



**TABLE OF CONTENTS**

Summary.....ii

COMMENTS OF THE WESTERN ALLIANCE.....1

I The Western Telecommunications Alliance.....7

II. Broadband Record and Experience of Rural ILECs.....9

III. Definition of “Broadband Capability”.....12

IV. Definition of “Access to Broadband”.....15

V. Predominant Role of Wireline Facilities.....19

VI. Effective and Efficient Mechanisms for Ensuring Access to Broadband.....21

    A. Urban and Suburban Areas.....23

    B. Rural Areas Served by RLECs.....24

    C. Rural Areas Not Served by RLECs.....29

VII. Open Networks.....30

VIII. Conclusion.....31

**SUMMARY**

The Western Telecommunications Alliance (“WTA”), whose members have been leaders in the provision of the current version of “broadband” facilities and services to Rural America, proposes a National Broadband Network capable of distributing existing, projected and yet-to-be-envisioned broadband services at ultimate speeds that will reach the Gigabits per second (“Gbps”) level. Since the network will be a National Broadband Network, its rural portions must be reasonably comparable – in facilities, services and rates – to its urban and suburban portions.

Capacity, scalability, reliability, security and environmental advantages require the National Broadband Network to be predominately a fiber optic network that can furnish the high transition speeds needed to accommodate burgeoning and unfolding future next generation broadband services. The task of completing a national fiber optic network (as well as a complementary national wireless network) will be substantial and expensive, but it can be accomplished -- for example, by following the Interstate Highway System model. In particular, the Commission should leverage available resources by making as much use as possible of existing, broadband-compatible wireline and wireless networks and facilities; and should not try to do everything at once, but rather should proceed steadily as “broadband” evolves. The scalability of fiber networks is critically important, for once a fiber optic line is deployed, its transmission capacity and speed can be readily increased at minimal incremental cost by upgrading the electronics at its end points.

The Commission should define “broadband capability” flexibly (for example, in terms of speeds above a minimum floor) as broadband technologies, service options and customer demands develop in order to encourage as much investment and deployment as possible without

freezing technology or penalizing certain individual carriers. Similarly, “access to broadband” should initially be defined as proximity to broadband facilities, and then shift to affordability considerations as deployment becomes more ubiquitous.

The Commission can best advance the National Broadband Network: (1) by monitoring and reporting the availability and demand for broadband services and the deployment of broadband networks; and (2) by providing proper financial and regulatory incentives for the deployment and operation of sufficient and reasonably comparable broadband networks in areas where such incentives are needed.

In urban and suburban areas, the Commission should monitor deployment of wireline and wireless broadband networks by competing carriers, provide financial or regulatory incentives in the few areas where market forces fail to produce sufficient broadband deployment, and modify existing low income programs to include broadband services and equipment.

In rural areas served by RLECs, the Commission should continue to provide the predictable and sufficient Universal Service Fund support that has been so successful in enabling the construction and operation of quality, affordable and reasonably comparable networks and services, and to transition such support from the existing Public Switched Telecommunications Network to the developing National Broadband Network.

In rural areas not served by RLECs, the Commission must resolve very difficult issues regarding investment incentives and the costs of broadband deployment assistance. One incremental approach would be to modify existing rules to encourage RLECs to acquire and upgrade rural exchanges whose current owners are not likely to deploy broadband during the foreseeable future.

Until the National Broadband Network is completed in all areas, the Commission should not provide USF support or other financial assistance to more than one wireline broadband network and one wireless broadband network in the same service area.

Finally, WTA notes that the interconnection, just and reasonable practices, and anti-discrimination provisions of Sections 201 and 202 of the Communications Act offer a proven and effective model for establishing the “open broadband network” needed by network operators, content providers and consumers. Such “open network” rules should also address and prohibit the discriminatory pricing of video content that impairs competition by RLECs and other providers of video services.



and services at affordable and reasonably comparable rates to all Americans whether they are located in urban, suburban, rural or insular areas. WTA believes that capacity, scalability, reliability and security considerations will require this future National Broadband Network to be predominately a fiber optic network that eventually will stretch all the way to the home, and that will be complemented and supplemented by terrestrial and satellite wireless facilities.

The United States is presently the unchallenged world leader with respect to the overall number of current “broadband” subscribers. As of June 2008, the United States led the Organization for Economic Cooperation and Development (“OECD”) countries with 75,009,521 broadband subscribers, which constituted 29.88 percent of the total 251,026,764 broadband subscribers at that time in all thirty OECD countries. Far back in second place was Japan, with 29,341,909 broadband subscribers.<sup>1</sup> However, the United States ranks only fifteenth among the thirty OECD countries in the percentage penetration of “broadband” subscribers per 100 inhabitants. As of June 2008, the United States had 25.0 broadband subscribers per 100 inhabitants, which exceeded the 30-country OECD average of 21.3 broadband subscribers per 100 inhabitants but lagged behind the following fourteen OECD countries: Denmark (36.7 broadband subscribers per 100 inhabitants), the Netherlands (35.5), Norway (33.4), Switzerland (32.7), Iceland (32.3), Sweden (32.3), Korea (31.2), Finland (30.7), Luxembourg (28.3), Canada (27.9), United Kingdom (27.6), Belgium (26.4), France (26.4) and Germany (26.2).<sup>2</sup>

International comparisons are likely to be distorted by a variety of factors, including differing definitions of “broadband” as well as variances in reporting

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<sup>1</sup> SOURCE: *OECD Broadband Statistics (June 2008)*, located at: <http://www.oecd.org/sti/ict/broadband>.

<sup>2</sup> Id.

requirements, data quality, cultural preferences, geography, topography, demographics and economics. One thing that is very clear is that the United States will have a much more complex, difficult and expensive task of achieving a ubiquitous National Broadband Network than the predominately small European countries with greater 2008 “broadband” penetration because the United States has a much larger land area, a much less homogeneous and concentrated population, and a much more varied and difficult topography.

The task of completing a comprehensive national network encompassing the urban, suburban and rural portions of the United States is a large and daunting one, but it can be accomplished. In fact, it was done several times during the Twentieth Century.

Beginning in Depression of the 1930s, government programs such as the loans and loan guarantees of the Rural Electrification Administration (“REA”) provided financing and investment incentives that supplemented and enhanced private efforts and enabled the completion of a predominately privately-owned nationwide electric power generation, transmission and distribution network that has brought adequate electrical power to virtually all American households and businesses. Similarly, during the latter half of the century, REA (now the Rural Utilities Service or “RUS”) loans and loan guarantees, Universal Service Fund (“USF”) support and private investment permitted the completion of the copper-based Public Switched Telephone Network that brought local and long distance telephone services to over 95 percent of U.S. households and virtually all U.S. businesses.

Yet a third example is the development and construction of the Interstate Highway System, an undertaking that was comparable in difficulty and expense to the



deployment of the predominately buried fiber optic facilities necessary to complete the National Broadband Network. Back in the 1950s, the nation was connected and traversed by a network of predominately two-lane U.S. highways, state routes and local roads. When President Eisenhower first proposed a national defense highway system like the German Autobahn, it looked like an impossibly expensive and laborious undertaking in a country of the vast spaces and varied topography of the United States. However, rather than trying to construct an entirely new system and to build and pay for everything at once, the project was approached gradually with emphasis upon priority routes and the use of as much existing highway infrastructure as practicable. Moreover, it was financed primarily by revenues from highway users (via the Federal Highway Trust Fund, a mechanism similar to the Universal Service Fund, which is supported by earmarked excise taxes on the purchase of gasoline). By the mid-1960s, many existing roads had been upgraded, expanded or replaced to form the major four-lane divided highways constituting the key north-south and east-west Interstate Highway routes. Since that time, the Interstate Highway System has grown gradually but steadily into today's extensive network of multi-lane divided highways and beltways, and continues to be maintained, upgraded and modified as transportation needs and consumer preferences evolve.

WTA believes that the Interstate Highway System provides a useful model for developing the National Broadband Network. Two key elements are: (1) that it should leverage available resources by making as much use as possible of existing, broadband-compatible wireline and wireless networks and facilities; and (2) that it should not try to do everything at once, but rather should proceed gradually and steadily so as to allow

“broadband” facilities and speeds to evolve as customer demands, service options and technologies change.

The additional cost of completing the deployment of a ubiquitous National Broadband Network is going to be very substantial. WTA does not feel confident to hazard a guess as to the ultimate amount, but concurs with the belief of many that the \$7.2 billion of grant and loan money for broadband construction in the American Reinvestment and Recovery Act (“ARRA”) is not much more than a “down payment” with respect to the amount needed. Hence, it is important to use resources efficiently and effectively by taking as much advantage as possible of existing telecommunications infrastructure. As the Commission is well aware, there are: (a) substantial amounts of lit and unlit fiber optic cable in inter-city and other inter-exchange trunk and backhaul facilities; (b) substantial amounts of fiber, fiber-coax and fiber-copper loop facilities in urban and suburban areas; (c) significant and growing amounts of fiber and fiber-copper loop facilities in rural telephone company service areas; and (d) substantial wireless coverage in populated areas and highway corridors where mobility needs are significant. Like the U.S. highways and state routes of the 1950s, this existing infrastructure can serve as the starting point for the National Broadband Network. Moving forward, the primary way to achieve the increased broadband access, capacity and speeds necessary to approach the desired National Broadband Network is to upgrade and expand the existing foundation by deploying fiber optic facilities further and further out into the network. Likewise, wireless towers can be added and upgraded to increase wireless “broadband” speeds in high-mobility areas and corridors where more wireless broadband service is demanded by consumers.

A high-capacity national fiber-to-the-home network cannot be built all at once. Rights of way and easements need to be obtained; fiber optic equipment needs to be purchased and delivered; trenching contractors and equipment need to be hired and scheduled (in parts of the West, outdoor construction is not possible during substantial portions of the year); and the fiber facilities have to be installed, tested and placed into operation. Even if financing were not an issue, equipment and personnel bottlenecks would preclude a fiber (or a wireless) broadband network from being completed throughout the United States within a short time. However, substantial and steady progress can be made from year-to-year. In fact, like the Interstate Highway System, a National Broadband Network may never be “completed” but rather is likely to require continuing upgrades, expansions, additions and maintenance.

The Commission can best utilize its resources to facilitate the deployment and evolution of the desired National Broadband Network: (1) by monitoring and reporting the availability and demand for broadband services and the deployment of broadband networks on national, regional and local bases that are sufficient to meet these service needs; and (2) by providing appropriate and effective incentives for the construction, upgrade and operation of sufficient broadband networks in areas where market, geographic, topographic and demographic conditions adversely impact the availability, quality and/or affordability of broadband networks and services.

The overall growth and development of the broadband network and services will depend upon complex interactions among a variety of players, including government agencies, telecommunications carriers, service providers, content providers, equipment manufacturers, investors, lenders and consumers. However, during the next decade or so,

the decisive factor regarding broadband deployment will be the speed at which fiber optic facilities are extended further and further out into the network to provide wireline broadband services and to furnish backhaul for wireless broadband services. Given that the pace of such fiber construction and expansion is significantly dependent upon the availability of sufficient financial resources, the Commission can influence this pace by providing sufficient and predictable high-cost support, by assisting in the appropriate targeting of broadband grants and loans by other agencies, and by encouraging private investors and lenders to fund broadband deployment projects.

## I

### **The Western Telecommunications Alliance**

The Western Telecommunications Alliance is a trade association that represents more than 250 rural incumbent local exchange carriers (“RLECs”) operating within the twenty-four states located west of the Mississippi River, including Alaska and Hawaii.

WTA members are generally small companies serving sparsely populated rural areas. Most members serve fewer than 3,000 access lines in the aggregate, and fewer than 500 access lines per exchange.

WTA members serve remote and rugged areas where the per-customer costs of constructing, operating and maintaining both wireline and wireless networks are much higher than in urban and suburban America. Their primary service areas are comprised of sparsely populated farming and ranching regions, isolated mountain and desert communities, and Native American reservations. In many of these areas, the WTA member not only is the Carrier of Last Resort, but also is often the sole telecommunications provider that has shown a sustained commitment to invest in and

serve the area. WTA members have made significant progress installing fiber optic and digital subscriber loop (“DSL”) facilities and making advanced services available to their rural customers, but still have a long way to go to achieve the goal of ubiquitous broadband availability (particularly as bandwidth demands and capacity needs continue to increase).

The networks of WTA members are highly diverse. They did not develop along a common Bell System model, but rather employ a variety of network designs, equipment types and organizational structures. They must construct, operate and maintain their networks under conditions of climate and terrain ranging from the deserts of Arizona to the rain forests of Hawaii to the frozen tundra of Alaska, and from the valleys of Oregon to the plains of Kansas to the mountains of Wyoming.

WTA members are predominately locally managed and locally oriented. They are generally one of the largest employers (and, in many cases, are the largest employer) in their rural communities and counties, and provide good jobs and local spending that are essential to the existence and prosperity of their service areas. WTA members have excellent and proven records of working with local governments, businesses and customers to provide needed telecommunications and information services and to facilitate local economic development.

Most WTA members generate customer revenues much smaller than the national telephone industry average. Because of this and because they serve high-cost rural areas, typical WTA members presently rely upon federal high-cost support dollars for approximately 25-to-50 percent of their cost recovery and to keep their monthly service rates at affordable levels.

## II

**Broadband Record and Experience of Rural ILECs**

WTA members and other RLECs have been leaders in the deployment of broadband facilities and services in Rural America. As this Commission, the relevant Joint Boards and state commissions are well aware, RLECs to date have generally done much more to construct existing “broadband” facilities and to bring existing “broadband” services to their rural customers than most of the larger wireline and wireless carriers. However, much more needs to be done to enable RLECs to keep up with burgeoning demand for broadband service and higher transmission speeds, and to provide their rural customers with affordable access to broadband facilities and services reasonably comparable in type, quality, speed and price to those available in urban areas.

During the 1990s when local exchange carriers began to deploy “broadband” facilities, it was thought that asymmetrical digital subscriber line (“ADSL”) technology would constitute a feasible and affordable transition from the traditional copper wire network to a higher bandwidth network that would also furnish advanced information and video services. Initially, it was estimated that ADSL would be effective only for the relatively small portion of rural customers located within about 18,000 feet from central office facilities. Since that time, RLECs have experimented with ADSL and other DSL technologies and have modified and upgraded their networks in order to offer “broadband” services to customers located further and further from their central offices. Primarily by deploying longer and longer fiber optic trunks in their loop plant, RLECs today are offering ADSL and higher-speed DSL services such as symmetrical digital subscriber line (“SDSL”), high data rate digital subscriber line (“HDSL”) and/or very

high speed digital subscriber line (“VDSL”) to more and more of their rural customers. Finally, a small but increasing portion of RLECs has been deploying fiber-to-the-curb (“FTTC”) and fiber-to-the-home (“FTTH”) services in some rural service areas.

The typical WTA member today is able to offer DSL service to 70 percent or more of its customers. The speeds of these DSL services range from 200-to-500 kilobits per second (“kbps”) to more than 10 megabits per second (“Mbps”). Many WTA members are deploying increasing and significant amounts of fiber in their loop plant. Some are beginning to offer FTTH service in their more densely populated core areas and/or to replace degrading copper loops with fiber optic facilities.

For example, one 850+-access line WTA member began offering DSL service within approximately 25 percent of its agricultural, grazing and timber-harvesting service area in 1996. Since 2000, it has used RUS loans to deploy substantial amounts of fiber optic cable in its loop plant, and by the end of the 2009 construction season will have converted 50 percent of its backbone loop distribution plant to fiber. By connecting DSL and other remote devices to its fiber optic plant, the WTA member is now able to offer hybrid fiber-copper broadband service to virtually all of its customers (about half of whom take such service). The member is providing a high-speed fiber connection to a community health service, and is beginning the conversion of its rural customers to FTTH service.

A second WTA member, which serves over 6,000 customers in a 4,500+-mile ranching area, has since 1995 used RUS loans and USF support to replace and upgrade its previous exchanges to an integrated broadband network comprised of a single softswitch, fiber optic rings and trunk lines, and remote digital loop concentrators. Its upgraded

network brought approximately 98 percent of the WTA member's customers within 12,000 feet of a fiber optic facility, and enabled them to receive broadband service via a hybrid fiber-DSL connection. The WTA member recently has been deploying FTTH in new subdivisions and replacing copper with FTTH in portions of its service area as the copper wears out. In one such town, the new FTTH plant attracted a high-bandwidth business that has brought over 170 new full-time and part-time jobs to the community.

Whereas the record of "broadband" deployment by RLECs is impressive to date, much more work needs to be done to keep abreast of the growing and evolving "broadband" service demands in Rural America. Section 254(b)(3) of the Communications Act requires residents of rural and other high-cost areas to have access to telecommunications and information services (including advanced services) that are reasonably comparable to those available in urban areas at rates that are reasonably comparable to urban rates. Reasonably comparable broadband facilities, services and rates will require substantial additional RLEC network upgrades, and particularly the deployment of fiber optic facilities closer and closer to the home (in the 10, 20, 30, 40 and even 50-mile loops commonly found in the rural areas of the West).

This is an expensive proposition. A 2006 NECA study<sup>3</sup> estimated that an additional investment of \$11.902 billion would be necessary to upgrade 5.883 million lines<sup>4</sup> of its RLEC members to an 8 Mbps bandwidth that could accommodate voice service, two standard digital video streams and one 1.54 Mbps Internet connection. Major additional investments for more extensive fiber optic loop plant and associated

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<sup>3</sup> National Exchange Carrier Association, *The Packet Train Needs to Stop at Every Door* (June 2006) at pp. 30-2.

<sup>4</sup> The NECA study excluded from its cost estimate the approximately 660,000 lines of NECA's members that were already committed to be upgraded to 8 Mbps capability.  
Comments of the Western Telecommunications Alliance, GN Docket No. 09-51, June 8, 2009



electronics, as well as for network and switching/routing equipment, will be necessary for RLECs to increase bandwidth above 8 Mbps as their customers demand higher bandwidths (toward Gbps speeds) and more and more advanced services.

However, the good news is that once a fiber optic network is completed, it will provide a reliable, high-capacity and long-lasting telecommunications pipe that is scalable and can be upgraded to higher and higher bandwidths at minimal incremental cost. In particular, buried fiber optic lines are relatively safe and secure from both natural and man-made disasters and disruptions, and have normal useful lives that are expected to exceed 25-to-30 years. And once a fiber optic line is deployed, its transmission capacity and speed can be readily increased at reasonable incremental cost in response to changing consumer demands by upgrading the electronics at its end points.

### III

#### **Definition of "Broadband Capability"**

WTA believes that the future National Broadband Network should ultimately be a predominately fiber optic network capable of distributing existing, projected and yet-to-be-envisioned advanced telecommunications and information services to households and businesses at speeds in the Gigabits per second range. However, at the present time, "broadband" is still in the early stages of its development as a technology and as a class of services, and the manner and pace at which "broadband" networks, bandwidth needs and desired services will evolve is not yet certain. Therefore, WTA recommends that the definitions and requirements for "broadband" adopted by the Commission in this proceeding should initially take the form of flexible guidelines (rather than specific or

rigid prescriptions), and that they should be modified over time in response to customer demand, service options, technological advances and economic constraints.

Of the three similar and somewhat interchangeable terms currently employed by the Commission, WTA finds “broadband” to be the most accurate and useful. “High-speed Internet” is an acceptable term now, but is likely to become too limited in a world where a host of emerging new broadband-enabled services (such as cloud computing, ultra high definition video, advanced videoconferencing and telepresence, real-time collaboration, smart appliances, home security, virtual sports, online gaming, virtual laboratories, telesurgery, and remote diagnosis and medical imaging, as well as many future services that are not yet even envisioned) are likely to transform and supersede what we now refer to as Internet access and services. “Advanced telecommunications capability” is a more comprehensive term than “high-speed Internet,” but is limited by: (a) a statutory definition that may not keep pace with future changes and conditions; (b) an emphasis upon telecommunications in a world where telecommunications and information services are becoming more and more convergent; and (c) a prescription for technological neutrality in a world where capacity, scalability, reliability and security will require preponderant reliance upon fiber optic facilities.

“Broadband” is an accurate and well-accepted term that will give the Commission maximum discretion and maneuverability to respond and adjust to service and bandwidth needs that may change substantially in the future and that may change at different paces in different portions of the country. “Broadband” can be readily and meaningfully be described in terms of transmission speeds, but should be defined flexibly and dynamically in terms of speed tiers that have been changing, and may continue to change,

rapidly in response to consumer service and bandwidth demands. As recently as 2007, the Commission used transmission speeds of 200 kilobits per second (“kbps”) to define “advanced” (i.e., broadband) services.<sup>5</sup> Today, 200 kbps is considered to be a snail’s pace by most end users, and the Commission definition appears to be moving through the First Generation Data Tier (200 kbps to 768 kbps) into the Basic Broadband Tier 1 (768 kbps to 1.5 Mbps).<sup>6</sup> However, many consumers are already demanding speeds greater than 1.5 Mbps, and both the market and regulatory definitions of “broadband” are likely to move through more and more of the following speed tiers previously utilized by the Commission’s staff: (a) Broadband Tier 2 (1.5 Mbps to 3 Mbps); (b) Broadband Tier 3 (3 Mbps to 6 Mbps); (c) Broadband Tier 4 (6 Mbps to 10 Mbps); (d) Broadband Tier 5 (10 Mbps to 25 Mbps); (e) Broadband Tier 6 (25 Mbps to 100 Mbps); and (f) Broadband Tier 7 (greater than 100 Mbps). Households in some gated or planned communities are already receiving “broadband” services at transmission speeds approaching 100 Mbps. And before the contemplated National Broadband Network is completed, consumers will be demanding or requiring transmission speeds above a Gigabit per second.

One possible approach to a regulatory definition of “broadband” would be to define it in terms of the range of transmission speeds above a minimally acceptable floor speed at the present time – for example, the current definition could be “768 kbps and above.” This approach has the advantage of allowing carriers and service providers to remain in compliance with “broadband” requirements and eligibility criteria in areas where customers remain satisfied with lower transmission speeds and/or where higher

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<sup>5</sup> Notice of Inquiry (*Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans*), GN Docket No. 07-45, FCC 07-21, released April 16, 2007, at par. 12.

<sup>6</sup> Wireline Competition Bureau Presentation of the Section 706 Report and Broadband Data Gathering Order (March 19, 2008 Open Meeting).  
Comments of the Western Telecommunications Alliance, GN Docket No. 09-51, June 8, 2009

transmission speeds are not yet technically or economically feasible, while not limiting or slowing the deployment of increased transmission speeds in other areas.

The Commission should also define “broadband” differently for wireline “broadband” services and for wireless “broadband” services. Notwithstanding stories about “cutting the cord,” the substantial majority of American businesses and households currently subscribe to both wireline and wireless services. Wireline and wireless “broadband” services presently utilize different equipment and technologies, and are used by customers for different purposes and at different times and places. For example, a businessman may use wireline broadband service at work and at home, and wireless broadband service while traveling and commuting and while attending the activities of his children on the weekend. These differences, as well as the trade-offs that customers are willing to make regarding things such as speed, capacity, file size, screen size and mobility, mean that wireline and wireless facilities and services will play separate but complementary roles in the future National Broadband Network, and that wireline “broadband” and wireless “broadband” should be defined differently in recognition of their differing roles and characteristics.

#### IV

##### **Definition of “Access to Broadband”**

WTA proposes that “access to broadband” should be defined to mean that a customer can obtain “broadband” service at his or her residence and/or business, both at a minimally acceptable transmission speed and at an affordable monthly rate.

At this time, the key factor is proximity to network facilities from which “broadband” service can be obtained if a customer desires such service. The actual

numbers of customers in various areas of the United States that have the present option of taking a wireline or wireless “broadband” service will be determined as the Commission completes its monitoring and mapping surveys, and will change as the definitions of “broadband” evolve. WTA presumes that such proximity to “broadband” services: (a) is greater in business districts than residential areas; (b) is greater in wealthier urban and suburban neighborhoods than in lower-income urban and suburban neighborhoods; (c) is greater in urban and suburban areas than in rural areas; (d) is greater in and around the towns and villages served by RLECs than in the outlying portions of their service areas<sup>7</sup>; (e) is greater in RLEC service areas than in rural areas not served by RLECs; and (f) with respect to wireless voice and data services, is greater in urbanized areas and along major highway corridors than in rural areas outside such highway corridors.

The immediate and primary goal of the National Broadband Plan should be to give more and more households and businesses proximity (and, therefore, access) to “broadband” services by extending fiber further and further into networks. The Commission and other federal agencies need to use financial and regulatory incentives (such as sufficient Universal Service Fund support, grants, loans and loan guarantees) to encourage and enable RLECs and other service providers to continue extending their fiber trunks, fiber and fiber-DSL loops and fiber backhaul facilities for wireless, so that wireline and wireless “broadband” services can be made available to more and more customers.

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<sup>7</sup> In the vast and rugged areas of the Rural West where customer “loops” may extend 30, 40 and 50 miles from the central office, it is frequently more expensive to extend fiber and/or DSL facilities to the most distant 10 percent of an RLEC’s customers than to the first 90 percent.  
Comments of the Western Telecommunications Alliance, GN Docket No. 09-51, June 8, 2009

WTA does not believe that the Commission and other federal agencies should support more than one wireline “broadband” network and more than one wireless “broadband” network in any particular service area until the goal of a ubiquitous National Broadband Network is achieved. It is neither equitable nor economically feasible for the federal government to support two or more wireline and/or two or more wireless “broadband” networks in certain service areas when other service areas are still lacking their first such network. Once ubiquitous wireline and wireless “broadband” networks have been deployed nationwide, the Commission and other federal agencies can determine whether they want to expend the additional dollars to encourage and support the deployment of multiple, competitive wireline and/or wireless “broadband” networks in certain areas.

As progress is made with respect to the proximity issue, the affordability of broadband services will become an increasingly important concern. WTA understands “affordability” as comprising the following two interrelated issues: (a) whether the rates for “broadband” services in a particular high-cost area are reasonably comparable to the rates for substantially similar “broadband” services in urban areas; and (b) whether particular urban and rural households can pay the applicable monthly service rates for “broadband” service.

Particularly in rugged and sparsely populated rural areas, it is relatively expensive on a per-customer basis to extend fiber and other lines as well as to construct wireless towers. To the degree that such deployment is not covered by grants, USF support will continue to be needed to enable rural “broadband” service providers to recover their above-average costs so that they can provide their rural customers with “broadband”

services reasonably comparable to those available in urban areas at rates that are affordable and reasonably comparable to those charged in urban areas. In other words, USF support will continue to be needed in many rural areas to keep general “broadband” service rates at affordable levels that are reasonably comparable with “broadband” rates in urban areas.

In addition, Lifeline and Link-Up support programs will need to be modified to assist low-income customers in both urban and rural areas to purchase “broadband” services. For “broadband” services, this assistance may entail funding to help purchase computers and other customer equipment needed to receive “broadband” services as well as discounts on installation and monthly service charges.

WTA members note that broadband “take rates” may not reach 100 percent during the next decade or so because some rural customers do not use computers, and have no interest in subscribing to existing broadband services even if they can be readily connected and even if such services are priced at affordable rates. This class of customers appears to be comprised predominately of elderly people who were not exposed to computers and information services during their working days and who see little need for them now. WTA believes that the Schools and Libraries Program has done an excellent job of improving the computer and information service literacy of children and many adults and of creating demand on their part for broadband networks and services, but that additional broadband education programs are not likely to have a significant impact upon the “take rates” of the remaining holdouts.

## V

**Predominant Role of Wireline Facilities**

Regardless of how the Commission defines “broadband capability” and “access to broadband,” the ultimate National Broadband Network needs to be a predominately fiber optic network. In the words of Professor Susan Crawford, a member of President Obama’s National Economic Council, “[s]imply put, a digital economy requires fiber.”<sup>8</sup> She has praised, in particular, the plans announced by the Australian government in April of this year to construct a National Broadband Network that will extend 100 Mbps fiber optic facilities to 90 percent of that nation’s homes and schools.<sup>9</sup> The Australian project is expected to take eight years and to cost \$31 billion.<sup>10</sup> Professor Crawford also noted that Singapore is building a national fiber optic network; that Great Britain and the Netherlands are also considering the option; and that such national fiber networks “can deliver massive social and economic benefits.”<sup>11</sup>

In comparing potential broadband alternatives, fiber optic networks have the preeminent advantages of virtually unlimited capacity and scalability in the short term and particularly in the longer term. Fiber has the potential of handling not only the tens or hundreds of Megabits per second (“Mbps”) of transmission capacity and speed that will be demanded by increasing numbers of customers within the next few years, but also the tens or hundreds of Gigabits per second (“Gbps”) of such transmission capacity and

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<sup>8</sup> David Hatch, “Obama adviser looks at U.S.-built broadband network,” *Congress Daily* (May 26, 2009).

<sup>9</sup> The remaining 10 percent of Australian homes would get 12 Mbps wireless broadband connections. This would not be “reasonably comparable” service under Section 254(b)(3) of the Communications Act.

<sup>10</sup> Ryan Singel, “Aussies Announce \$31B National Broadband Network” (<http://wired.com/epicenter/2009/04/aussies-announc/>) (April 7, 2009). The remaining 10 percent of Australian homes and schools will be served by 12 Mbps wireless connections.

<sup>11</sup> Hatch, *op. cit.*



speed that are likely to be demanded before the National Broadband Network is completed.

“Gigabits per second” speeds may sound like science fiction now, but are likely to become feasible and in significant demand within a decade or so. For example, ultra high definition video applications, which will have up to sixteen times the resolution of high definition television and require capacities of as much as 120 Mbps per channel, are already on the planning board as the nation completes its June 2009 conversion to digital television. These and similar next-generation broadband services (e.g., cloud computing, telepresence, smart homes, telesurgery and virtual laboratories) will require huge amounts of bandwidth that are likely to be feasible only on high-capacity fiber optic networks.

Whereas fiber optic networks can be costly to deploy initially, they are much more economical to operate, adjust and upgrade in the long run because of their ready scalability. Once the fiber network is extended to the home or office, its capacity can be increased readily and rapidly from tens of Mbps to hundreds of Mbps to tens and hundreds of Gbps as service needs change, and such modifications can be accomplished at minimal incremental cost merely by switching out the electronics at each end.

WTA notes that, in the United States, many urban carriers and RLECs already have made substantial starts in deploying fiber optic facilities in their networks (including in their customer loop plant) as well as between their networks. In other words, much of the investment and construction necessary to deploy a national fiber optic broadband network in this country has already been started.

Fiber networks (and particularly buried fiber facilities) have a proven record of reliability, durability and safety. Aside from an occasional line cut, both inter-city fiber trunks and fiber loop plant have proven records of service with minimal outages and maintenance. There are substantial numbers of fiber routes in existence today that have been operating reliably for 10-to-20 years, and that are expected to continue operating for useful lives that should reach or exceed 25-to-30 years. In an increasingly dangerous world, buried fiber optic facilities are less vulnerable to sabotage, terrorist attack and severe weather. They are also environmentally friendly, and have virtually no perceptible adverse impacts upon scenic beauty or wildlife.

Finally, fiber optic networks provide backhaul services that enable wireless networks to be much more efficient and effective. Wireless “broadband” networks can and should play a significant complementary and supplementary role in the National Broadband Network, particularly by providing mobility options in business districts, shopping malls, restaurants, coffee shops, parks, campuses, highway rest areas and other places where people congregate and need connections for their portable broadband devices. Good wireline backhaul facilities will enable wireless “broadband” service providers to focus their coverage and capacity upon hot spots and other heavily trafficked areas where mobility needs and usage are the greatest.

## VI

### **Effective and Efficient Mechanisms For Ensuring Access to Broadband**

Completion of the fiber optic and wireless portions of the National Broadband Network will be expensive. WTA members and other RLECs plan to apply for both the presently appropriated Broadband Technology Opportunities Program (“BTOP”) grants

Comments of the Western Telecommunications Alliance, GN Docket No. 09-51, June 8, 2009

being administered by the National Telecommunications Information Administration (“NTIA”), and any similar future federal grants that may be offered (as well as RUS broadband grants, loans and loan guarantees). Such grants will enable WTA members and other RLECs to extend their fiber optic networks further and more rapidly into their service areas and to reduce their fiber deployment costs. However, even if RLECs receive a significant portion of the \$4.7 billion of NTIA grants<sup>12</sup> included in ARRA (and/or the \$2.5 billion of new RUS broadband funding in ARRA), such funding is not much more than a down payment on the total amount needed to complete the National Broadband Network in RLEC service areas.

Whereas federal grants are welcome and useful, the primary means for completing and upgrading the National Broadband Network is likely to continue to be private investment by wireline and wireless common carriers. When the Telecommunications Act of 1996 was being drafted, debated, amended and enacted, both the Clinton Administration and the Congress wanted “to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans.”<sup>13</sup> At that time, like today, the costs of deploying the desired advanced network and services were large, and the fiscal condition and priorities of the federal government precluded substantial grant or other direct tax revenue financing. The 1996 Act attempted to solve the problem by employing competition to stimulate network investment and deployment in most markets, and by using Universal Service Fund (“USF”) support to encourage network investment and deployment in sparsely populated

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<sup>12</sup> Actually, approximately \$810 million of the NTIA grants are reserved for broadband service adoption programs (\$250 million), public computing center upgrades (\$200 million), audits (\$10 million) and broadband inventory mapping (\$350 million).

<sup>13</sup> *Conference Report on S. 652, Telecommunications Act of 1996*, 142 Cong Rec. H1078 (January 31, 1996).

and higher-cost areas where competition and other market forces were not likely to be as effective.

WTA believes that the successes and failures of advanced services deployment during the past thirteen years, as well as the most effective and efficient mechanisms for completing the future National Broadband Network, can best be evaluated separately with respect to the following three demographic and service categories: (1) urban and suburban areas; (2) rural areas served by RLECs; and (3) rural areas not served by RLECs. The first two categories have been well served by mechanisms with proven records of success that can be readily adapted and used to complete the National Broadband Network, while the third category continues to have significant unresolved problems and issues.

#### **A. Urban and Suburban Areas**

Incumbent local exchange carriers (“ILECs”), competitive local exchange carriers (“CLECs”), cable television operators and wireless carriers have been deploying and upgrading “broadband” facilities and services in most urban and suburban areas in a manner consistent with consumer demand and usage. Competition among multiple wireline carriers and multiple wireless carriers should continue to ensure that fiber and wireless broadband facilities are extended, that broadband speeds and bandwidths are increased, and that broadband services continue to be rolled out in response to customer requests and preferences.

The Commission’s Form 477 data collection and analyses, as well as potential federal and state broadband mapping projects, can determine if particular urban or suburban areas (or portions thereof) are falling behind their counterparts with respect to

the deployment of broadband networks and/or services. The Commission and the affected state and local governments can determine in such instances whether additional incentives or regulatory requirements are needed, or whether the problem is temporary and self-correcting (for example, by one or more of the local competitors moving to respond to unmet needs).

The Commission already has in place Lifeline and Link-Up programs to assist individual households and families that cannot afford services that are physically available in their urban and suburban neighborhoods (and also in rural areas), and can modify or expand these programs if necessary to encompass discounts and support for broadband services.

#### **B. Rural Areas Served by RLECs**

USF programs for rural carriers [High-Cost Loop Support (“HCL”), Local Switching Support (“LSS”) and Interstate Common Line Support (“ICLS”)] have been a major success story. These programs have provided critical assurances of cost recovery and loan repayment that have enabled WTA members and other RLECs to obtain the equity and loan financing necessary to construct, operate, maintain and upgrade their circuit switched telecommunications networks. USF support has permitted RLECs to install and operate digital switches and soft switches, to implement Signaling System 7, to deploy and extend fiber optic and DSL facilities deeper and deeper into their networks, to bury lines to limit weather damage and outages, to provide local or centralized equal access, to offer custom calling options, to comply with Emergency 911 (“E911”) and Communications Assistance for Law Enforcement (“CALEA”) responsibilities, and to provide access to the Internet and information services. Without predictable and

sufficient USF support, small rural carriers with limited financial resources and limited access to capital markets would not have been able to invest in the infrastructure necessary to furnish rural customers and service areas with quality and affordable telecommunications and information services that are reasonably comparable with those available in urban areas.

Completion by RLECs of the transition from the Public Switched Telecommunications Network to the National Broadband Network will require continued predictable and sufficient support from USF mechanisms. Because fiber optic and DSL facilities provide supported telecommunications services as well as emerging broadband services, many RLECs have been able to make progress extending fiber and DSL into their loop distribution plants under the existing USF mechanisms. However, as the focus shifts to completion of the predominately fiber optic National Broadband Network, the USF mechanisms for RLECs and rural wireless carriers will need to be modified accordingly.

First, the Commission should revise its current definition of supported services to include “broadband” services. As indicated above, “broadband” technology, speeds, bandwidth and services have been changing rapidly, and will continue to evolve during the foreseeable future. Hence, the definition of “broadband” needs to remain very flexible at this time in order to encourage broadband investment and deployment without either stifling innovation or placing unreasonable financial burdens upon small carriers. For example, WTA has suggested that “broadband” be defined flexibly in terms of reasonable ranges comprised of a practicably attainable floor and an open-ended ceiling (such as “768 kbps and above”).

In addition, the Commission should provide for a reasonable transition from the existing USF mechanisms designed to recover the costs of circuit switched networks to USF mechanisms designed to recover the costs of broadband networks. This transition needs to be long enough to permit RLECs not only to obtain the financing necessary for broadband upgrades but also to obtain permits and easements, hire installation contractors or machinery, acquire and take delivery of fiber and other associated broadband equipment, and bury or otherwise deploy the upgraded trunk, loop and other facilities. WTA suggests that a general ten-year transition period would be reasonable for most RLECs.

A transition plan should include progress guidelines of benchmarks that would require a USF recipient to have extended “broadband” facilities and services to at least a specific percentage of its customers at the end of each year. It should also include exceptions or waiver procedures that would excuse a USF recipient from extending wireline or terrestrial wireless “broadband” facilities and services to certain areas or customers under certain conditions. Such conditions would include: (a) where the cost of deploying and maintaining the facilities to serve the area or customer is unreasonably high (e.g., the per-customer cost exceeds a multiple of the national average broadband cost); (b) where the necessary financing, permits, easements and/or equipment cannot be obtained in timely fashion even though the USF recipient has exerted timely, diligent and good faith efforts to obtain them (WTA is concerned that a substantial National Broadband Network deployment program is going to encounter financing, equipment and/or personnel bottlenecks that will significantly delay or preclude deployment by some carriers); and (c) where a significant portion of the potential customers in an area

have declared in a petition or other appropriate document that they simply do not want to receive or pay for upgraded “broadband” service.

WTA envisions that the ultimate broadband USF mechanisms for RLECs would be similar to the existing USF mechanisms. There should be a broadband high-cost loop mechanism that would help recover the costs of fiber and fiber-DSL loops that exceed the national average broadband loop cost, and that would replace the existing HCL and ICLS mechanisms during the transition. There should also be a broadband switching mechanism that would help recover above-average costs of softswitches and routers, and that would replace the existing LSS mechanism during the transition.

WTA expects that the broadband high-cost loop mechanism will initially be significantly larger than the existing HCL and ICLS mechanisms. It is going to be expensive to deploy broadband networks and services in rural areas that are reasonably comparable to those available in urban areas, and is going to require increased USF support to recover enough of such costs to keep rural broadband service rates at affordable levels that are reasonably comparable to the rates for such services in urban areas. In the longer term as fiber loops are depreciated and broadband upgrade loans repaid, the levels of sufficient broadband high-cost loop support may decline. However, it is likely that RLEC broadband networks may continue to have above-average operating, maintenance and upgrade costs.

In addition to support for broadband loop and switching costs, the broadband USF mechanisms for RLECs will also need to address the availability and adequacy of the “middle mile” transport facilities needed by RLECs to reach the National Broadband Network backbones, as well as the costs of such “middle mile” transport. In portions of



some states, RLECs have joined together to construct fiber rings and other inter-carrier facilities that should alleviate some of the “middle mile” problem. However, in many other areas, RLECs or larger carriers are going to need to upgrade existing “middle mile” transport facilities to achieve the requisite broadband transmission speeds. And, given that rural “middle mile” transport rates may be high in the future broadband world, the Commission may need to modify its USF support programs to include above-average “middle mile” transport costs in order to enable broadband services to remain affordable in the affected rural areas.

As indicated above, WTA does not believe that the Commission and other federal agencies should support more than one wireline “broadband” network and more than one wireless “broadband” network in any particular service area until the goal of a ubiquitous National Broadband Network is achieved. It is neither equitable nor economically feasible for the federal government to support two or more wireline and/or two or more wireless “broadband” networks in certain service areas when other service areas are still lacking their first such network. Once ubiquitous wireline and wireless “broadband” networks have been deployed nationwide, the Commission and other federal agencies can determine whether they want to expend the additional dollars to encourage and support the deployment of multiple, competitive wireline and/or wireless “broadband” networks in certain areas.

Finally, WTA notes that a predominately fiber optic National Broadband Network will bring the nation as a whole as well as its rural communities and residents substantial benefits, including economic and community development, civic participation, jobs and job training, distance learning, telemedicine, public safety and energy efficiency. These

economic, social and political benefits will transcend any short term or long term increases in USF necessary to permit the deployment of the network.

### **C. Rural Areas Not Served by RLECs**

This last category contains some rural areas where ILECs, CLECs, cable operators and wireless carriers have not made significant progress in the deployment of broadband facilities and services. Many of these rural areas are served by larger companies that have much more pressing obligations and alternatives for use of their not-unlimited resources. Also, many of these rural areas are part of large study areas that do not qualify for direct or portable USF support.

The Commission has long been faced with the difficult and complex problem of developing financially feasible programs and incentives that will be effective in achieving upgrades of the networks and services in these rural areas. Limited USF support and state service quality obligations have been tried with some success. Pilot broadband construction grant programs, and the disaggregation and targeting of costs and USF at the wire center level in large study areas have also been proposed.

One feasible partial solution would be the modification of the Section 54.305 “parent trap” rule and related USF regulations to encourage and enable RLECs to purchase and upgrade the rural exchanges of larger ILECs. In the past, RLECs have compiled an excellent record of acquiring and upgrading unwanted and long-neglected rural exchanges of larger carriers.<sup>14</sup> However, during recent years, these transactions and

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<sup>14</sup> See e.g. Union Tel. Co. and US West Communications, Inc., 12 FCC Rcd 1840 (1997) (upgrade of acquired exchanges by RLEC to digital loop carrier, to install new cable, and to replace aerial wire); Pend Oreille Tel. Co. and GTE Northwest, Inc., 12 FCC Rcd 63 (1997) (RLEC upgrade to fiber, to offer single party service and to purchase CLASS-capable digital switch); and Accipiter Communications, Inc. and US West Communications, Inc., 11 FCC Rcd 14962 (1996) (RLEC upgrade to install fiber and digital switch, and to extend service to unserved areas).

rural exchange modernizations have been discouraged by the parent trap rule, by the difficulty of obtaining study area waivers and safety valve support, and by study area consolidation requirements that can reduce the USF support of the acquiring and upgrading RLEC below its pre-transaction levels. If the Commission were instead to encourage RLECs to acquire underserved exchanges of larger ILECs and upgrade them to provide broadband services, this would not fully resolve the “rural areas not served by RLECs” problem, but it certainly would reduce its scope and make tangible progress toward extending the National Broadband Network to rural customers.

## VII

### Open Networks

The National Broadband Network should be an “open network.” Nondiscrimination and network interconnection obligations are important and complex issues that need to be resolved as the Commission undertakes the major and expensive task of planning its completion.

WTA recognizes that some portions of the existing Internet community oppose virtually all regulation. However, it notes that Title II of the Communications Act contains substantive provisions that have been tried and tested in the telecommunications marketplace as well as in Commission and judicial proceedings, and found repeatedly to give carriers, content providers and customers full and reasonable access to the public network at just and reasonable rates. RLEC and other common carrier networks are already required to serve all customers and interconnect with all other carriers (Sections 201(a) and 251), to serve customers by means of just and reasonable rates and practices

(Section 201(b)), and not to discrimination against or prefer certain customers (Section 202(a)).

Put simply, Title II of Act is an established, effective and efficient set of rules and mechanisms for allowing service providers and content providers access to broadband networks on reasonable and non-discriminatory terms, and for allowing them to challenge practices that they believe are not open and equitable.

On the other hand, not only wireline and wireless network operators, but also information service and other content providers, should be subject to nondiscrimination requirements. The reverse side of the “Open Networks/Net Neutrality” coin is equal access to content at equivalent prices. For example, the practice of video content providers of tilting competitive playing fields by charging RLECs, small cable television operators and Internet Protocol video service providers substantially more for video programming than large multiple system operators should be prohibited.

## VIII

### Conclusion

To recapitulate, WTA submits the following proposals for a National Broadband Network:


- Capacity, scalability, reliability, security and environmental advantages require the National Broadband Network to be predominately a fiber optic network that can furnish the Gigabits per second transition speeds needed to accommodate projected and not-yet-envisioned next generation broadband services.
- Deployment of broadband networks is under way in many urban, suburban and rural areas; resources can be most efficiently and effectively utilized by employing the Interstate Highway System model and extending and upgrading existing fiber optic, DSL and wireless infrastructure as much as practicable.

- At the present time, the Commission should define “broadband capability” flexibly (for example, in terms of speeds above a minimum floor) as broadband technologies, service options and customer demands evolve in order to encourage as much investment and deployment as possible without freezing technology or penalizing carriers that make initially sub-optimal deployment decisions.
- “Access to broadband” should initially be defined as proximity to broadband facilities, and then shift to affordability considerations as deployment becomes more ubiquitous.
- The Commission’s most critical contributions to a National Broadband Network are: (1) monitoring and reporting the availability and demand for broadband services and the deployment of broadband networks; and (2) providing proper financial and regulatory incentives for the deployment and operation of sufficient and reasonably comparable broadband networks in areas where such incentives are needed.
- In urban and suburban areas, the Commission’s main role should be to monitor deployment of wireline and wireless broadband networks by existing carriers and new entrants, to provide financial or regulatory incentives in the few areas where private incentives fail to produce sufficient broadband network deployment, and to modify existing low income programs to encompass broadband services and equipment.
- In rural areas served by RLECs, the Commission’s key role should to continue to provide the predictable and sufficient USF support that has proven so successful in enabling the construction and operation of quality, affordable and reasonably comparable telecommunications facilities (including multiple use broadband facilities) and services, and to transition such support from the existing world of the Public Switched Telecommunications Network to the developing world of the National Broadband Network.
- In rural areas not served by RLECs, the Commission needs to resolve very difficult issues regarding investment incentives and the costs of broadband deployment assistance. One incremental approach would be for the Commission to modify its existing policies and rules to encourage RLECs to acquire and upgrade rural exchanges whose current owners do not have sufficient incentives or available uncommitted resources to deploy broadband during the foreseeable future.
- Until the National Broadband Network is completed in all areas, the Commission should provide USF support to no more than one wireline broadband network and one wireless broadband network in the same service area.

- Finally, WTA notes that the interconnection, just and reasonable practices, and anti-discrimination provisions of Sections 201 and 202 of the Communications Act offer a proven and effective model for establishing the “open broadband network” needed by network operators, content providers and consumers.

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Respectfully submitted,  
**WESTERN TELECOMMUNICATIONS  
ALLIANCE**

By   
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