 percent of the area is rural and without sufficient access needed for economic development. How should this definition be reconciled with the NTIA definitions of ''unserved'' and ''underserved?''

The RUS should give priority to funding areas that 1) meet the 75% definition 2) meet the NTIA definitions of "underserved" and "unserved" and 3) have had or will likely have BTOP projects approved. This will ensure that areas that are going to receive broadband funding will have sufficient utility support.

However, though the RUS may consider criteria put forth by the NTIA as persuasive or effective, it should not be bound by it. The RUS is tasked with providing grants to rural areas without sufficient access to high speed broadband service. Though this may overlap in some cases with "unserved or under served communities," the overlap is not always there.

b. How should the agencies structure their eligibility requirements and other programmatic elements to ensure that applicants that desire to seek funding from both agencies (i) do not receive duplicate resources and (ii) are not hampered in their ability to apply for funds from both agencies?

Use a joint application for both the NTIA and RUS programs to make it easier for the two agencies to coordinate and prevent duplication. Specifically, have listed at the top of the application the total amount sought and agencies applied to, and if it is a joint application (single project seeking money from both RUS and NTIA).

Where possible, tie dollar amounts to concrete and specific infrastructure items to make it easier to see if elements are being funded duplicatively.

Designate a liaison from each program to keep the other updated.

The NTIA and RUS should work together to decide which agency should fund projects, based on each agency's requirements, or if the applicant meets both sets of requirements and shows sufficient need for funding from both, whether both agencies should provide funding.

If RUS or NTIA reject an application because they judge it to be better suited for the other program, the agency should check with the other to see if they received the

same application; if not, the rejecting agency should forward the application to prevent qualified applicants from falling through the cracks.

3. How should RUS evaluate whether a particular level of broadband access and service is needed to facilitate economic development? Seventy-five percent of an area to be funded under the Recovery Act must be in an area that USDA determines lacks sufficient ''high speed broadband service to facilitate rural economic development.'' RUS is seeking suggestions as to the factors it should use to make such determinations.

a. How should RUS define ''rural economic development?'' What factors should be considered, in terms of job growth, sustainability, and other economic and socio-economic benefits?

- Growth in median and mean annual income
- Job growth/ Decreases in unemployment
- Population growth
- Average age of the area (a younger population may indicate that young workers are staying in town because they are not having to move to bigger communities to find jobs)
- Ability of small businesses in rural areas being able to link up with key urban centers.
- Ability of schools, libraries and hospitals to receive electronic information to improve their database and services. (Because health and education of the workforce are traditionally factors used to determine economic development, improvements in these metrics attributable to broadband deployment would be good factors to use in measuring "rural economic development.")
- Ability of the community to attract business and capital investment
- Access to fast, accurate information to emergency response teams. (Since public safety is a basic community need)
- Growth in percentage and/or number of Internet users.
- Ability of households to access, afford and/or literately use broadband service.
- Increases in Internet sales originating and terminating in the community.

b. What speeds are needed to facilitate ''economic development?'' What does ''high speed broadband service'' mean?

Defining speeds necessary for "economic development" is like trying to hit a moving target—the speed required would vary by business. Some businesses may only need to send spreadsheets to one another, while others might have to browse pictures on

online catalogs or have employees watch training videos online. Speeds that would support business email volumes, remote desktop access, and videoconferencing would provide small communities the ability to link up with urban centers. See the spotlight section titled "Defining Unserved, Underserved, and Broadband" located at the beginning of these comments for a further discussion on what constitutes high speed broadband.

c. What factors should be considered, when creating economic development incentives, in constructing facilities in areas outside the seventy-five percent area that is rural (i.e., within an area that is less than 25 percent rural)?

Whether those facilities would provide support services to rural areas or have a significant effect on "economic development" in rural areas, such as job creation.

Whether it would be feasible or economically efficient to instead locate the facilities in a rural area (e.g. rural Internet connections will always end up in urban areas).

Whether the areas in question are themselves unserved or underserved in NTIA terms.

4. In further evaluating projects, RUS must consider the priorities listed below. What value should be assigned to those factors in selecting applications? What additional priorities should be considered by RUS?

Priorities have been assigned to projects that will: (1) Give end-users a choice of Internet service providers, (2) serve the highest proportion of rural residents that lack access to broadband service, (3) be projects of current and former RUS borrowers, and (4) be fully funded and ready to start once they receive funding under the Recovery Act.

#(4), readiness to start should be given 30%, a high percent, because this is a strong indicator of sustainability. Sustainability is a goal that has been stressed by roundtable participants. Additionally, quick economic stimulus is an important goal under the Recovery Act.

#(2), proportion of access-lacking residents served should be given 25%. Arguably, giving unserved residents broadband access creates more absolute value than giving already-served residents more choices in providers. In weighing this factor, evaluators should also consider the level of demand for broadband in the unserved community, and what economic development would result from giving the community broadband access.

#(1), choice of ISP, should be given 15%. Choice of Internet providers is important, but only to the extent it provides meaningful consumer choice, drives down cost, and produces new and better technologies/services.

#(3), history of borrowing with RUS, should be given 5%. Consider this factor where the RUS borrower has demonstrated the ability to achieve goals laid out in prior proposals.

Additional priorities: 20% reliability (of the service and the backbone). 5% past history of projects similar in size / deployment time

5. What benchmarks should RUS use to determine the success of its Recovery Act broadband activities? The Recovery Act gives RUS new tools to expand the availability of broadband in rural America. RUS is seeking suggestions regarding how it can measure the effectiveness of its funding programs under the Recovery Act. Factors to consider include, but are not limited to:

a. Businesses and residences with ''first-time'' access.

Percent of businesses and residences wanting access who are able to gain first-time access. Number of businesses and residences able to gain first-time access. Increased business activity of efficiencies that can be attributed to ability to access the Internet (e.g. increase in e-commerce from the newly served communities)

b. Critical facilities provided new and/or improved service:

i. Educational institutions.

Increased Internet literacy by teachers and students. Increase in learning activities done online (e.g. tutorial videos, videoconferencing with urban classrooms)

ii. Healthcare providers.

Increased use of telemedicine in diagnosis/treatment. Use of technology to securely store and transmit patient information.

iii. Public service/safety.

Use of real-time interactive information to get addresses, background checks, etc. Use of wireless communication by police, fire, and EMTs.

c. Businesses created or saved.

Increased capital investment in the community from internal or external sources. Abilities of local businesses to make ordering inventory and selling merchandise easier/cheaper/more efficient using e-commerce.

d. Job retention and/or creation.

Ability of workers to live in rural communities and telecommute, teleconference, etc.

e. Decline in unemployment rates.

f. State, local, community support.

Adoption rates of broadband technologies.

Increase in the number or percentage of broadband users for a particular geographic area

Percentage increases in speed or quality for areas with existing, but limited, broadband capability.

Ease of physical connection between deployment technologies.

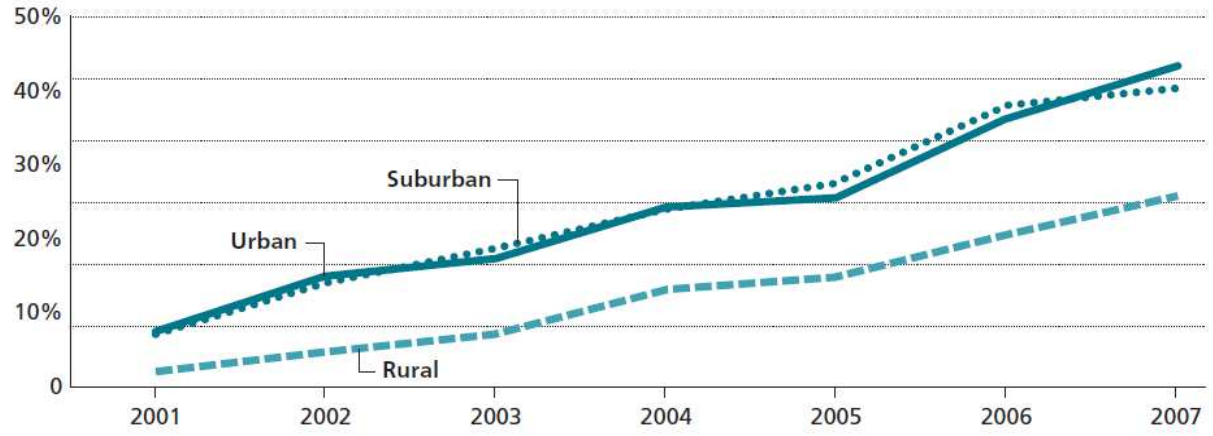
The success individual projects can be measured in the following way: Each applicant submits metrics for success which are modified, if necessary, and consented to by the RUS. The project can then be weighed against these metrics.

Additionally, the NTIA will be creating a "broadband map" showing the level of broadband access across America. These figures could be updated with the results of individual projects to give a "rural results map" on which success could be weighed.

APPENDIX A – CHARTS ON THE UNSERVED DEFINITION

Chart 1

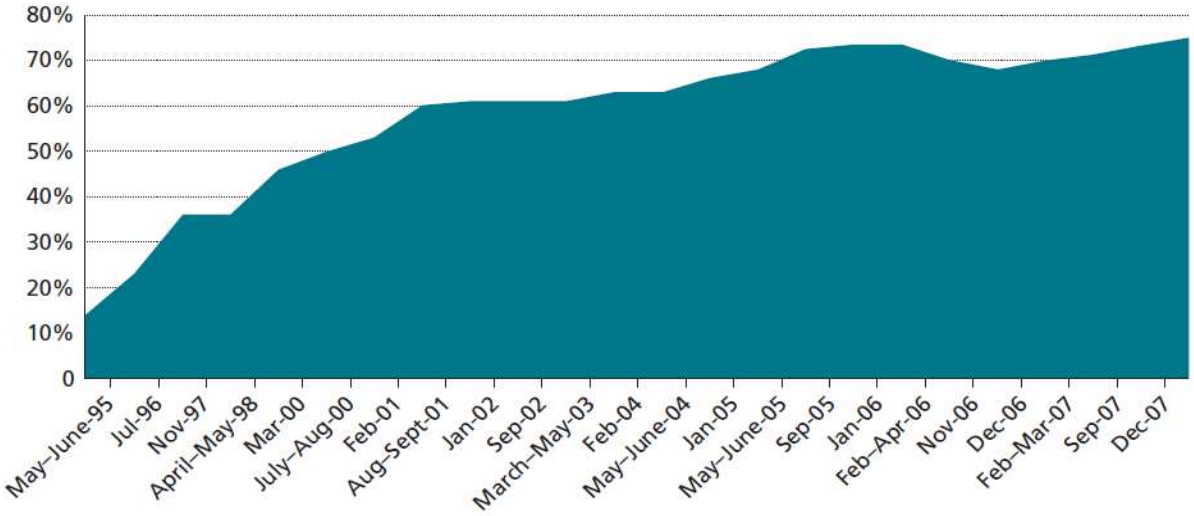
Percentage of U.S. Adults with Broadband in Urban, Suburban, and Rural Areas, 2001–2007



Source: Horrigan and Smith 2007.

Chart 2

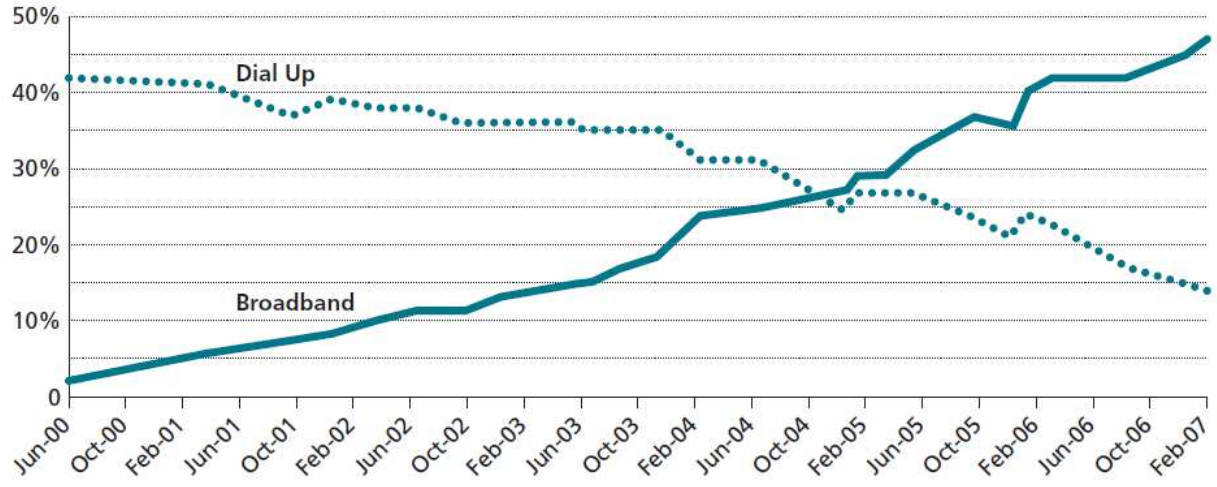
Percentage of Adults in the United States Using the Internet, 1995–2007



Source: Pew Internet & American Life Project Surveys. March 2000-December 2007.

Chart 3

Percentage of U.S. Adults with Broadband and Dial-up Access, 2000–2007



Source: Horrigan and Smith 2007.