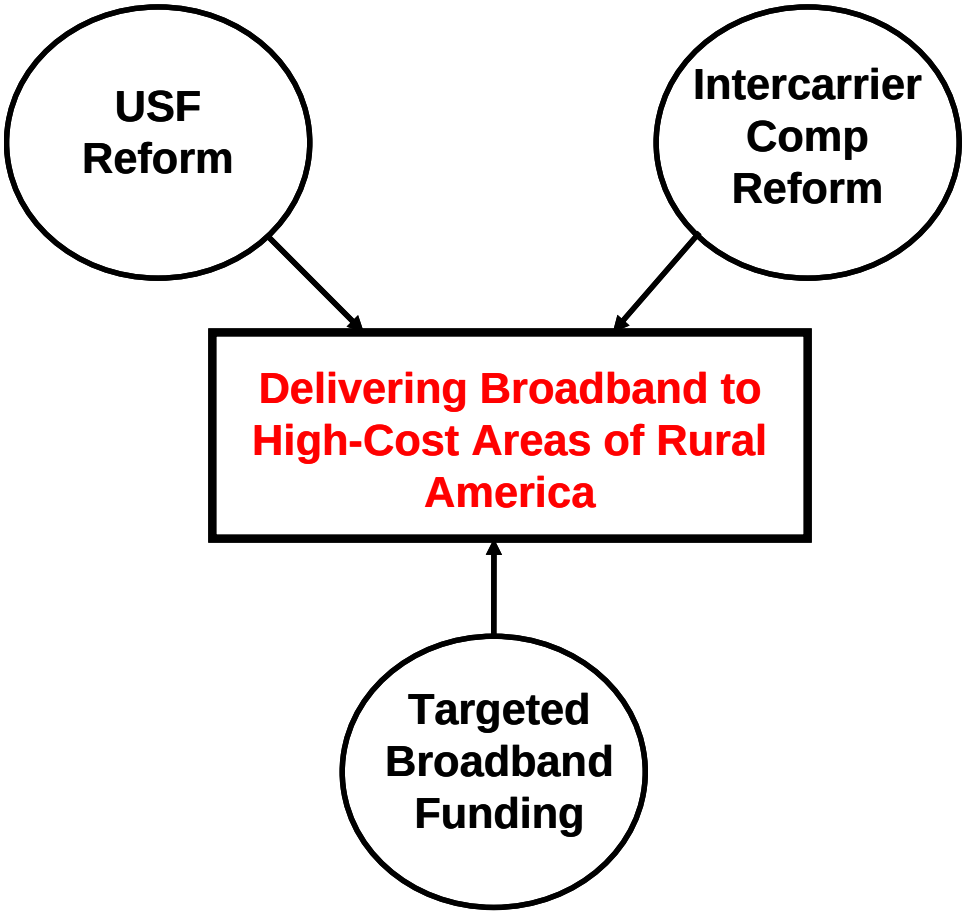
Rural Broadband

Overcoming Obstacles and Achieving the Vision



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EXECUTIVE SUMMARY

- President Obama has stated a goal of bringing Broadband services to every community in America, even in the most rural and high-cost areas. The FCC is currently developing a National Broadband Plan to implement this vision.
- This Plan must realize that in many rural areas of the country Broadband infrastructure is so costly to build relative to the revenues that it will generate, that no rational business case can be made for private entities to make such investments. Thus, explicit government support will be necessary to deliver Broadband to all Americans.
- Rural wire/fiber-line carriers are building networks employing a hybrid fiber/copper technology that, in addition to providing basic telephone service, are also enabling the delivery of high-speed Broadband service to millions of rural consumers. Building and operating these networks has been made possible by a combination of explicit support provided by the Universal Service Fund (USF), and implicit support provided through Intercarrier Compensation (ICC). On average, USF and ICC provide over half of network cost recovery for rural carriers, and even higher percentages in the most rural areas.
- The current USF and ICC regimes are based upon voice-service metrics that are not sustainable in an increasingly Broadband world. Fundamental reforms in both programs will be necessary to continue the delivery of Broadband services to current customers and expand Broadband delivery to unserved and underserved rural communities.

  Universal Service Fund
  - The $7B+ USF collection mechanism relies on assessments on interstate and international long distance revenues. The popularity of service "bundles," and the irrelevance of distance on the Internet, combine to make the current collection mechanism unsustainable.
  - The current USF distribution mechanisms must be modified to ensure that rural wire/fiber-line carriers have the ability and incentive to invest to bring ever-higher-speed Broadband services to currently unserved and underserved rural communities.

  Intercarrier Compensation
  - The current ICC mechanism is badly broken. It assesses different rates based on the jurisdiction of the call, the type of carrier, and the nature of the traffic. This is leading to arbitrage, phantom traffic and an eroding ICC revenue stream.
  - The "minute-of-use" metric upon which ICC operates does not even exist in the Broadband world. Ultimately, most, if not all, per-minute of use ICC revenues will go away.
  - A new explicit support mechanism must be created to replace the revenue support for rural networks currently achieved through ICC if these networks are to continue to support the delivery of Broadband services to rural consumers.
- Without fundamental reform of the USF and ICC systems, rural ILECs (RLECs) face the realistic possibility of a financial collapse that would be devastating to the rural consumers that they serve, and extremely harmful to the achievement of the Nation's Broadband goals.
- Wireless networks lack the speed and throughput capacity to fully or economically replace rural wire/fiber-line networks as an important rural Broadband delivery vehicle.

I. INTRODUCTION AND BACKGROUND

A. Defining the Broadband Vision

President Obama clearly understands the power and transformative changes that Broadband service can bring to our Nation's economy and to our quality of life. He has forcefully articulated his Broadband vision for our Nation as follows:

> I believe that America should lead the world in broadband penetration and Internet access. As a country, we have ensured that every American has access to telephone service and electricity, regardless of economic status, and I will do likewise for broadband Internet access. Full broadband penetration can enrich democratic discourse, enhance competition, provide economic growth, and bring significant consumer benefits.
>
> Market forces will drive the deployment of broadband in many parts of the country, but not all. To get true broadband deployed in every community in America, we need to reform the universal service fund, make better use of the nation's wireless spectrum, promote next-generation facilities, technologies, and applications, and provide new tax and loan incentives.[1]

FCC Chairman Julius Genachowski has expressed his Broadband vision as follows:

> Infrastructure matters. It is the way jobs and commerce, innovation and progress of all kinds – in education and health care and energy – are spread across the country. And in the 21st Century, broadband infrastructure will be the platform for growth and opportunity for us, our children, and our children's children. Unfortunately, we as a nation have been lagging when it comes to broadband, falling behind too many countries. This is unacceptable. We must do better. Today, as the government moves quickly on billions in much-needed broadband grants, we are also moving on a broadband strategic plan for the entire country so that we can renew American leadership and competitiveness for the 21st Century.[2]

The benefits of Broadband described by President Obama and Chairman Genachowski are not just pipe dreams. A recently published U.S. Department of Agriculture (USDA) study confirms the positive correlation between high levels of Broadband penetration and increased economic and civic vitality in rural communities. Among the study's findings are:

[1] CNET News, Technology Interview with Barack Obama, January 2, 2008. See also *Barack Obama: Connecting and Empowering All Americans Through Technology and Innovation, www.BarackObama.com.*

[2] Remarks of FCC Chairman Julius Genachowski at ceremonies announcing the BTOP and BIP programs, Erie, PA, July 1, 2009

- Whereas an estimated 55 percent of U.S. adults had Broadband access at home, in 2008, only 41 percent of adults in rural households had Broadband access.
- Evidence suggests that this shortfall in Broadband use is involuntary, and may be due to the higher cost of broadband provision or lower returns to broadband investment in sparsely populated areas.
- In comparing counties that had broadband access relatively early (by 2000) with similarly situated counties that had little or no Broadband access as of 2000, employment growth was higher and nonfarm private earnings greater in counties with a longer history of Broadband availability.
- Areas where population is widely dispersed over demanding terrain generally have difficulty attracting broadband service providers.[3]

In order for rural consumers to enjoy the many benefits provided by Broadband services, two factors must be present:

1. Networks capable of providing Broadband service must be in place, and
2. Consumers must find it in their own personal and economic self-interest to purchase such services at the prices offered in the market.

As will be documented in Section II, the costs of building and maintaining telecom networks, wireline or wireless, in remote, sparsely populated areas of the Nation are so high that explicit federal and state support mechanisms are necessary to ensure that they are built so as to reach out to everyone.

The Nation's rural wire/fiber-line infrastructure is currently supported by a system of explicit support from universal service and implicit support from intercarrier compensation that,

[3] *Broadband Internet's Value for Rural America*, Peter Steinberg, et. al., USDA, August, 2009.

due to changes in markets and technology, is becoming increasingly unsustainable. This has serious implications for America's Broadband vision. At the FCC's initial Broadband Workshop on August 12, 2009, Craig Moffett, VP and Senior Analyst at Sanford Bernstein, stated:

> The cost of Broadband is clearly inextricably tied to the cross-subsidies that exist in the existing wireline infrastructure. And I'm stating the obvious when I say that the wireline business is in real trouble. The underlying costs for the telecommunications network that are borne, traditionally, by wired voice are being reallocated because the wired voice business is going away quite rapidly. That's a real problem.

As FCC Chairman Genachowski said "Infrastructure matters." In order for the Nation to achieve its Broadband vision, fundamental reforms in the universal service and intercarrier compensation regimes that have traditionally supported wire/fiber-line infrastructure investment in high-cost rural areas must be made. The history and current problems of the ICC and USF regimes will be described in the remainder of this Section I, and specific policy changes necessary to begin these reforms are described in Section IV.

In addition to reforming the current implicit and explicit funding mechanisms, additional targeted Broadband support mechanisms, such as the recently announced BIP and BTOP programs,[4] will also be necessary to assist in building and maintaining the necessary infrastructure to deliver Broadband to unserved and underserved areas[5] of our Nation. Sustainable adoption programs must also be developed so that more of our citizens use and benefit from the wealth of resources available on the Internet. Specific suggestions for improvements in the BIP and BTOP programs to help them achieve their important goals are described in Section V.

[4] The Broadband Technology Opportunities Program (BTOP) administered by NTIA, and the Broadband Initiatives Program (BIP) administered by RUS will be more fully discussed in Section IV.C.

[5] The July 1, 2009 Notice of Funds Availability (NOFA) released by NTIA and RUS defines "unserved" as an area where at least 90% of the households lack access to facilities-based, terrestrial Broadband service, either fixed or mobile, at minimum speeds of 768 kbps downstream and 200kbps upstream. "Underserved" is an area meeting one of the following criteria: 1) No more than 50% of households have access to facilities-based, terrestrial Broadband service at the minimum speeds; 2) No fixed or mobile Broadband service provider advertises broadband at speeds of at least 3mbps downstream, or 3) The rate of Broadband subscribership is 40% or less.

There is no one, single policy change that will ensure achievement of the Nation's vision for high-speed Broadband service for all Americans, even those in the most remote and sparsely populated regions of our land. Instead, it will require a carefully coordinated program of policy initiatives as depicted in Figure I, below (and which also serves as the Cover for this white paper).

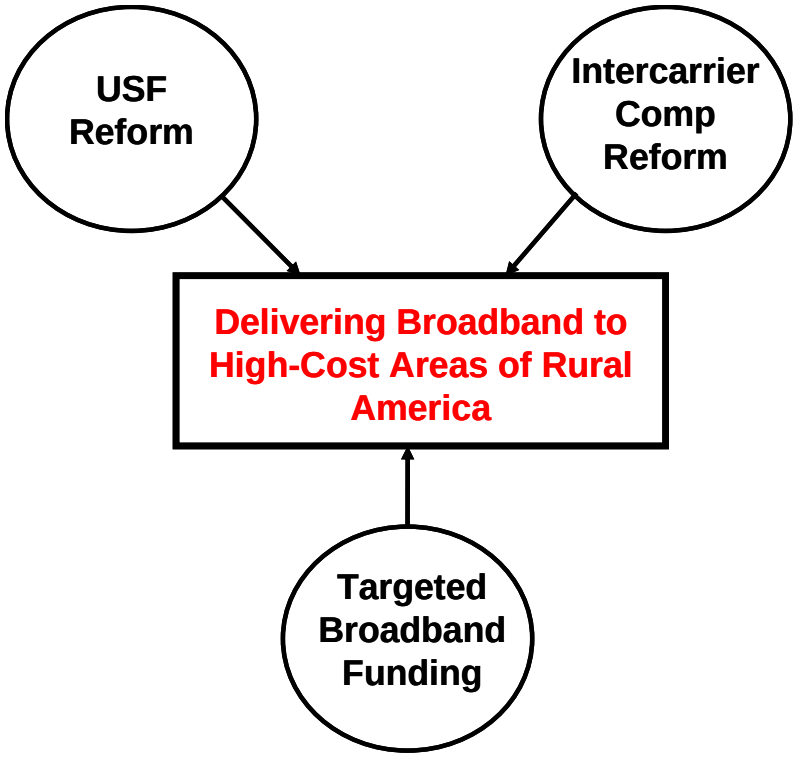

Figure I

In addition to specific rule changes, achieving the Broadband vision will also require change in some of the regulatory paradigms and perceptions that guided policy making over the past decades. These changes are discussed in Section III.

B. Rural Consumers Depend Heavily on the Support Provided by the Universal Service Fund and Intercarrier Compensation

Rural ILECs (RLECs) generally operate in areas where service was not available in the early days of the telephone, because the areas were deemed too costly to serve profitably. Under Federal law and long-standing universal service policy, RLECs are required to serve throughout their territory and generally price their basic telecommunications services at rates comparable to the rates charged by lower-cost urban carriers for the same services. How do they do it?

RLECs are able to accomplish their universal service and Carrier of Last Resort (COLR) obligations due to a combination of implicit support provided by intercarrier compensation (access charges) and explicit support provided by the universal service fund. Chart III shows the extent that RLECs rely on these two sources of support as compared to the Regional Bell Operating Companies (RBOCs) that serve many lower-cost urban areas.

Source of Revenues		
Source	**Rural**	**RBOC**
End User	27%	61%
Access Charges	26%	10%
USF	30%	0%
Other	17%	29%

Chart II[6]

As shown on this Chart II, on average over half of the revenues that rural carriers rely on to cover their network costs come from USF and access charges, versus about 10% for the large

[6] Source: Letter from Scott Reiter, NTCA to Marlene H. Dortch, CC Docket No. 01-92, January 7, 2004. This data was the result of a special study, since intrastate access revenues are not readily available, and represents the most current data available.

urban carriers. These are average numbers and understate the dependence of small carriers operating in the most rural and highest-cost regions of the Nation.[7]

However both the USF and intercarrier compensation mechanisms are facing major challenges that will require significant policy reform if this critically important support for service to rural consumers is to continue to support rural Broadband delivery. The current USF collection mechanism is based on "interstate and international long distance revenues," a metric rapidly losing its meaning as "bundled" service offerings proliferate, and the Internet obliterates the concept of "long distance." Equally troubling is the fact that the "minute-of-use" pricing model upon which switched access charges operate becomes totally dysfunctional as more traffic migrates to digital Broadband platforms where "minutes" do not even exist. Unless sustainable replacements for this critical cash flow are developed soon, RLECs will face a catastrophe of train-wreck proportions in their efforts to build and operate rural wire/fiber-line networks to serve rural consumers.

Given the role that RLECs play and will play in the delivery of current and future high-speed Broadband services, as well as the critical role that their wire/fiber-line networks play in enabling wireless providers to offer mobile Broadband services to consumers, reform of the current USF and ICC regimes must be an important first step in achieving the vision of the ubiquitous provision of affordable Broadband services in rural America.

C. The Universal Service Fund

1. The History of Universal service

Universal service – the concept that all Americans, no matter where they live, no matter how costly they may be to serve, should have access to comparable services to those available in

[7] It is not uncommon for rural carriers in the more remote and high-cost areas to receive 70% or more of their total revenues from USF and ICC.

urban areas, at comparable prices – has been a hallmark of federal telecommunications policy for the past 75 years. The principle of universal service was initially codified in the Communications Act of 1934, which states in its preamble:

> …to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges….[8]

The concept of universal service stems from the telephone pioneers in the early part of the last century who reasoned that the telephone network became more valuable to everyone as each additional subscriber was connected to it. The strategy of these pioneers and policymakers was to make the telephone so convenient and so affordable that every working family could have a phone in their home. In order to make the price of basic residential service affordable to average Americans, the industry and its regulators developed a pricing strategy that overpriced long distance services and business services so that basic residential service would be affordable to all consumers.

One of the major challenges in achieving the goal of universal service was getting affordable telecommunications services to consumers in remote rural areas of the nation. The provision of telephone service in sparsely populated rural areas is very costly. Indeed, in the early days of telephony, the Bell System network was built in the cities and towns, but stopped when it could no longer be economically provisioned due to low customer density, great distances between consumers, or the difficult nature of the terrain. In most cases where an area is served by an independent company today, it is because at some time in the past Bell chose not to serve it – precisely because it was too costly for them to serve. Thus, the thousand or more RLECs in existence today reflect an era when rural communities saw the need to have the same communications links as their urban neighbors and started telephone companies to accomplish

[8]Communications Act of 1934, § 1

that. To enable these small rural carriers to continue to meet the needs of rural consumers, policymakers developed the universal service support system that we know today.

Until the break-up of the old AT&T in 1984, the high cost of supporting rural telephone networks was administered internally within the telephone industry. By mutual agreement, all telephone companies pooled their long distance revenues, and each company received recovery of its costs from this "Division of Revenue" process. The AT&T divestiture separated the local telephone operations from the long distance operations of the old Bell System, and replaced the Division of Revenue process with a system of "access charges." These access charges were billed by local telephone companies to long distance or "interexchange carriers (IXCs)" for providing the local connections necessary for originating and terminating long distance calls. One of the problems that this change created, however, was that the higher costs of serving rural areas that were previously hidden in the toll pooling process were now exposed in higher, cost-based access charges. If RLECs were to set their access prices based on the costs they had previously recovered through the Division of Revenue process, then long distance companies would have little incentive to serve high-cost rural areas. If these costs were shifted to end-user subscribers, then local rates would rise to unaffordable levels, violating one of the basic tenets of universal service.

To address these concerns, and to enable RLECs to deploy infrastructure in high-cost areas to meet the needs of rural America, a universal service support system was created in the late 1980s to replace implicit support in rates with explicit support mechanisms. These mechanisms have enabled RLECs to invest in infrastructure to deliver basic and advanced telecommunications services to even the most remote and high-cost areas of America. Without this support, such investment would be too risky and its recovery too uncertain to attract the

necessary capital, absent some system of governmental support. These universal service mechanisms help to ensure that all Americans have at least one local exchange carrier serving as a Carrier of Last Resort (COLR), capable of providing basic telephone service wherever they may live.[9]

In recent years universal service funds have aided in the development of a telecommunications infrastructure that provides growing numbers of rural consumers with access to Broadband services reasonably comparable to those available in urban areas. This mission, not yet fully achieved, is critical because Broadband is rapidly becoming the economic life-blood of modern communities. Like the rivers and canals of the 18th century, the railroads of the 19th century, and the interstate highways of the 20th century, Broadband infrastructure and the transformative services that it enables, gives people, communities and enterprises the tools needed for success in the 21st century. Rural economic development is critical for our country, and the wide deployment of infrastructure capable of delivering Broadband services will be a key element of revitalizing rural economies, as the previously cited USDA study has concluded.

Today, as policymakers work to define a national policy framework that places the ubiquitous deployment of high-speed Broadband services at the forefront of the National agenda, universal service funding will continue to play an important part in maintaining present Broadband capabilities, and in increasing their availability and the speeds at which they operate.

2. Universal Service Fund Issues

There are two major challenges facing the USF. The first deals with the mechanism through which money will be collected to enable the payment of explicit universal service support to qualified recipients. The second deals with the means by which support for high-cost

[9] In addition to the support mechanism for high-cost areas, the early USF contained a Lifeline Assistance component to provide offsets to monthly Subscriber Line Charges for low-income individuals.

rural telecommunications infrastructure can be maintained, while at the same time identifying additional funding needs and mechanisms to enable the delivery of Broadband to currently unserved and underserved communities.

a. The USF Collection Mechanism

Currently, the Universal Service Fund[10] is financed through an assessment on the interstate and international end-user revenues of all telecommunications service providers. Service providers are required to report their projected interstate and international end user revenues to the Universal Service Administrative Company (USAC) quarterly. USAC then divides the projected funding needs for the coming quarter by the projected revenue base to determine the quarterly "Contribution Factor" that will be multiplied by each carrier's interstate end-user revenues to determine its contribution to the fund. This contribution factor, currently 12.9% for the third quarter of 2009, has been growing significantly over time, and its long-term viability is in doubt. The math behind this problem is obvious:

- The demand for funds – the numerator – has been growing, and likely will continue to grow as the Nation seeks to deploy Broadband more widely;
- Interstate end-user revenues – the denominator – have generally been declining, as shown on the following Chart III.
- In addition, accurate identification of purely interstate long distance revenues is more difficult due to the growing popularity of packaged service plans that offer bundles of local and long distance minutes, or unlimited calling, without regard to distance or jurisdiction.

[10] The Universal Service Fund currently totals approximately $7.5 billion, and is composed of four programs: High Cost ($4,379M), Low Income ($805M), Schools and Libraries ($2,124M), and Rural Health Care ($183M). Figures reflect 2008 actual levels.

These forces have worked together over the past several years to produce rapid growth in the Contribution Factor.

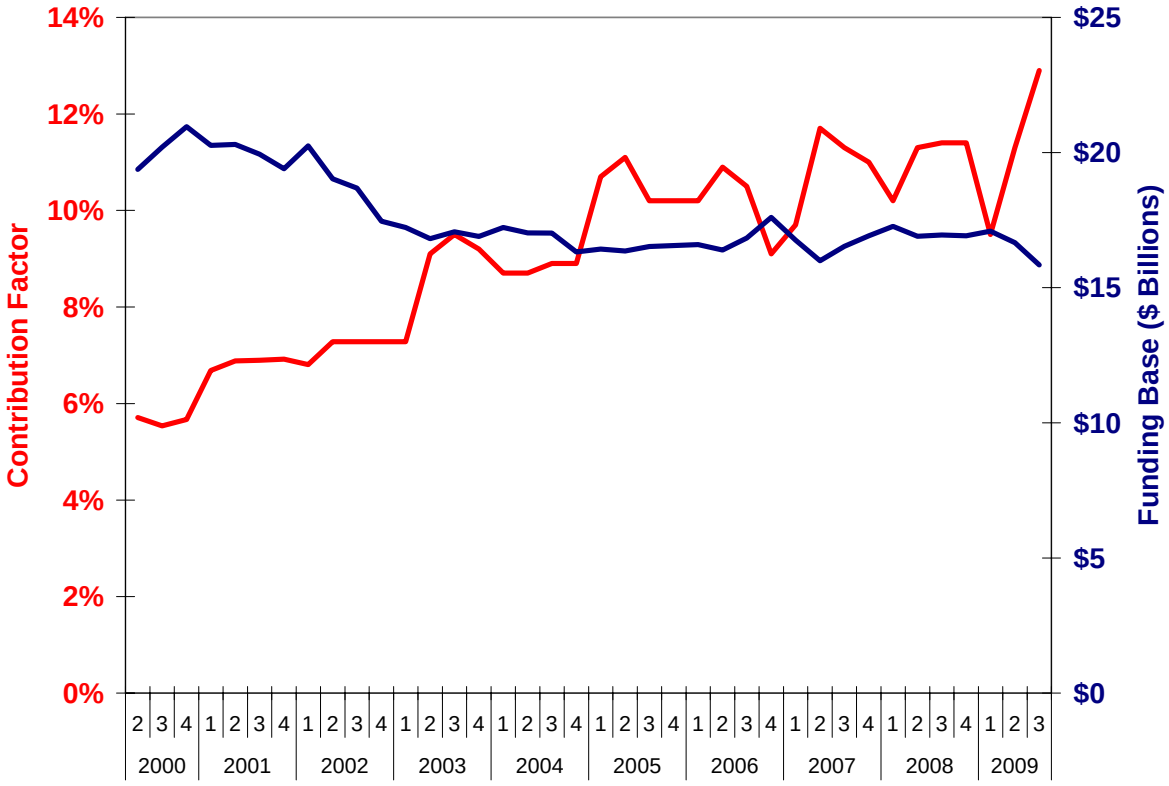

Chart III

The current USF collection mechanism suffers from two basic problems. First, the existing trends will push the contribution factor higher, to politically and economically unsustainable levels. Second, and of greater concern, market and technology trends are making the identification of "interstate and international long distance revenues" increasingly difficult. Consumers already are favoring plans that offer "bundles" of minutes without differentiation of local, interstate or international minutes. As broadband becomes the predominant service delivery platform, the concept of "long distance" has virtually no meaning on the Internet. Consequently, a new funding mechanism is needed for universal service funding that recognizes the realities of the current market and technology environment.

b. Modifications to existing USF programs will be necessary to provide sufficient funding to expand Broadband into currently unserved areas, increase Broadband speeds, and address areas or groups of underserved consumers

The current high-cost universal service mechanism for rural ILECs provides funding to carriers based upon their actual, audited costs of providing basic telecommunications services throughout their service territories. Since 1993 the High-Cost Loop Fund (HCLF) has operated under the provisions of a cap that limits its overall size. This cap was re-indexed in 2001 in response to the recommendations of the Rural Task Force (RTF).[11] In its 2000 Report, the RTF also adopted a "no barriers to advanced services" policy that allows rural carriers to use universal service funds to construct dual-use networks that, in addition to providing basic telephone service, are also capable of delivering Broadband services. As a result of this universal service funding, rural carriers have constructed hybrid fiber/copper networks that deliver Broadband service to millions of rural consumers today, and stand to facilitate the delivery of ever-higher-speed Broadband services to currently unserved and underserved communities.

"Non-rural" telephone companies receive funding based upon a different USF mechanism that generally provides significantly less support than would be the case under the formulas used for "rural" companies.[12] As a result, most rural areas served by "non-rural" companies have received less infrastructure investment over the years, and generally have a lower percentage of Broadband-capable lines than an equivalent area served by a rural carrier.

[11] The RTF was created by the Federal-State Joint Board on Universal Service in 1998 to make recommendations on the universal service fund for "rural" telephone companies as a part of the implementation of the Telecommunications Act of 1996. The RTF included a broad cross-section of industry and consumer participation.

[12] The term "non-rural telephone company" is unfortunate, since it refers to the size of carrier, not the nature of the territory that is served. Actually, over half of the consumers living in areas that would normally be classified as "rural" in nature are served by non-rural carriers. USF funding decisions made following the passage of the 1996 Act presumed that non-rural carriers that served large numbers of low-cost urban customers could sustain more implicit support than rural carriers that lacked large population centers and thus required more explicit USF support.

To achieve the National goal of Broadband availability for all Americans, including those in remote and high-cost areas, reform of the current universal service system will be necessary to provide specific, predictable and sufficient funding to construct and operate the telecommunications infrastructure necessary to deliver Broadband services to currently unserved and underserved rural communities at rates reasonably comparable to urban rates. Additional, explicit Broadband support mechanisms may also be necessary to achieve all of our Broadband availability goals.

Policy changes that will be necessary to achieve these goals are described in Section IV.

D. Intercarrier Compensation

1. The Origins of Intercarrier Compensation

The Bell System Divestiture in 1984 created a system of access charges that replaced the revenue contribution that over-priced long distance charges made to under-priced (relative to its cost) basic telephone service. Since RLECs experienced high costs and drew heavily from the prior Division of Revenue process, their initial access charges were very high relative to the Bell System companies that served predominantly lower-cost urban areas. The initial universal service fund was developed in the late 1980s to reduce the highest rural access charges, however a large gap still remained between the access charges of the urban and rural carriers.[13]

2. Intercarrier Compensation Must be Reformed to Ensure Sustainable Support for Rural Networks

One of the most basic problems with intercarrier compensation today is that the price for the use of the local network to originate and terminate calls can vary widely depending on the jurisdiction of the call, the type of carrier involved, and the nature of the traffic carried.

[13] Early access charges for the RBOCs were a nickel per minute or less, whereas many of the high-cost rural carriers had charges of 25 cents per minute or more.

Call Jurisdiction: Under current U.S. law, interstate access charges (i.e., for calls that cross state lines) are regulated by the FCC, while intrastate access charges (i.e., for calls that stay within the state) are regulated by each state regulatory commission. To compound matters, over the past decade the FCC has been very aggressive in removing implicit support from interstate access charges,[14] while many states have done little to reduce intrastate access rates from their initial levels. This has left a wide gap between interstate and intrastate access charges in these states.

Carrier Type: Interexchange Carriers (IXCs) pay access charges for "long distance" calls, Wireless Carriers typically pay negotiated intercarrier rates to terminate calls on the local network, and CLECs typically pay reciprocal compensation rates either negotiated or set through state arbitration. As a result of a series of regulatory decisions that originated in the 1980s, Information Service Providers (ISPs) do not pay access charges.

Type of Call: Different intercarrier compensation rates apply to "long distance" calls, local calls, wireless calls, and ISP calls.

Chart IV, taken from the 2006 Missoula Plan,[15] depicts nationwide average prices for the various call types, and illustrates the wide disparity that exists between current intercarrier rates.

[14] Unlike USF which is explicit, or visible, the support from ICC is "implicit," or hidden. The CALLS plan in 2000 (FCC 00-103) and MAG Plan in 2001 (FCC 01-304) reduced interstate access charges for price cap and rate-of-return carriers, respectively, by removing implicit support from access charges in replacing it with explicit universal service funding.

[15] As will be discussed shortly, the Missoula Plan was developed in 2006 by the Intercarrier Compensation Task Force operating under the direction of NARUC.

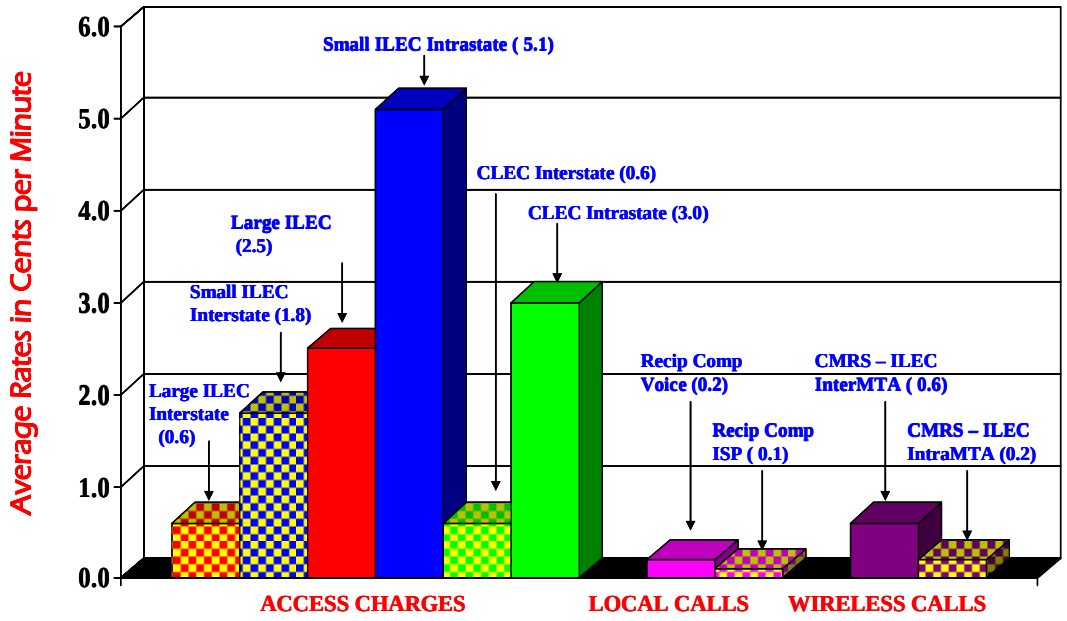

Chart IV[16]

This rate disparity has caused numerous problems. One such problem is rate arbitrage, where carriers make one type of traffic (e.g., long distance) appear to be a different type of call (e.g., local) that carries a lower rate. Another type of problem, called "Phantom Traffic," occurs when the call lacks required identification of the originating carrier and call type, making it impossible for the local carrier to bill for the call at all. Also, providers of Voice Over Internet Protocol (VoIP) service recently have claimed that, even though their calls appear to the consumer to be a traditional long distance call, the fact that during the transmission the signal is translated into IP- Protocol makes the call an Information Service for which access charges do not apply. Further compounding the problem is the fact that the historical method of intercarrier charging – a fixed price for each minute of use – does not fit well with the way consumers are

[16] Source: Letter from Hon. Tony Clark, North Dakota Public Service and Chair NARUC Committee on Telecommunications Commission, Hon. Ray Baum, Oregon Public Utility Commission and Chair NARUC Task Force on Intercarrier Compensation, and Hon. Larry Landis, Indiana Utility Regulatory Commission and Vice-Chair NARUC Task Force on Intercarrier Compensation, to Hon. Kevin Martin, FCC Chairman, CC Docket 01-92, July 24, 2006. Rates shown are terminating rates per minute of use. Although this chart is now over three years old, it is still relevant since there has been little movement in access charges at either the interstate or state level.

using and paying for the network today, particularly the popularity of bundled calling plans, and the increasing use of the network for data transmission.

As Broadband becomes the predominant service delivery vehicle, the current model for intercarrier compensation breaks down completely. The customer purchases a Broadband "pipe" over which multiple services – video, data, as well as voice communications – travel as a digital stream of zeros and ones. There are no "minutes of use" to charge for, and no "carrier" to assess the charges to. It is indeed ironic that the Broadband-capable network funded by today's per-minute ICC charges is enabling the ability to render these charges obsolete.

The combined impact of rate arbitrage, phantom traffic and other market changes can be clearly seen in Chart V, which tracks wireline minute-of-use trends for Tier I (predominantly urban) and Tier II (predominantly rural) carriers.

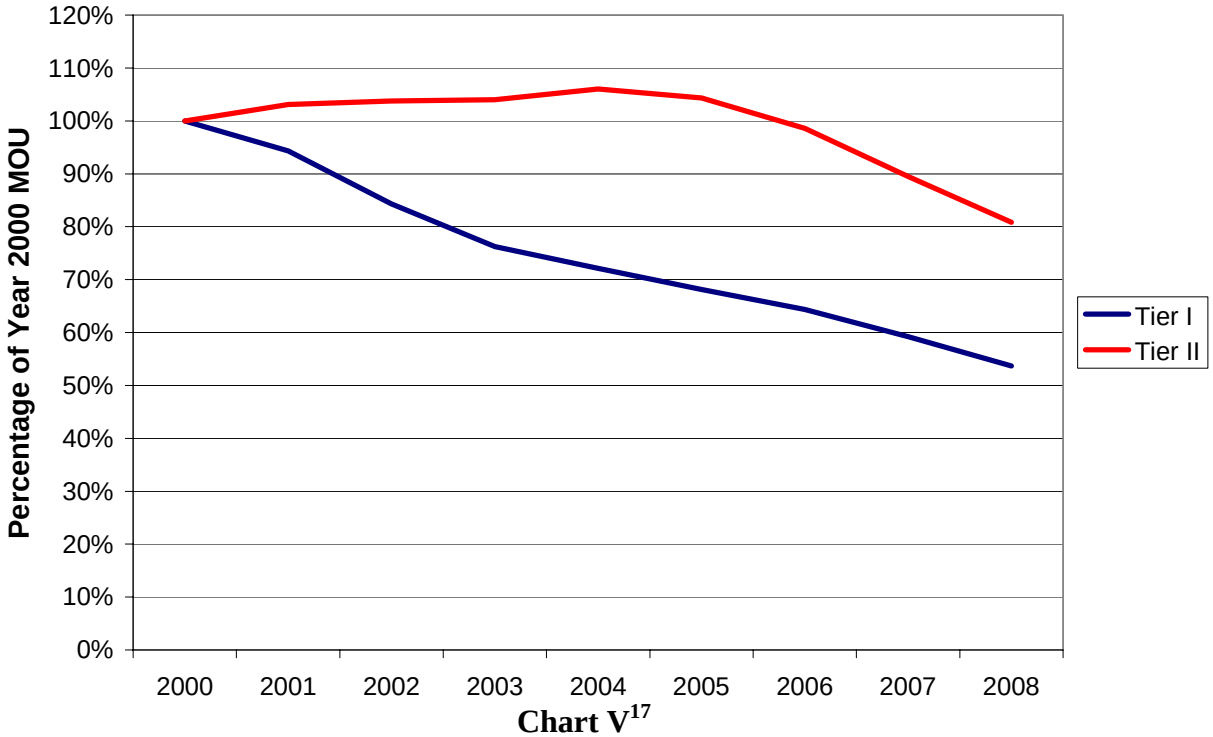

Chart V[17]

[17] Source NECA MOU Reports 2000 - 2008

While Tier I minutes have been in decline since 2000, Tier II minutes grew slightly between 2000 and 2004, but have declined by about 25% between 2004 and 2008. These trends are likely to accelerate, eroding the basis for minute-of-use-based intercarrier compensation as a source of funding for the rural wire/fiber-line network.

Rural wire/fiber-line network providers have historically relied on the revenue support provided by intercarrier compensation to cover roughly half of the shortfall between revenue generated by their customers and the costs of operating the network necessary to serve as Carrier of Last Resort and provide affordable telecommunications services in high-cost rural areas. As shown on Chart V, recent trends are rapidly eroding this funding base. Without a sustainable recovery mechanism to cover this gap, existing rural wire/fiber-line network providers will have difficulty maintaining the current network, let alone making the infrastructure investments necessary to deliver ever-higher-speed Broadband services. Maintenance of this network infrastructure is essential not only for the end-user customers of the wire/fiber-line networks, but also for the wireless and other service providers who rely on these networks for necessary backhaul and middle-mile functionality.

The need for fundamental intercarrier-compensation reform has been long-understood, but very difficult to accomplish. One reason for this is that intercarrier compensation reform is a "zero-sum game" – what is revenue to one carrier is cost to the other. Another factor making intercarrier compensation reform difficult is the issue of jurisdiction. As shown on Chart IV, there is a significant difference between nationwide average interstate and intrastate access charges (i.e., 1.8¢ vs. 5.1¢ for small ILECs). The FCC lacks jurisdiction to reduce intrastate access charges, and there is little desire on the part of the states to do it on their own. Of course in a Broadband world this is not an issue since jurisdiction does not exist on the Internet,

however before we arrive at that point, it is essential that the revenue support that ICC provides to rural networks be replaced by some more sustainable mechanism.

In 2004 the National Association of Regulatory Utility Commissioners (NARUC) convened an Intercarrier Compensation Task Force, with representation from all major telecommunications sectors, and also consumers, to seek to find common ground on intercarrier compensation reform. As a result of these efforts, in June of 2006, NARUC forwarded the "Missoula Plan" onto the FCC for its consideration. While not supported by all Task Force participants, the Missoula Plan represented a consensus solution that was acceptable to a wide range of telecommunications interests. While the Plan had aspects that each stakeholder would not support independently, taken as a package solution it was deemed to be an acceptable solution by its supporters. Despite intensive lobbying by its proponents and opponents, the FCC never acted on the Missoula Plan.

In late 2008, in the closing days of the Bush Administration, an intensive effort was made to find a comprehensive intercarrier compensation solution. Several complete draft orders were put out for comment, and four FCC Commissioners issued a statement indicating areas of apparent "consensus."[18] Ultimately nothing happened, and the same intercarrier compensation issues still exist.

The failure to address the inadequacies of the current intercarrier compensation system is a serious impediment to success in bringing advanced Broadband services to Rural America. Without replacement of the faltering per-minute assessment basis for access charges, RLECs will

[18] Commissioners Copps, Adelstein, Tate and McDowell cited as areas of consensus: 1) Moving intrastate rates to interstate levels, 2) Not unduly increasing basic rates, 3) Addressing Phantom Traffic and Traffic Pumping issues, 4) Implement alternative cost recovery mechanism in certain circumstances, 5) Eliminate the Identical Support Rule and move to support based on company's own cost, 6) Broadband should be supported by universal service, and 7) Special consideration for Alaska Native Regions and Tribal Lands. Joint Statement of Commissioners Michael J. Copps, Jonathan S. Adelstein, Deborah Taylor Tate and Robert M. McDowell, FCC 08-262, November 5, 2008.

lack the means to continue to support the wire/fiber-line networks currently delivering Broadband to millions of rural consumers, and invest to bring ever-higher-speed Broadband services to currently unserved and underserved rural communities.

The “consensus” areas identified by the four Commissioners would seem to be a good starting place to begin solving this problem.

II. THE HIGH COSTS OF SERVING RURAL AMERICA

This section will discuss the specific factors that make certain areas more costly to serve than others, and how these factors affect both wireline and wireless network technologies.

A. Wire/Fiber-Line Networks

Two factors play a primary role in making wire/fiber-line service more costly to provide in rural areas – distance and density. The farther from the central office or switching center a customer is, the higher the cost of extending trunking facilities to reach the customer's neighborhood. Also, the more sparsely populated the area, the higher the costs of the distribution facilities necessary to connect individual customers within the neighborhood to the network. In addition, in many of the more remote regions of the country hostile terrain and difficult weather conditions contribute to higher costs of building and maintaining the network.

In January 2000, the Rural Task Force (RTF) published the landmark *White Paper 2 – The Rural Difference*, which provides facts and data summarizing the significant demographic differences between rural and non-rural telephone companies.[19] Among the differences cited by the RTF were:

- Rural carriers serve about eight percent of the nation's access lines covering 38 percent of the nation's land mass.
- The average population density is only 13 persons per square mile for areas served by rural carriers compared with 105 persons per square mile in areas served by non-rural carriers.
- Rural carriers have lower business customer density than non-rural carriers.
- The average population density of areas served by rural carriers varies radically. Rural carriers in Alaska and Wyoming on average serve populations of 0.58 and 1.25 persons per square miles respectively, while rural carriers in some states serve populations of over 100 persons per square mile.

[19] Section 3(37) of the Communications Act defines "rural telephone company." Generally, a Study Area (an FCC term indicating the area over which USF funding is computed, and generally consisting of all of a company's operations within a given state) with less than 100,000 lines in a state is considered to be rural. Non-rural study areas serve significantly more lines, and most RBOC study areas are classified as non-rural.

As the RTF noted, there is a wide diversity among rural carriers. This diversity is driven by demographics, terrain, distance, density and many other factors that influence the cost of delivering high-quality telecommunications services.

The next two Charts use nationwide average cost results to illustrate the role that distance and density play in determining cost of providing telephone service.[20]

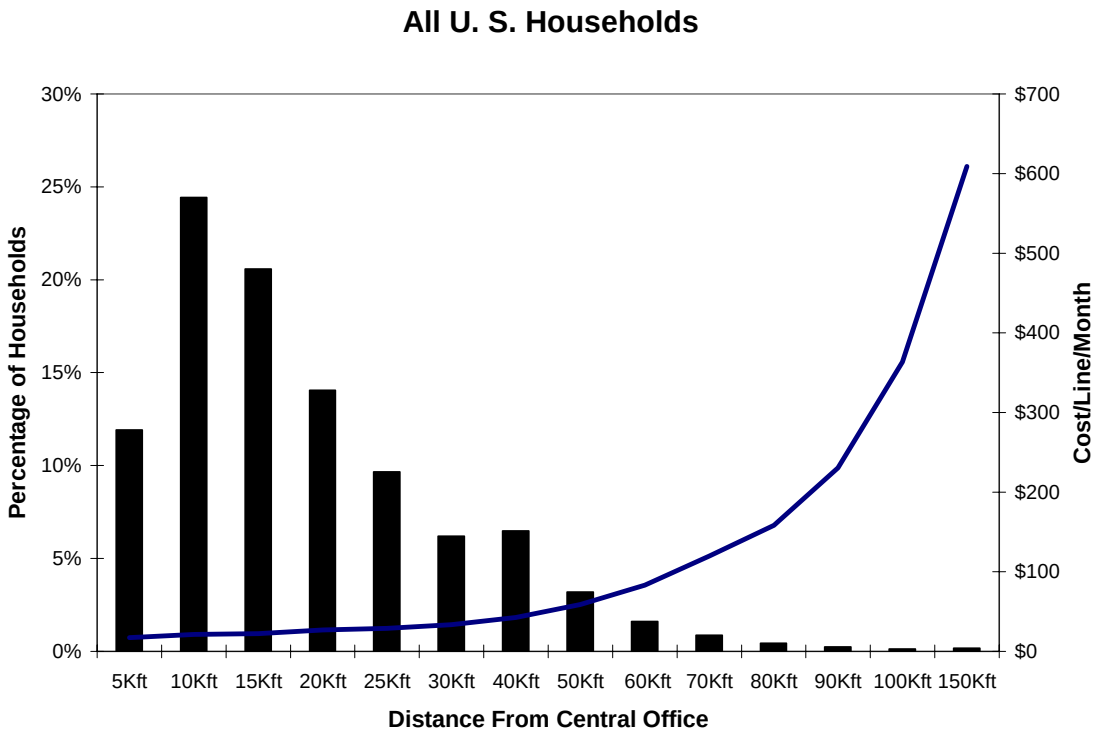

Chart VI

Chart VI illustrates the impact that distance from the central office has on the monthly cost of providing basic telephone service (on the right-hand vertical axis), and the distribution of customer density for all U.S. households (on the left-hand vertical axis).

[20] This data includes loop, switching and transport functions, and was developed during the FCC's proxy model proceeding in the late 1990s. It comes from the BCPM 3.0 model with FCC Common Inputs. As the Rural Task Force identified in White Paper 4, proxy models are not sufficiently accurate at the individual rural wire center level to be reliable indicators of the costs of specific rural telephone companies. The data presented in Charts VI and VII reflects Nationwide averages of cost and is presented solely to illustrate the dramatic effect that distance and density may have on the average cost of building wire/fiber-line networks. This model employs a forward-looking hybrid fiber/copper architecture that can be used for both voice telephone and Broadband data services.

Notice that nationwide well over half of all households are located within 15,000 feet of their serving central office, whereas only a small percentage are located at distances exceeding 50,000 feet. This chart also shows that costs are relatively low in close proximity to the central office, but grow geometrically as distances exceed 40,000 feet. This geometric expansion stems, in part, from the fact that the more distant customers generally are located in sparsely populated areas as well.

Chart VII illustrates the impact that population density has on the average cost of providing telephone service.

Households per Square Mile	Nationwide Average Cost
0 to 5	$133.00
6 to 100	$48.44
101 to 200	$30.72
201 to 650	$26.87
651 to 850	$25.05
851 to 2550	$23.11
2551 to 5000	$21.83
5001 to 10,000	$20.25
> 10,001	$18.16

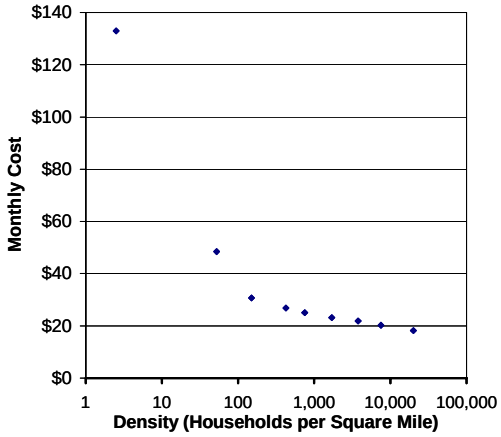

Chart VII

Chart B shows that costs increase gradually with decreasing population density until around 100 households per square mile. Below this density level, costs increase geometrically as population density decreases. A good indicator of relative costs is the percentage of customers in the two lowest density bands – 0 to 5, and 5 to 100 households per square mile.

- Nationwide, 1.1% of residential customers are in service areas with less than 5 households per square mile, and 11.4% are in areas with less than 100 households per square mile.

- On average for rural companies 5.9% of residential subscribers are in service areas with less than 5 households per square mile and 38.1% are in service areas with less than 100 households per square mile.

- By contrast for non-rural companies only 0.5% of customers are located in areas with a density less than 5 households per square mile and only 8.0% are in areas with less than 100 households per square mile.

- The actual cost for each particular rural company is based on its particular mix of distance, density and other factors.

While these studies were initially done to analyze the cost of providing basic telephone service, they are also relevant for analyzing the cost of delivering wire/fiber-line Broadband services to rural America. This is because most rural ILECs employ DSL (Digital Subscriber Loop) network employing a hybrid fiber/copper architecture. Within the DSL architecture, digital "nodes" are located no more than 18,000 feet of the customer location, and connected to the central switching office by fiber-optic lines. Transmission from the digital node to the customer premise is done over existing copper facilities. DSL technology allows the concurrent transmission of voice and high-speed data over a single copper loop by making use of the high-frequency portion of the loop above the voice range for Broadband data.[21]

The cost model used to develop the data shown on Charts VI and VII[22] employs this "forward-looking" network architecture. This is the network architecture employed by most rural telephone companies today to deliver Broadband service to their customers. These studies clearly illustrate the relative costs of delivering wire/fiber-line Broadband service to consumers in the most remote and sparsely populated areas as opposed to those in more densely populated areas. RLECs seeking to expand their areas of Broadband coverage and/or increase the speed at which Broadband is delivered must invest to build fiber facilities further out into their networks

[21] *NECA Rural Broadband Cost Study*, Victor Glass, et. al., at page 9.
[22] All of the cost models examined by the FCC, including the BCPM model used to compute this data as well as the the HAI and HCPM models, employed this same forward-looking hybrid fiber/copper DSL technology.

to bring the digital "nodes" closer to customer locations, and to upgrade the electronic equipment that performs the Broadband transmission function. Ultimately the highest speed broadband applications will be achieved by extending fiber facilities from the serving central office all the way to the customer's premises, although the cost studies shown on Charts VI and VII do not include this fiber-to-the-home architecture.

There is one other wireline Broadband architecture that bears mention, and that is Broadband service offered by cable companies. Cable companies use a coaxial, or more recently a hybrid fiber/coaxial network architecture, to deliver video and other services to their customers. In recent years many cable companies have been upgrading their networks to deliver voice telephone and Broadband Internet access to their customers over their networks.

Due to the nature of their network architecture and business plans, cable companies generally build their networks in areas of high population density, and usually within or near the city or town limits. Thus, while cable companies may be able to expand the availability of Broadband services in the more densely populated rural areas, their networks will not be able to solve the problem of bringing Broadband to the more remote and sparsely populated areas of Rural America.

B. Wireless Networks

Wireless networks exhibit similar trends of increasing costs with distance and density, although they do so for slightly different reasons due to the nature of the wireless network architecture. The central element of a wireless network is the wireless tower. This is the means by which a customer's handset in a mobile wireless network, or base unit in a fixed wireless network, communicates with the rest of the world. From the tower, traffic is carried back to the carrier's switching center via "backhaul" facilities, and then on to its final destination (i.e., the

Internet in a wireless Broadband application, or another telephone in a switched wireless application) over "middle mile" facilities.

One of the key cost drivers in a wireless network is the number of towers that are required to deliver adequate signal coverage in the service area. Each tower and the radio equipment and antenna that it supports has a "footprint" for which it provides coverage. Figure VIII depicts a wireless antenna and its associated coverage area.

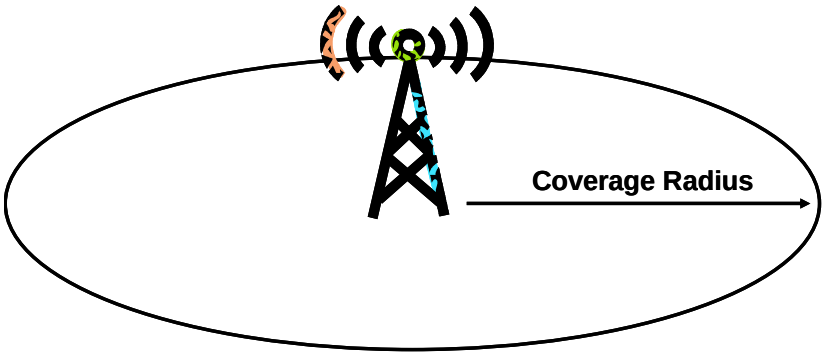

Figure VIII

While Figure VIII shows a circular coverage area, this is not necessarily the case. The exact coverage area of an antenna is determined by complex interactions of multiple factors including spectrum frequency, transmitter power, tower height, terrain, buildings, foliage, and many other factors. For purpose of illustration of the impact of distance and density on wireless network cost, however, the assumption of a circular coverage area will be useful.

The "coverage radius" of an antenna is the function of many factors. The wireless router that you have in your home may have a coverage radius of less than 100 feet, while tall, high-power cellular towers on flat desert terrain may have a coverage radius of 30 miles or more. The coverage radius (or more appropriately, coverage footprint) is important, since it will determine the number of antennas, towers and other equipment that will be necessary to achieve the necessary level of signal coverage in the service area. Each tower location and associated radio equipment add cost to the network (in a cellular network towers and related equipment can cost

hundreds of thousands of dollars each), and the more towers in a given network, the greater the quantity of backhaul facilities and related cost that will be required.

Subscriber density has a major impact on the cost of delivering wireless services to consumers. The following example will assume an initial tower cost of $250,000, and a coverage radius of 15 miles. Chart IX shows the impact of different subscriber densities on the cost per subscriber of this tower.

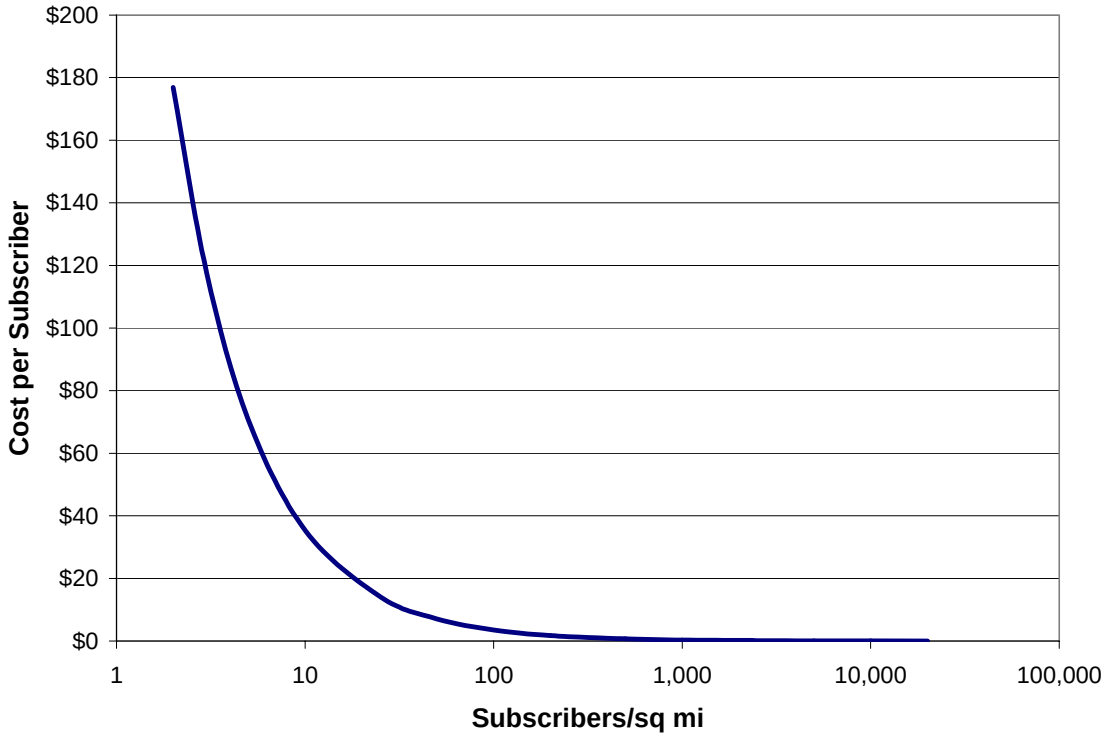

Chart IX

Notice that similar to Chart VII depicting the cost relationship of wireline cost per subscriber to density, the per subscriber cost of this tower increases geometrically with decreasing subscriber density, with the "knee" in both cost curves at approximately 100 subscribers per square mile. To put this relationship in perspective, at a density of 5 subscribers per square mile each subscriber accounts for $70 of this tower's cost, while at a density of 1000 subscribers per square mile, this cost is reduced to about 35 cents per subscriber.

Of course this simple illustration looks at first-cost only, and does not include backhaul, middle-mile or other costs (such as maintenance) that will determine the ultimate monthly cost of providing wireless Broadband service. What it does clearly illustrate, however, is that if rural consumers are going to get mobile wireless services comparable to urban consumers, and at comparable prices, then some form of external support funding is going to be necessary to support the otherwise uneconomic number of towers it will take to accomplish this vision.

Of more significant concern is the inherent limitation of wireless Broadband networks to carry large amounts of data over long distances in sparsely populated rural areas. As stated by a participant in the FCC's recent Broadband Workshops, "Wireless, while it can certainly compete with terrestrial broadband for speeds, has a real hard time competing with terrestrial broadband for throughput. That is, speed times duration times session frequency. And so ... the economics of wireless don't look like they are a fully viable substitute."[23]

A number of factors will influence the cost of constructing and operating wireless Broadband networks in rural areas. One of these is the frequency of the spectrum available. Generally the lower frequency bands (e.g. 700 Mhz) can carry a signal longer distances more successfully than higher frequency spectrum (e.g., 3,500 Mhz). Another factor is the throughput of a given block of spectrum, or how many customers could be served as a given Broadband speed. A panelist at the recent FCC workshops estimated that a full 20 Mhz spectrum block could support about 600 subscribers at 2 mbps (Megabits per second) download speed.[24]

[23] Remarks of Craig Moffett at the FCC Broadband Workshop August 12, 2009. Also, anyone spending time recently in an airport or major metropolitan network will notice how growing volume of traffic is slowing down the wireless network. See *Customers Angered as iPhones Overload AT&T*, New York Times, September 3, 2009.

[24] Remarks of Ed Evans, Chairman Stelera Wireless, FCC Broadband Workshop August 12, 2009 – "What we shoot for is an average throughput experience of around 2 mbps on the downlink side, is sort of how we model it. And so, when you factor that into 600 subscribers, that would be taking a full 20 megahertz of spectrum, so 2 carriers with HSPA+, and the 48mbps capability that basically using those 2 carriers to get 48 mbps of throughput and then using a standard, 10:1 or 20:1 over subscription rate that you would use with any other technology, those are the numbers that we come up with."

Another constraint is the amount of "good" spectrum blocks that might be available to serve a given community, and the proximity of those blocks to one another on the spectrum map, which affects whether they can be used together to cumulatively meet Broadband needs.

One of the strategies discussed by panelists at the FCC Workshops for expanding the throughput of wireless Broadband networks was to use shorter structures to mount the antennas (i.e., lamp posts, roof tops, etc.), and engineer a shorter coverage radius for each antenna. While this will indeed expand the capacity of the wireless Broadband network, this strategy seems more geared for serving cities and towns rather than the more remote portions of rural America. While wireless Broadband certainly will play a role in bringing service to currently unserved or underserved rural towns where population density is high, it is unlikely to be the silver bullet that will solve the dilemma of serving the sparsely populated and more remote rural areas of the country.

C. Satellite Networks

Broadband service delivered via satellite is available in virtually all locations in the United States. Satellite Broadband services suffer from several issues that make them less desirable than other Broadband delivery vehicles for many rural consumers. The first is latency, or the time delay between the end-user's sending a signal, its receipt by the satellite, and the satellite delivering the response back. This latency can range between 500 – 700 milliseconds from the end-user to the ISP, or about 1,000 – 1,400 milliseconds latency for the total round-trip back to the end-user.[25] A second issue is that the quality of the satellite signal can be affected by moisture and various forms of precipitation such as rain or snow – a phenomenon called "rain fade." Another concern is the throughput capacity of the satellite network. Like other wireless solutions, the available bandwidth is shared among multiple users, restricting the speed of the

[25] Wikipedia, Satellite Internet Access, at page 2.

actual connection experienced by each individual user. A final factor is cost, which generally is higher than terrestrial Broadband.

The July, 2009 NOFA published by NTIA and RUS defined an "unserved" area as "one or more contiguous census blocks, where at least 90 percent of households in the proposed funded service area lack access to facilities-based, terrestrial broadband service." This definition would clearly indicate a preference for terrestrial-based services in the National Broadband vision, which is understandable given the limitations discussed above. Realistically, however, there may be some parts of rural America where it may be so costly to extend terrestrial service that the next-best solution of Satellite Broadband is the only viable alternative. As shown on Charts VI, VII and IX, terrestrial costs tend to increase geometrically at the extremes of the network. A substantial amount of funding currently supports rural telecommunications networks, and significant additional funding has been committed to extend Broadband-capable networks for the benefit of all rural consumers. However there ultimately will be a finite amount of funding available to accomplish the mission of bringing Broadband to all Americans. Satellite Broadband service will be useful in reaching that last fractional percentage of customers that may be just too costly to serve by any other means.

III. NECESSARY CHANGES IN REGULATORY RULES, PARADIGMS & PERCEPTIONS

As the Nation re-calibrates its telecommunications policy programs to focus on ensuring that all Americans, including those in rural, insular and high-cost areas, have access to high-speed Broadband services, changes must be made not only in the rules that govern such programs, but also in the regulatory paradigms and perceptions that may have guided policy development in an earlier era. Specific changes that will be necessary to achieve the rural Broadband vision include:

A. The Historical "Telecommunications Service" vs. "Information Service" Dichotomy is no Longer Necessary and is Inconsistent With the Evolution and Growth of Broadband Services

Beginning in the mid 1960s and ending in the late 1980s, the FCC conducted a series of three *Computer Inquiries*.[26] The purpose of these proceedings was to prevent (the old, pre-divestiture) AT&T from using its monopoly over the telephone industry to dominate IBM and the emerging computer and information industries. Through an evolving series of structural and accounting safeguards, the FCC sought to separate "basic" services, such as Plain Old Telephone Service (POTS) from "enhanced" services, such as data processing. As access charges were being developed in the mid to late 1980s, the FCC sought to further protect and nurture the nascent Enhanced Services Providers (ESPs) including providers of emerging dial-up Internet access services referred to as Information Service Providers (ISPs). In what came to be called the "ESP Exemption," ISPs were specifically exempted from the assessment of access charges

[26] *Computer I*, Order, 28 FCC 2d 267 (1971), *Computer II*, Final Decision, 77 FCC 2d 384 (1980), *Computer III*, Report & Order, 104 FCC 2d 958 (1986).

on their dial-up Internet access and other traffic, even though much of that traffic was arguably interstate.[27]

Around the same time, the FCC was also defining the distinction between "Telecommunications Services," which involve the transmission of information without change in its form or content, and "Information Services," which do involve a change in information form, content or protocol. Information Services were also given certain regulatory advantages to nurture the development of these nascent industries.

Recently there has been controversy regarding how these distinctions should be applied to Voice over Internet Protocol (VoIP) services. Although VoIP services provide consumers with the same functionality as a regular long distance call, providers of VoIP services have claimed that the conversion of a telephone call from analog to IP-Protocol and then back to analog constitutes a change in "protocol" and therefore turns such a call into an Information Service. Nationwide, many VoIP providers are refusing to pay access charges, claiming that such charges are prohibited by the ESP Exemption. Vonage recently won a case before the 8th Circuit Court of Appeals stating that it was exempt from contributing to state universal service funds because they provided an Information Service.[28] The FCC has had a petition before it for several years requesting a definition of whether VoIP is an Information Service. So far the FCC has not acted on this petition.

Without arguing the merits of whether IP-protocol conversions turn an otherwise normal telephone call into an "Information Service,"[29] a better question might be – "Why should this matter any longer?" Neither the computer industry nor the Internet is emerging or nascent, nor

[27] *Access Charge Reconsideration Order*, Memorandum Opinion and Order, Docket No. Docket No. 78-72, FCC 2d 682, 711-22 (1983)
[28] *Vonage Holdings Corp. v. Nebraska Pub. Serv. Commission, 564 F.3d 900, 905 (eth Cir. 2009).*
[29] And there are plenty of grounds to make such an argument, since analog-to-digital-to-analog conversions have been a fixture of telecommunications networks since the 1960s, if not earlier.

does either need protection and nurturing. The traditional voice telephone industry is neither a monopoly nor dominant. What should matter is that these anachronistic distinctions now only encourage arbitrage, and will have the unintended consequence of making the vision of ubiquitous and affordable Broadband difficult, if not impossible to attain.

At the core of this issue, and as noted in the initial Broadband Workshop by Sanford Bernstein Analyst Craig Moffett,[30] is the fact the mechanisms that have enabled the construction and maintenance of wire/fiber-line infrastructure in high-cost rural areas are premised on the metrics of the wired voice telephony business that is rapidly going away. This is a serious problem, since the very same networks currently deliver Broadband services to millions of rural consumers, and will be an integral part of delivering ever-higher-speed Broadband services to unserved and underserved rural consumers.

Rural Broadband networks are expensive to build and operate. Explicit funding support will be necessary if they are to be built and maintained high-cost rural areas. The USF and ICC regimes that currently support the rural wire/fiber-line networks are broken and badly in need of major reform. The notion of exempting what is becoming a significant form of traffic over Broadband connections and the Internet from providing the support that makes those Broadband connections available and affordable to all Americans simply does not make sense. To the extent that the Telecommunications/Information dichotomy is maintained it will only serve the interest of those who seek to arbitrage the system, and hinder rural Broadband infrastructure goals.

The FCC of the 1980s made the decisions that it did based on the nature of the public interest at that time. Times, technologies and markets have changed. The public interest of 2009 and beyond dictates a policy that encourages the widest deployment of advanced Broadband

[30] Op. cit.

services. Those that benefit from the availability of ubiquitous Broadband connections should be required to contribute to the cost of their maintenance.

To address this critical National need, either Congress should end this anachronistic dichotomy, or the FCC should use its classification authority and Section 201 authority to implement telecommunications policies that enable and encourage investment in rural telecommunications infrastructure that delivers Broadband services to all Americans.

B. Wireline and Wireless are Complementary, Not Competing Services

Wireline and wireless service are, for most consumers, complementary products; each needed and valued by consumers for different reasons. Wireless services offer the convenience and personal safety advantages of mobility, while wireline services offer advantages of reliability, home safety, and significantly higher broadband speeds.[31]

The wireless industry itself acknowledges the different and complementary nature of wireline and wireless broadband services. In its comments to the FCC on its development of a National Broadband Plan, CTIA states "Mobile broadband is not a third pipe to the home, but rather broadband to the person ...wireless is a different form of broadband than cable and wireline."[32] Clearwire states in its comments "As a starting point, the Commission's definitions of "broadband," "unserved" and "underserved" must separately account for fixed wireline/wireless services and mobile wireless services. Fixed and mobile broadband are two separate services providing different constituents and needs."[33]

[31] Consumers who rely on wireless for voice services often use wireline services for Internet access. A Neilson study found that 75% of consumers that had "cut the cord" used either a cable modem or DSL for their Internet access. *Call My Cell: Wireless Substitution in the United States*, September, 2008.
[32] Comments of CTIA – The Wireless Association, GN Docket No. 09-51, filed June 8, 2009, pages 1-2.
[33] Comments of Clearwire Corp. at page 4.

In addition to being complementary in the marketplace, wireless and wire/fiber-line networks also share common elements of the network infrastructure that delivers wireless services to consumers.

C. Mobility Services are Generally "Wireless" only in the "Last Mile"

As described more fully in Section II.B, mobile telecommunication networks consist of a wireless connection from the consumer's handset or base unit to a nearby tower location. From this tower, the communications must be "backhauled" to the carrier's switching location, and from that point carried onward through "middle-mile" to its ultimate destination. Often these backhaul and middle-mile functions are provided over the network of the wire/fiber-line carriers.

Many believe that the wireless link from handset to tower in mobile Broadband networks is this weakest link in the mobile service connection. At the FCC's Broadband workshop on August 12, 2009, Jake McLeod, Senior VP and CTO of engineering firm Bechtel Telecommunications stated:

> The mantra with any engineering community within the site or the wireless realm now is get the signal in the ground as quickly as possible because your weakest link -- wireless is simply a wired system, and the only wireless part of it is between the antenna and the user device. That's it. And that's the most unstable link in the entire budget. So, you want to get that signal in the ground, in fiber, as quickly as possible.

Mr. McLeod also stated that in many of the wireless networks that his company has built overseas, over 90% of the backhaul from the cell sites is done over fiber. The other panelists estimated that in the United States this figure is around 10%, and must be increased as the volume and speed of mobile Broadband traffic increases. Clearly, the National Broadband Plan must focus on expanding the availability of fiber in rural areas.

D. Rural Wire/Fiber-Line Networks Will be Essential to Achieve the Broadband Vision

It has been widely published that the United States currently lags behind other nations in the developed World, both in broadband speeds available, and in the delivery of such services to all of our citizens.[34] One of the reasons for this reality is that our country covers a large land mass, with dense population clusters on the coasts, and lots of sparsely populated and rural territory in between. There is no single "silver bullet" that will fix this problem, however it is certain that the wire/fiber-line networks operated by the Nation's rural telephone companies will play a vital role in meeting the goal of providing high-speed broadband service to all of our citizens. The extension of fiber-optic technology further out into their networks, and in some cases directly to the subscriber's premises, creates a platform for the delivery of reliable and ever-higher-speed broadband services that 21st Century businesses and consumers will be demanding. Rural wire/fiber-line networks will play an important role in achieving the Broadband vision for many reasons, including:

- Rural wire/fiber-line networks are capable of delivering Broadband speeds significantly higher than mobile Broadband providers, more efficiently and at a higher rate of reliability.
- Rural wire/fiber-line networks can provide an important part of the infrastructure necessary to deliver mobile Broadband services in high-cost rural areas.
- Many rural wire/fiber-line service providers have decades-long roots in the communities they serve, and their business plans are built around understanding and meeting the needs or rural businesses and consumers for reliable and advanced

[34] Organization for Economic Co-Operation and Development (OECD) Broadband Portal, May 2009, shows the United States ranked as 15th in broadband subscribers per 100 inhabitants among industrialized nations, http://www.oecd.org/dataoecd/21/35/39574709.xls

telecommunications services. Their understanding of, focus on, and commitment to rural markets enable them to be leaders in delivering advanced Broadband services to rural America.

E. Historical USF and ICC Regimes Must be Reformed and Transition Into a Coordinated Rural Broadband Support Policy Framework

Reforming the current USF and ICC regimes must be an important step in implementing a National Broadband Plan that delivers Broadband to all consumers – even those in the most remote and costly-to-serve areas. The current regimes, built in an environment of analog, copper, circuit-switched technology, must be fundamentally re-tooled to successfully deploy a support high-cost rural networks that have already become digital, fiber, and packet-switched. The need for efficient mechanisms to support high-cost and otherwise uneconomic infrastructure investment will always exist so long as the Nation maintains a policy goal of delivering advanced telecommunications services to all of its citizens.

Effective USF and ICC reform is essential for another reason – absent significant and timely reform, the operators of the Nation's most rural wire/fiber-line networks will suffer a financial collapse that could make continued operation of their networks impossible. Carriers in the most remote and sparsely populated areas often receive 70% or more of their cash flow from USF and ICC. Neither the "interstate and international revenue" metric critical to the current USF collection mechanism, nor the "minute-of-use" metric that drives intercarrier compensation exists, or is even sustainable, in the Broadband world. Deprived of significant portions of the cash flow that supports their loan covenants and operating expenses, rural carriers would face bankruptcy and the reality of having to shut down their networks. Cable companies do not have the physical infrastructure that extends much beyond the city limits, and wireless carriers lack the tower capacity and Broadband throughput capability to serve the more remote rural areas.

The true losers in this scenario would be the consumers of rural America. It is **crucial** that the current USF and ICC and USF mechanisms be reformed promptly!

Specific policy changes that will be necessary to reform current support mechanisms are detailed in Section IV of this paper. It is important to realize that no single mechanism or program will totally solve the rural Broadband challenge. Different markets, and different technologies, will require efficient mechanisms tailored to the specific policy goals that we are trying to achieve in each case.[35] It will be critically important, however, to establish a single point of oversight and management of these mechanisms and programs to ensure that aggregate impact on the quality and variety of services available to consumers is maximized. The FCC, operating under broad policy objectives established by Congress, is the logical place for this rural infrastructure support function to be managed.

F. The Development of Broadband Subscribership Should be Encouraged

The best Broadband infrastructure in the world means nothing unless consumers have the motivation and ability to subscribe to the services that it provides. The BTOP program specifically includes $250 million of grant funding to promote Sustainable Broadband Adoption initiatives, $150 million of which will be distributed with the July 1, 2009 NOFA. In addition to the good ideas and best practices that will emerge from this effort, there are other policy initiatives that should be undertaken to promote more widespread Broadband adoption.

1. Broadband Service Should be Eligible for Life Line and LinkUp Support

One of the fundamental principles of network economics underlying universal service policy is that the network becomes more valuable as more and more subscribers are added to it. With the Internet now becoming a primary vehicle for education, job training and re-training,

[35] The experience over the past decade of attempting to incent rural wireless infrastructure development through the forced application of wireline support programs provides valuable lessons that policy makers would be well not to forget.

employment applications, and government interaction, no American should lack access to Broadband services because of an inability to pay for them. Broadband services should be eligible for support under the existing Life Line and LinkUp programs, and available to consumers who qualify for funding support under the existing eligibility criteria.

2. Rural Carriers Must Have Access to Programming Resources on Terms, Conditions and Prices Reasonably Comparable to Those Available to Urban Carriers

Among the many benefits of Broadband services is access to a world of entertainment products and services. The importance of access to movies, programming, games, and other material that consumers really want, to the creation of demand for high-speed digital information delivery products, must not be underestimated. In order for rural telecom providers to attract consumers to Broadband service, and offer services comparable to those available to urban consumers at comparable prices, then equal and affordable access to programming resources and content will become an important component of building rural Broadband subscribership. Policy makes should ensure that rural Broadband service providers have fair and equal access to programming resources and content at rates, terms and conditions that are reasonably comparable to those of their urban counterparts.

3. Rural Carriers Must Have Access to Middle-Mile Facilities on Terms, Conditions and Prices Reasonably Comparable to Those Available to Urban Carriers

As documented in Section II, rural markets are more costly to serve than urban markets. This is true not only for "last-mile" facilities, but for "middle-mile" facilities as well. The need to haul information over long distances, and the need to move it through smaller and less efficient (in terms of cost per unit of transmission) "pipes" than can be used in higher-population-density areas, means that middle-mile functionality will be more costly in rural areas than urban areas. Thus, if we are to price Broadband service in rural areas at levels reasonably

comparable to those available in urban areas, then some mechanism must be developed to support this otherwise uneconomic business proposition. Policy makers should ensure that rural Broadband service providers have fair and equal access to middle-mile transmission facilities at rates, terms and conditions that are reasonably comparable to those of their urban counterparts. Additional, targeted support mechanisms for affordable middle-mile connectivity may be necessary to achieve this vision.

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IV. ACHIEVEMENT OF THE NATION'S BROADBAND GOALS WILL REQUIRE THE FOLLOWING POLICY REFORMS

A. Universal Service Fund

1. The Current USF Collection Mechanism Must be Reformed to be Sustainable in a Broadband World

The current USF collection mechanism assesses a surcharge (currently 12.9%) on all interstate and international services. This assessment has been growing in recent years as a result of the growing size of the USF and the declining size of the contribution base. One of the reasons for the decline in the funding base is the increasing difficulty of determining what an "interstate" service is, given the increasing popularity of "bundled" calling plans. The collection mechanism should be reformed to define a more stable base of contributors.

As the deployment of Broadband service to all Americans becomes a primary policy objective, the funding base should be redefined to include all service providers whose customers benefit from the widespread availability of affordably priced Broadband connections. Recognizing that telecommunications markets are in transition, the new funding base should acknowledge the realities of the current markets as well as future markets and technology where Broadband becomes the predominant form of service delivery. A fair contribution system needs to be supported by all users, thus a system that makes some form of assessment on telephone numbers and high-speed Internet connections would best meet these objectives.

In designing the contribution methodology it is important that the solution is as "future-proof" as possible. Some parties have proposed a new collection mechanism based solely on an assessment on working telephone numbers.[36] While such a system might work in the short-run, it risks repeating the mistake of funding the evolving Broadband network based on the metrics of

[36] See AT&T Petition for Immediate Commission Action to Reform its Universal Service Contribution Methodology, WC Docket 06-122, July 10, 2009.

traditional voice telephony services. No one can accurately predict today how services offered over digital Broadband networks will evolve in the future, or if or when the NANP numbering scheme will be replaced by some new and different addressing architecture. It is for this reason that the new USF collection methodology must also assess all Broadband connections, regardless of technology, so consumers in all parts of America can have access to affordable Broadband services.

2. The USF must support network infrastructure capable of delivering Broadband services

Section 254(c)(1) of the Telecommunications Act of 1996 states that:

> Universal Service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies.

In defining the criteria for establishing the services supported by the universal service fund, the Act states that the FCC shall consider the extent that such services:

a. Are essential to education, public health, or public safety;

b. Have, through the operation of market choices by customers, been subscribed to by a majority of residential customers;

c. Are being deployed in public telecommunications networks by telecommunications carriers; and

d. Are consistent with the public interest, convenience, and necessity.

In aggregate, Broadband services meet each of these criteria. In order that consumers in all areas of the nation, including rural, insular and high-cost areas have access to broadband services reasonably comparable to those available in urban areas, the universal service funding mechanisms must be modified so as to provide specific, predictable and sufficient support to networks capable of delivering Broadband service to all Americans..

In reality, the RLEC universal service mechanism has been used for some time to aid in the construction and maintenance of networks that are capable of delivering Broadband services to rural consumers. In its 2000 Recommendation regarding universal service funding for rural telephone companies, the Rural Task Force recommended a "no barriers to advanced services policy" that stated "universal service funding should support plant that can, either as built or with the addition of plant elements, when available, provide access to advanced services."[37] Many RLECs have deployed a hybrid fiber/copper DSL network architecture that, in addition to providing economical basic telephone service, also enables the provision of Broadband service to millions of rural consumers.

[37] Rural Task Force Recommendation to the Federal-State Joint Board on Universal Service, CC Docket 96-45, Released September 29,2000.

3. Modifications to Existing USF Programs

The following universal service policy reforms, most of which can be implemented rapidly, will assist in addressing the problems of unserved and underserved communities.

a. To Enable Delivery of Broadband to Unserved and Underserved Rural Consumers, The Cap on the HCLF Mechanism Should be Removed

Since 1993, the High-Cost Loop Fund (HCLF) has operated under some form of cap. In 2001, in response to the recommendation of the Rural Task Force, the cap was re-indexed, and since has been allowed to grow (or shrink) annually by the Rural Growth Factor (RGF), which basically measures the growth in rural lines.

There are two basic problems with this cap in relationship to the Broadband vision. First, and most importantly, it limits the ability of rural wire/fiber-line carriers to invest in the high-cost rural infrastructure necessary to achieve the expansion of Broadband-capable rural networks and the speeds at which they operate. Second, under the operation of the RGF, the amount of support available typically decreases when a customer replaces a POTS line with Broadband service.

For rural consumers to have access to Broadband services comparable to those available in urban areas, it will be important for both the HCLF available to wire/fiber-line network providers, as well as the new high-cost tower funding mechanism for wireless providers, to operate without a cap.

b. To Address the Needs of Consumers in the Rural Areas of "Non-Rural" Telephone Companies, The "Parent Trap" Rule Must be Modified

The FCC rules provide that when a "non-rural" carrier (e.g., Verizon, AT&T, Qwest, etc.) sells a wireline service territory, the acquiring carrier is essentially limited to the amount of

support previously received by the non-rural carrier.[38] This rule is often called the "Parent Trap" rule. This rule is problematic, since the formulas used to compute high-cost support for the rural areas served by "non-rural" companies generally provide significantly less support than would be the case under the formulas used for "rural" companies. As a result, most rural areas served by "non-rural" telephone companies have received less infrastructure investment over the years, and generally have a lower percentage of Broadband-capable lines than an equivalent area served by a rural telephone company.

The real victims of the Parent Trap rule have been the rural consumers who, through no fault of their own, have had the misfortune of living in an area that was once served by an RBOC. The RBOCs naturally focus their attention on their large urban centers where competition is greatest, and capital investment dollars generally are directed to these areas to the detriment of the more rural areas that they serve. In recent years Verizon has been particularly active in selling off rural territory so that capital resources can be focused on upgrading Broadband capabilities in its urban areas and its wireless business.[39] Even if RBOCs were provided sufficient funding to upgrade their unserved and underserved rural areas, there is no guarantee under current programs that that the funds would actually be spent there rather than in areas of greater competitive need (i.e., their large cities). Early experience with the BIP and BTOP programs indicates that the RBOCs appear not to be applying for this round of Broadband stimulus funding.[40]

[38] 47 CFR § 54.305.
[39] In 2005 Verizon sold its Hawaiian wireline operations to the Carlyle Group. In 2007 Verizon sold its wireline operations in Maine, New Hampshire and Vermont to FairPoint Communications. In 2009 Verizon announced the sale of its wireline operations in 14 predominantly rural states to Frontier Communications. The Hawaiian operations are currently in bankruptcy, FairPoint is rumored to be near bankruptcy (*Two Sides of Verizon's Deal Making,* The Wall Street Journal, August 11, 2009), and the Frontier deal has yet to close.
[40] *Major Carriers Shun Broadband Stimulus,* The Washington Post, August 14, 2009.

One way or another, the National Broadband Plan must account for the funding that will be necessary to upgrade networks to deliver Broadband to the unserved and underserved rural areas of the non-rural carriers. One possible strategy would be to repeal the Parent Trap rule, and allow companies with a business plan focused on serving rural markets and consumers to reclassify acquired territory as "rural" for purposes of universal service funding. This would also require removal of or an increase in the HCLF cap as discussed above. Another alternative would be to adjust the "Safety Valve" mechanism which operates as part of the Parent Trap rule, and provides some additional high-cost funding when the acquiring carrier makes significant infrastructure investments in the acquired area. Use of the Safety Valve has been limited due to complexities in the reimbursement formulas, and a cap on the size of the Safety Valve fund. If the formulas were adjusted to provide greater incentives for investment, and the cap was removed or significantly increased, this could assist in bringing Broadband to the acquired exchanges. A third alternative to deal with the rural areas of the non-rural companies would be to create a targeted Broadband support program, similar to the BIP and BTOP programs, that would provide funding for carriers wishing to serve the unserved and underserved rural areas of the non-rural companies.

One possible "solution" that should not be considered under any circumstances is to simply "unify" the rural and non-rural mechanisms without including increased funding for the needs of the rural areas of the non-rural telephone companies. Simply taking the current, capped high-cost fund and spreading it around to rural and non-rural carriers would have disastrous consequences for the consumers served by rural ILECs. Rural ILECs receive high-cost support based upon their actual, audited cost of building and maintaining Carrier of Last Resort wire/fiber-line networks in their high-cost service territories. These wire/fiber-line networks

provide basic and Broadband services to consumers in their area, and enable the provision of mobile Broadband services. A significant and dramatic decrease in this high-cost funding would threaten the ability to continue maintenance of these networks and the loan covenants that support this investment. This would have serious adverse consequences for achieving the rural Broadband vision. Clearly a solution to the "non-rural rural" problem must be found, but it should not be solved at the expense of the customers of rural wire/fiber-line carriers that have been playing by the rules.

4. Targeted, Cost-Based Support Should be Provided to One Wire/Fiber-Line Network and no More Than One Wireless Network in Each Rural Service Area

In his Separate Statement accompanying the 2001 MAG Order,[41] former FCC Chairman, then Commissioner, Kevin Martin insightfully stated:

> "I also note that I have some concerns with the Commission's policy – adopted long before this Order – of using universal service support as a means of creating "competition" in high-cost areas. I am hesitant to subsidize multiple competitors to serve areas in which costs are prohibitively expensive for even one carrier. This policy may make it difficult for any one carrier to achieve the economies of scale necessary to serve all of the customers in a rural area, leading to inefficient and/or stranded investment and a ballooning universal service fund…

History has shown Martin's comments to have been prophetic – there is such a thing as too much competition, and the consequences can be adverse for rural consumers..

Given the size of the challenge of bringing high-speed Broadband to rural America, it is important that the retargeted universal service fund be as efficient as possible, delivering the biggest bang for the buck. The universal service fund should thus support one wire/fiber-line and no more than one wireless network provider in each rural service area. Due to the differing

[41] Separate Statement of Commissioner Kevin J. Martin, Second Report and Order and Further Notice of Proposed Rulemaking in DD Docket 00-256, Fifteenth Report and Order in CC Docket No. 96-45, and Report and Order in CC Docket Nos. 98-77 and 98-166, FCC 01-304, Released November 8, 2001. MAG is an acronym for "Multi-Association Group," and refers to a proposal that, among other things, moved a portion of implicit support in RLEC access charges to an explicit universal service funding mechanism.

nature of the wire/fiber-line and wireless[42] technologies, both the method and goals for awarding support and the service areas to be supported will need to be defined differently.[43] Both funds should be based on the carrier's actual costs of achieving defined policy goals for network coverage.

B. Intercarrier Compensation

Intercarrier compensation must be radically reformed as a necessary step in ensuring the delivery of affordable Broadband services to all Americans. To preserve this essential revenue support for rural wire/fiber-line networks, the following intercarrier compensation reforms will be necessary:

1. So Long As Access Charges Remain, All Carriers That Use the PSTN Must Pay Access Charges

As clearly shown on Chart V (page 16), rural ILEC access minutes have been declining since 2004. Among the reasons for this decline are Phantom Traffic, rate arbitrage and the refusal by some carriers to pay access charges. The FCC should address the Phantom Traffic by reiterating the responsibility of all carriers to accurately label their originating traffic to permit proper billing, and for all intermediate carriers handling such traffic to pass this information onward without modification. The FCC should authorize ILECs receiving unlabeled traffic to bill their highest ICC rate to the carrier from which the traffic is received. To address the issue of VoIP providers refusing to pay access charges based on their belief that VoIP is an Information Service and access charges are precluded due to the ESP Exemption, the FCC should finally confirm that VoIP calls that terminate to the PSTN are Telecommunications Services subject to access charges.

[42] In November of 2007, the Federal-State Joint Board on Universal Service recommended the creation of a separate "Mobility Fund."

[43] The wire/fiber-line fund should continue to be targeted to the ILEC Study Area. The wireline fund should be targeted to area definitions related to the provision of rural wireless service – most likely the RSA.

2. Intrastate Access Charges Must be Immediately Reduced to Interstate Levels, With Lost Revenue Support Replaced by a Sustainable Recovery Mechanism (RM)

Companies should be allowed to reduce intrastate switched access rates to interstate levels, or lower, immediately, and a new, sustainable Restructure Mechanism (RM) should be established by the FCC to replace lost revenue contributions necessary for the support of rural wire/fiber-line networks. While the Commissioners note the need to make this transition over a "reasonable period of time," the rapid pace of market and technology change will not allow for the typical transition pace that the industry could tolerate in years gone by.[44] The decline in access minutes clearly shown on Chart V (page 16) is accelerating. Chart IV (page 15) shows that for small rural carriers the current average intrastate rate is 5.1 cents-per-minute, vs. 1.8 cents per minute for interstate access. This difference is huge, is likely driving inappropriate market behavior, and is not sustainable. The FCC should immediately allow carriers to reduce intrastate access rates to interstate levels. The FCC should also allow rural carriers operating under rate-of-return regulation to recover revenues lost through this reduction from a sustainable Restructure Mechanism (RM) in order to sustain the support flow that benefits rural consumers through the provisioning and maintenance of rural telecommunications networks.

As the telecommunications marketplace evolves to the provision of packet-based digital services delivered over Broadband pipes, current minute-of-use switched access prices become irrelevant. The National commitment to a Broadband Plan is certain to accelerate this evolution. It is therefore critical that a new cost recovery mechanism be put in place that will allow rural carriers to continue to maintain their current wire/fiber-line networks, and to invest to enable the delivery of ever-higher-speed broadband services to currently unserved and underserved rural communities.

[44] The FCC's current review of intercarrier compensation issues began in 2001 – over 8 years ago.

C. BIP, BTOP and Other Broadband Programs

In February of 2009, President Obama signed into law the American Recovery and Reinvestment Act of 2009 (ARRA). Included in this $787 billion stimulus packages was $7.2 billion of funding to deploy broadband infrastructure in un-served and underserved areas, expand public computer center capacity, and encourage sustainable adoption of Broadband services. The ARRA provides $4.7 billion to the National Telecommunications and Information Administration (NTIA) for grants under the Broadband Technology Opportunities Program (BTOP), and $2.5 Billion to the Rural Utilities Service (RUS) for grants and loans under the Broadband Initiatives Program (BIP).

On July 1, 2009, NTIA and RUS jointly released the first of three rounds of Notice of Funds Availability (NOFA) documents providing rules and guidelines for the awarding of $1.6 billion of BTOP grants and $2.325 billion[45] of grants and loans under the BIP program. The NOFA provides additional definitions of program terms (i.e., broadband, unserved, underserved, rural, remote, etc.) and guidelines for applications under the BIP and/or BTOP programs. The NOFA also describes the four criteria under which applications will be evaluated – 1) Project Purpose, 2) Project Benefits, 3) Project Viability, and 4) Budget and Sustainability, and a 100 point scoring matrix detailing how competing BIP and BTOP applications will be ranked to determine which ones will receive the funding. The scoring matrix for Last Mile Projects from the July NOFA is shown in Chart X, below:

[45] The ability of RUS to use a part of its funding to make loans means that the amount of infrastructure investment that the BIP can support will be greater than $2.5 billion awarded in the ARRA. RUS estimates that it will be able to make $9 billion in grants and loans for rural Broadband infrastructure.

Application Scoring Criteria – Last Mile Projects	
RUS - BIP	**NTIA - BTOP**
PROJECT PURPOSE (25 Points) • **Proportion of Rural Residents in Unserved Areas (5 points)** One point for each 10,000 unserved rural households that will receive broadband – max. 5 • **Rural Area Targeting (5 points)** One point for each 5% increase of rural above the 75% rural area service requirement – max. 5 • **Remote Area Targeting (5 points)** One point if at least one funded area is 50 mi. from a non-rural area. One point for each additional 50 mi. – max. 5 • **Title II Borrowers (5 points)** Five points for previous Title II borrowers • **Recovery Act and Other Govt. Collaboration (5)** One point for each partnered governmental or Recovery Act program – max. 5	**PROJECT PURPOSE (30 Points)** • **Fit With Statutory Purposes** Evaluated with respect to each of BTOP's statutory purposes • **Recovery Act and Other Govt. Collaboration** Evaluated on their collaboration with Recovery Act and other governmental programs • **Enhanced Service for Health Care Delivery, Education, and Children** Assess the depth and breadth of the project's ability to enhance broadband service for health, education and children • **Socially and Economically Disadvantaged Small Businesses** Applicants that meet the definition of a socially and economically disadvantaged small business
PROJECT BENEFITS (25 Points) • **Performance of the Offered Service (10 points)** Ten Points if minimum speed is 20 mbps for wireline and 2 mbps for wireless systems • **Affordability of Services Offered (5 points)** Up to five points for demonstration that proposed services are affordable for targeted market • **Choice of Provider (5 points)** Five points for business plan which allows more than one provider in service area • **Critical Community Facilities (5 points)** Five points for offering discounts of at least 25%to all critical community facilities in service area	**PROJECT BENEFITS (25 Points)** • **Cost Effectiveness** Cost efficiency based on the ratio of the total cost of the project to households passed • **Performance of the Offered Service** The extent to which the advertised speed exceeds the minimum speed requirements • **Affordability of Services Offered** Comparison to existing prices in proposed service area, or demonstration of proper pricing • **Nondiscrimination, interconnection, and choice of provider** The extent to which the applicant commits to exceeding the minimum requirements, commit to offering wholesale access, or commit to binding arbitration of disputes
PROJECT VIABILITY (25 Points) • **Applicant's Organizational Capability (12 points)** Up to twelve points based on strength of project's management team • **Community Support (2 points)** Up to two points if letters of support are received from all communities in proposed area • **Ability to Promptly Start Project (10 points)** Ten points if all licenses and approvals received, contractors available, equity contributions transferred, and project timelines reasonable • **Disadvantaged Small Business (1 point)** One point to applicants that meet definition of a socially and economically disadvantaged small business concern	**PROJECT VIABILITY (25 POINTS)** • **Technical Feasibility of Proposed Project** Appropriateness of the technical solution and clarity, level of detail and choice of system designs • **Applicant's Organizational Capability** Years of experience and expertise of management team and past track record on similar projects • **Level of Community Involvement in Project** Linkages to unaffiliated organizations in the project area, particularly community anchor institutions and public safety organizations • **Ability to Promptly Start Project** Start date, project timeline, securing all licenses and approvals, and preparedness of contractors
BUDGET AND SUSTAINABILITY (25 POINTS) • **Reasonableness of the Budget (5 points)** Up to five points based on the clarity and reasonableness of the proposed budget • **Leverage of Outside Resources (10 points)** Sliding scale ranging from one point if ratio of outside funding to BIP funds is less that 25%, to 10 points if ratio is over 100% • **Extent of Grant Funding (10 points)** Sliding scale ranging from zero points if grant funding is 100% or request, to 10 points if no grant funding is requested (i.e., 100% loan)	**BUDGET AND SUSTAINABILITY (20 Points)** • **Reasonableness of Budget** Clarity, level of detail, comprehensiveness, appropriateness of solutions, reasonableness of costs, and sufficiency to complete the task • **Sustainability of the Project** Ability of the project to be sustained beyond the funding period • **Leverage of Outside resources** Ability to provide the 20% matching funds, with additional consideration to proposals that exceed the minimum matching requirement
TOTAL (100 Points)	**TOTAL (100 Points)**

Chart X

The BIP and BTOP programs represent an important step in providing the funding that will be necessary to support the infrastructure investment that will be necessary to deliver high-speed broadband services throughout rural America. The following improvements to the plans announced in the July, 2009 NOFA will help in ensuring that BIP and BTOP funds are targeted in a manner that more efficiently meets the needs of unserved and underserved rural communities:

1. The Definition of "Remote" Must be Modified

The BIP program administered by RUS provides grants, loans, and loan/grant combinations to support rural infrastructure investment. Grant funding is limited to applications proposing to serve remote, unserved rural areas. BIP loan and loan/grant combination funds are to be used to serve non-remote and underserved areas. Furthermore, in non-remote and underserved areas, the grant portion of the funding is restricted to 50% of the total project cost, or less, and the scoring criteria give strong advantages to applications that are 100% loan, and involve no grant funds.

Thus, in order for a project to be considered for 100% grant funding, the service area must be both remote and unserved. There is a major problem however in how "remote" is defined in the July, 2009 NOFA. Remote is defined as an area that is at least 50 miles from a population center of over 20,000 inhabitants. This definition severely limits the portions of rural America that will be eligible for 100% grant funding.

Figure XI shows how this definition will impact four states, Texas, Iowa, North Carolina and Virginia:[46]

[46] Actually Chart XI is conservative since, for simplicity in construction, it measures the 50 miles from the center of the population cluster rather than from the edge of the cluster.

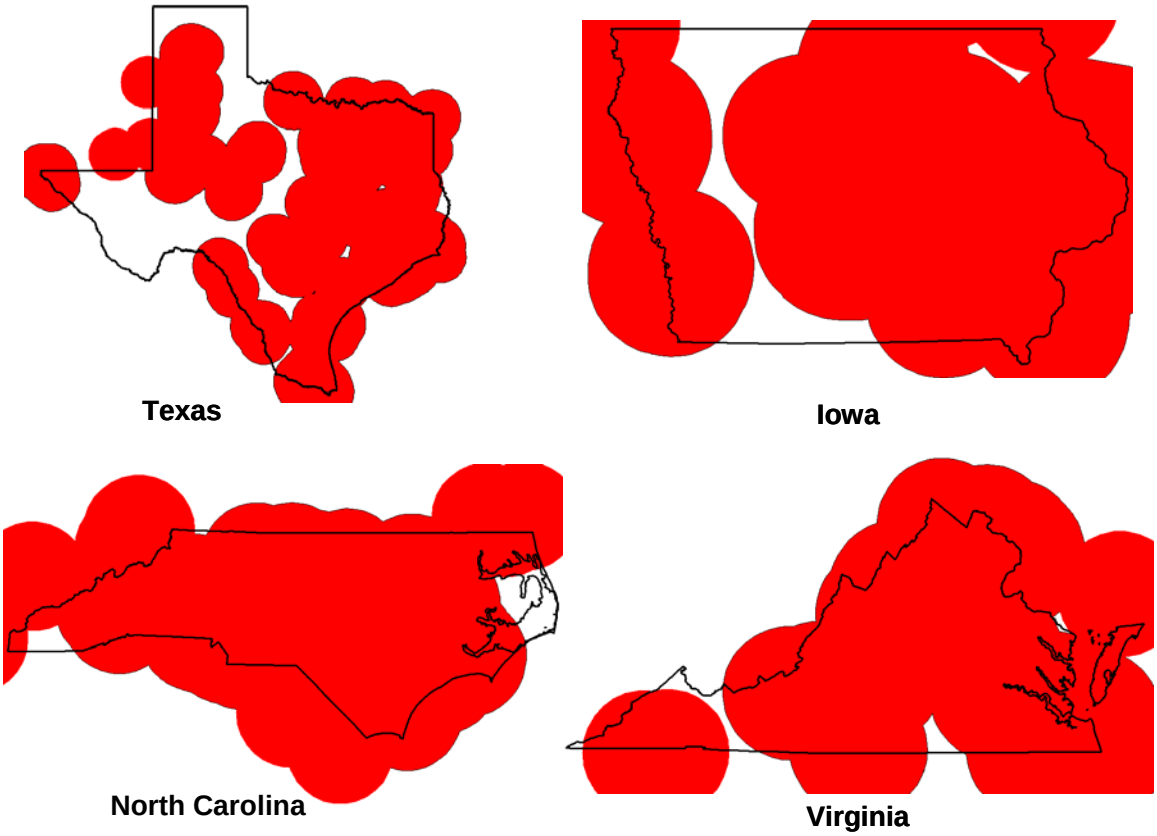

Figure XI
Areas Within 50 miles of Population Centers of 20,000+

Figure XI clearly shows that in North Carolina and Virginia, virtually no areas would be considered "remote" and therefore eligible for 100% grant funding under BIP. In Iowa, slightly more area would qualify, although a major portion of the state would not. Even in Texas, significant portions of the state would be considered non-remote.

The criteria by which BIP scores the degree of "remoteness" also does not comport with the nature of rural population distribution. Under the "Remote Area Targeting" criteria, an application is given one point if the funded area is 50 miles from a non-rural area, and one point for each additional 50 miles. Based upon the sampling of states contained in Figure XI, it would appear that very few areas in the lower-48 states would qualify for one point, and virtually none would qualify for more than one point.

As described and illustrated in Section II, rural networks – both wireline and wireless – are costly to serve because of some combination of distance from population and subscriber density in the area that is served. The metrics for assessing the unserved areas most in need of explicit support funding must be redefined to include measures of both distance and population density.

2. The Emphasis on "Loans" in the BIP Misses the Point – A Loan Does Not Turn a Bad Business Case Into a Good Business Case

As discussed throughout this paper, many remote and sparsely populated rural areas lack telecommunications infrastructure capable of supporting Broadband services because the cost of constructing and maintaining the necessary network facilities greatly exceed the revenues that can be obtained from the customers of those services. Stated differently, there is not a good "business case" for making such investments. A loan does not take a bad business case and make a good business case out of it. In fact it may even worsen the case, as the loan must be repaid. If a loan were all that were necessary to make otherwise uneconomic investments viable, then the BIP and BTOP plans would likely not be necessary.

The emphasis on loans is evident in the scoring criteria shown on Chart X. Of the 25 points awarded for "Budget and Sustainability," 10 points are awarded based upon "Leveraging of Outside Resources," and another 10 points is awarded based upon the "Extent of Grant Funding." Under the definition of these criteria shown on Chart X, a BIP application for 100% loan funding would score 20 points, whereas a 100% grant application would score one point. This is a significant difference on a 100 point grading scale given the extent of the explicit Broadband funding need, and the number of applications that are expected to be received. Even if the applicant were to put up 20% of the project's cost (the nominal funding requirement for a BTOP application), such an application would only score two points.

In order to achieve the desired goal of supporting Broadband infrastructure investment in otherwise uneconomic areas, the BIP scoring criteria should be revised to focus more on the degree to which an area is unserved, the cost factors that necessitate explicit governmental funding assistance, and the manner in which the project proposal seeks to bring Broadband service to unserved rural consumers.

3. The Metric That Measures Service to Unserved Populations Must be Revised

A similar problem also exists with respect to the item under the "Project Purpose" category labeled as "Proportion of Rural Residents in Unserved Areas." While the goal is expressed as the "proportion" of unserved residents, the scoring criteria has (hopefully inadvertently) been set to favor the "number" of unserved rural residents. The matrix on Chart X shows that the current scoring criteria awards "one point for each 10,000 unserved rural households that will receive Broadband – max. 5 points." This would mean that communities of under 10,000 households would receive no points, and be at a significant competitive disadvantage vis-à-vis more heavily populated areas. Since most rural communities have less than 10,000 households, this scoring criteria would actually work against the very goals of delivering Broadband to unserved rural communities that the BIP seeks to achieve.

On August 4, 2009, a diverse group of rural telecommunications trade association wrote to the RUS Administrator asking that he fix this problem.[47]

4. Ultimately, the Size of Explicit Funding Mechanisms (BIP, BTOP, USF, RM, etc.) Must be Commensurate With National Broadband Policy Goals

President Obama has established a national goal to ensure that all rural communities receive Broadband service. While the competitive market will deliver a choice of Broadband

[47] The rural trade associations signing this letter were the Organization for the Promotion and Advancement of Small Telecommunications Companies (OPASTCO), the National Telecommunications Cooperative Association (NTCA), the Rural Cellular Association (RCA), the Rural Independent Competitive Alliance (RICA), the Rural Telecommunications Group (RTG), and General Communication, Inc.

services to most of the country without any government intervention, the facts clearly demonstrate that there are some portions of rural America where no rational business would invest to serve since there will not be sufficient revenues to cover the high costs of serving. The role of explicit universal service funding is, and always has been, to fill that gap between that which the free competitive market will provide, and the policy outcomes sought by government. As the Nation establishes its Broadband development goals, it must also ensure that sufficient funding resources are available to bring this plan to reality.

V. CONCLUSION

The need for efficient mechanisms to support high-cost and otherwise uneconomic infrastructure investment will always exist so long as the Nation maintains a policy goal of delivering advanced telecommunications services to all of its citizens. In an earlier era, Congress and the FCC decided that the telephone should be universally and affordably available to all Americans. The nation's wire/fiber-line carriers have successfully employed explicit support from the universal service fund, and implicit support from intercarrier compensation to make this vision a reality. They have also invested to build telecommunications infrastructure that delivers Broadband to millions of rural consumers today, and is capable of delivering ever-higher-speed Broadband services throughout rural America in the future.

As the Nation sets a new course for its vision of "Broadband service for all," the critical USF and ICC mechanisms must be re-tooled to be sustainable and successful in the coming Broadband environment. Universal service reform and intercarrier compensation reform must be an important part of implementing the National Broadband Plan and achieving the vision.