Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
A NATIONAL BROADBAND PLAN FOR OUR FUTURE	)	**GN Docket 09-51**
	)	

REPLY COMMENTS OF THE

INDEPENDENT TELEPHONE & TELECOMMUNICATIONS ALLIANCE

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SUMMARY

The comments submitted in response to the Commission's Notice of Inquiry in the instant proceeding evidence widespread justification and support for National broadband deployment. The filed comments reveal that a primary goal of the National Broadband Plan should be to increase the number of Americans who have access to broadband. The bedrock of broadband policy should be the goal to ensure, throughout the Nation, the availability of broadband services that are capable of supporting core applications that consumers demand. Consistent with these principles, ITTA reiterates its support for a National Broadband Plan that will facilitate the establishment and continued evolution of networks that enable maximum capacity, reliability, security, and scalability. ITTA supports government intervention where normal economic forces are incapable of supporting deployment and subscription. At the same time, ITTA cautions against actions that would have the effect of discouraging private investment in broadband. Together, these guiding principles should result ultimately in greater broadband deployment and consequent consumer benefits across the Nation.

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I. THE NATIONAL BROADBAND PLAN SHOULD FACILITATE THE ESTABLISHMENT AND CONTINUED EVOLUTION OF NETWORKS THAT ENABLE MAXIMUM CAPACITY, RELIABILITY, SCALABILITY, AND SECURITY.

A. THE FILED COMMENTS SUPPORT UBIQUITOUS DEPLOYMENT

The comments submitted in response to the Commission's Notice of Inquiry in the instant proceeding evidence widespread justification and support for National broadband deployment. Whereas in previous proceedings parties may have debated the value of ubiquitous broadband deployment, that issue has now been settled resoundingly by a wide range of voices. Parties to the instant proceeding include not only industry and public sector entities, but also academics, health organizations, and others who articulate their support for the benefits of greater broadband deployment. To be sure, the Nation has enjoyed great progress already – citing the Commission's 2009 Broadband Access Report, Qwest notes that broadband is available from a wide variety of providers, including wireline, cable, mobile wireless, and satellite.[1] ITTA members, by way of example, have deployed broadband of increasing speeds in, on average, more than

[1] Qwest at 19, *internal citation omitted.*

85 percent of their service areas,[2] and USTelecom reveals that 90 percent of American households can access either wireline or cable broadband, and approximately 80 percent of American households have access to both.[3] Overall, the filed comments reveal that a primary goal of the National Broadband Plan should be to increase the number of Americans who have access to broadband. As Embarq explains, "The more people and places we can reach using full broadband capability, the more we can rely on broadband in our economic and social networking, which makes the network more valuable for each of us."[4] The bedrock of broadband policy should be the goal to ensure, throughout the Nation, the availability of broadband services that are capable of supporting core applications that consumers demand. At the same time, increased access should be complemented by increased usage; AT&T notes that "broadband *demand* is lagging behind broadband *supply*."[5] Accordingly, the National Broadband Plan should contemplate mechanisms that would provide assistance to low-income consumers who seek to subscribe to broadband services.

Consistent with these principles, ITTA reiterates its support for a National Broadband Plan that will facilitate the establishment and continued evolution of networks that enable maximum capacity, reliability, security, and scalability. As noted in its initial comments, ITTA supports government intervention where normal economic forces are

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[2] A survey of ITTA members drew sample data representing approximately 12 million access lines served by mid-size carriers.

[3] USTelecom at 4.

[4] Embarq at 4.

[5] AT&T at 5 (emphasis in original).

incapable of supporting deployment and subscription. At the same time, ITTA cautions against actions that would have the effect of discouraging private investment in broadband. Together, these guiding principles should result ultimately in greater broadband deployment and consequent consumer benefits across the Nation.

B. THE NATIONAL BROADBAND PLAN SHOULD BE TECHNOLOGY NEUTRAL

In its comments, ITTA called for a technology-neutral approach in the National Broadband Plan, since broadband is not limited to a single type of technology. The ultimate goal of ubiquitous deployment should be to enable the use of core applications, which should not be mistaken only for Internet-based services. By way of example, Google notes that broadband can be used to deliver proprietary video that does not require access to the Internet.[6] Likewise, telemedicine benefits from dedicated T-1 and other facilities that can assure the accurate and rapid transmission of data-intensive medical imaging and files. The proposition that broadband facilities should be able to support non-Internet applications is moreover consistent with the vision that broadband networks should provide, among other features, a secure environment for economic transactions. As AT&T notes, users "do not consume 'broadband' in the abstract; rather, they use an array of distinct types of broadband-based services that, either in isolation or in combination with other broadband-based services, give them the features and functionalities they desire to meet their needs."[7] ITTA agrees – the Commission must direct its focus toward ensuring the best network experience possible, and then, on that basis, formulate a National Broadband Plan that will ensure that consumers in sparsely

[6] Google at 9.

[7] AT&T at 13.

populated and high-cost areas obtain the same ability to access services capable of supporting core applications that are available to their peers in urban areas. The definition of broadband must also evolve over time to accommodate developing technology and applications that consumers adopt. Citing the "'experiential' approach," USTelecom echoes this sentiment when it states that "changing technology and development of new applications . . . will require on-going efforts to obtain information from software and applications developers about the amount of bandwidth needed to satisfy end-user demand."[8]

The Commission must ensure that the National Broadband Plan accommodates and supports the strongest and most robust networks. User demand is evolving: the National Telecommunications Cooperative Association (NTCA) notes that fully half of all Internet traffic consists of downloads from YouTube.[9] Although ITTA does not advocate reliability and capacity solely to facilitate entertainment, consumer demands will ultimately drive urban service benchmarks that will set the bar for service in rural areas. And, private end-user needs aside, universities, hospitals, and large institutions will rely on increasing capacity for research and distance-communications purposes. AT&T cites Tennessee's eHealth Link as an example of health care providers' reliance on broadband.[10] The Tennessee network links tertiary care hospitals and clinics with facilities in outlying rural or suburban areas, and enables health care providers to share

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[8] USTelecom at 9.

[9] *See,* NTCA at 20, 21.

[10] AT&T at 75.

data in a secure manner when coordinating patient care. Participants in the network rely on T1 lines and are also able to avail themselves of video-conferencing capabilities. These sorts of needs will only increase as broadband becomes more widely deployed and consumer expectations evolve. As Windstream notes, speed, as well as the ability to upgrade a network, should be considered.[11]

As the Commission formulates the National Broadband Plan, it must consider the range of high-capacity services demanded by educational and health-care communities, as well as industry and end-user consumers, when establishing technology-neutral standards. Chairman Julius Genachowski described recently his vision of broadband:

> A small business in Gettysburg will be able to connect and compete with businesses in Pittsburgh, or even Johannesburg.
>
> An elderly person in Georgia will be able to get remote medical monitoring from a specialist at Georgetown, better health care at lower cost.
>
> A struggling eighth grader in Columbia, South Carolina, will be able to get tutoring from a student at Columbia University.
>
> And parents in Baltimore will be able to connect with live video to their son or daughter serving in Baghdad or Afghanistan."[12]

If these are the purposes the National Broadband Plan is to serve, then the networks arising out of the Plan must be capable of supporting the applications that enable achievement of those goals throughout the Nation.

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[11] Windstream at 10-12.

[12] Remarks of Chairman Julius Genachowski to the Staff of the Federal Communications Commission (Jun. 30, 2009) (http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-291834A1.pdf (last viewed Jul. 14, 2009 13:50)).

C. THE NATIONAL BROADBAND PLAN SHOULD SUPPORT NETWORKS CAPABLE OF DELIVERING CORE APPICATIONS

The National Broadband Plan should incorporate a technology-neutral approach that does not select "winners" or "losers," but rather establishes service-oriented standards and goals without specific reference to a particular technology or mode of delivery. The application of any Plan principles, including support for networks in high-cost regions, will then be premised upon an objective determination of which particular service best meets the needs for a particular geographic region or application. The Plan must ensure that ubiquitous deployment of broadband is defined as the ability to access service that supports core applications at the end-user's premises.

A discussion of broadband speeds, or capacity, is elucidated by explanation of the speeds required to provide core applications. One example of this effort is found in initial comments submitted by the Communications Workers of America (CWA). Citing information produced by the California Broadband Task Force, CWA describes the following benchmarks:

500 kpbs – 1 Mbps	basic applications
1 Mbps – 5 Mbps	basic IPTV and video
5 Mbps – 10 Mbps	basic medical file sharing, building control and management, video streaming of 2-3 channels
10 Mbps – 100 Mbps	robust telemedicine, distance learning, high-definition video, smart/intelligent building control
100 Mbps – 1 Gbps	HD telemedicine, full IPTV and video support
1 Gbps – 10 Gbps	research applications, telemedicine remote control of scientific/medical instruments, and remote super-commuting[13]

[13] CWA at 5, 6.

The Commission should consider these and other possible benchmarks associated with on-line functionality when developing benchmarks for speeds necessary to support key broadband applications. The capacity of various technologies, along with latency characteristics, can then be measured against those applications that are most sought, required, and enjoyed by consumers.

The results of this type of analysis will reveal that the Commission must not be misled by the false premise that non-wired networks are best suited to be "central" to meeting National goals.[14] The Rural Cellular Association inappropriately, and inaccurately, derides wireline networks, calling them "out-moded and obsolete copper-wire infrastructure designed to provide voice-grade plain old telephone services."[15] To the contrary, wired networks, including existing copper facilities, remain a robust option for expanding broadband further.

As XO Communications notes, "Given its near ubiquity and increasingly robust capabilities, the existing copper infrastructure represents a ready-made solution for expanding broadband access around the country."[16] Covad echoes this position, calling copper a "proven medium" for providing business-class broadband services, and identifies copper as a useful short-range option offering speeds up to 20 Mbps.[17] The Western Telecommunications Alliance proposes that the National Broadband Plan be

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[14] *See* Verizon at 7.

[15] Rural Cellular Association at 12.

[16] XO Communications at ii.

[17] Covad at 4, 6.

crafted in a manner that enables leveraging of existing assets while a fiber-based network is built in phases.[18] That approach is consistent with practices already underway: by way of example, HomePNA, an industry alliance that describes itself as "develop[ing] home network specifications for distributing entertainment and triple play data over existing coax cables and phone wires,"[19] explains that multi-media home networking can be provided with "no new wires," or, alternatively, through combinations of fiber (FTTH, FTTB, FTTC) and DSL.[20] Moreover, the capacity of wireline networks can be enhanced significantly with the addition of new electronics. Xtendwave, a technology firm, has developed enhanced spectrum utilization techniques that enables it to deliver 40 Mbps 6,000 to 8,000 feet, rather than the usual 3,500 to 5,000 feet.[21] Xtendawave relies upon Adaptive Filter Bank Modulation (AFBM), a patented technology that can be applied via a modem and line card upgrade.[22] Rim Semiconductor, a publicly-traded chip vendor, announced in 2008 that it had delivered 40 Mbps over 5,500 feet of 26-gague copper.[23]

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[18] Western Telecommunications Alliance at 4, 5.

[19] *See* www.homepna.org (last viewed Jul .16, 2009 (11:53)).

[20] "HomePNA and IPTV: A Whole New 'Must See' IPTV Experience in 2009" (available at www.homepna.org/learn/white_papers/HomePNA_IPTV_Experience.pdf (last viewed Jul. 16, 2009 (12:00).

[21] "Pushing Copper's Speed Limits," Ed Gubbins, Telephony Online (Mar. 17, 2008).

[22] "AFBM: A Copper Network Technology to Revive the DSL and Cellular Backhaul Markets," at 4. Xtendawave describes the technology as "media agnostic," and applicable to copper, cable, and wireless solutions (http://xtendwave.com/downloads/Service_Provider_Executive_Summary.pdf (last viewed Jul. 16, 2009 (13:14)).

[23] "New Technology to Push 40Mbps DSL over Existing Copper Wire," David Waratuke, Audioholics, (Feb. 25, 2008) (http://www.audioholics.com/news/industry-news/rim-semiconductor-40mbps-copper-dsl) (last viewed Jul. 21, 2009 (11:32)). According to news reports, Rim Semiconductor received a $1 million order in June 2008, but was

Wires are an integral part of the National Broadband Plan, and both copper and fiber share an essential characteristic that should be central to the Plan: the ability to deliver a dedicated resource to end-users that is not susceptible to interference or degraded service. The dependability of wired networks is rooted in physics and fact. Verizon explains that a major difference between wireline and mobile wireless networks is that mobile networks operate on "shared bandwidth." Accordingly, "[a]ll customers on a wireless network in the same area share that same capacity, meaning that the more one customer uses, the less that is available for all others attempting to use or access the network."[24] The same principle applies to any technology that depends upon shared resources in the last mile.

CTIA, in arguing for flexible network management standards, describes the sensitivity of wireless networks to disruption:

> This impact on service is further complicated on wireless networks by the fact that spectrum is shared between users and between services, which means that, not only are data users sharing the same amount of network capacity, data users must share the limited capacity with voice users, particularly as carriers move to IP-based platforms.[25]

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unable to secure financing to build and ship the products. In September 2008, the Portland Business Journal reported that the owner of the building where Rim Semiconductor was located exercised its right of possession and lien, and took possession of the premises. "Rim Semiconductor Locked Out of Office," Portland Business Journal (Sep. 12, 2008) (www.bizjournals.com./portland/stories/2008/09/08/daily52.html) (last viewed Jul. 16, 13:27). Telephony Online subsequently reported that the firm sought acquirers. "Rim Semiconductor Goes Up for Sale," Ed Gubbins, Telephony Online (Sep. 23, 2008) (http://login.telephonyonline.com/wall.aspx?ERIGHTS_TARGET=http%3A%2F%2Ftelephonyonline.com%2Faccess%2Fnews%2Frim-semiconductor-sale-0923%2F) (last viewed Jul. 16, 2008 13:30)).

[24] Verizon at 103, 104.

[25] CTIA at 28 (internal citation omitted).

These limitations should be considered when determining whether a wireless service is the best alternative for a particular deployment in an area that is otherwise unserved, and these limitations *must* be considered when the Commission assesses which technology or technologies are best suited for execution of its National Broadband Plan.

Differences between wireline and wireless networks are highlighted by Verizon, which elucidates that on wireless networks, "since the radio link to the user must compensate for interference from other users and noise, which are not present in a fiber optic line, the attainable throughput for wireless broadband is significantly less than fiber even on comparable bandwidths."[26] The quest to deploy the most robust network should not sacrifice capacity at the altar of convenience. ITTA does not dispute the evolution of wireless services, such as 4G or Long Term Evolution (LTE), and the promise of increased capabilities. Nevertheless, the best mobile network is still beholden to propagation characteristics that are inherent in wireless transmission. Ultimately, as CTIA acknowledges, "spectrum-based services like wireless broadband are subject to the laws of nature."[27] These factors can include interference by buildings or structures. As

[26] Verizon at 105. Although "noise" can be a factor on DSL lines, there are alternative ways to address the problem. In 2008, Alcatel-Lucent introduced "SmartDSL," which maintains high levels of bandwidth by inserting artificial noise into the line. *See,* "Alcatel-Lucent's Smart DSL Targets Line Stability," Converge! Network Digest, (Feb. 4, 2008) http://www.convergedigest.com/silicon/siliconarticle.asp?ID=23645 (last viewed Jul. 17, 2009 11:25). Dynamic Spectrum Management, or DSM, is also a method by which noise can be lowered.

[27] CTIA at 34

explained in a White Paper issued by HomePNA, "[b]uildings often create 'dead' spots or areas of lower transmission rates."[28]

The nature of wired networks, by contrast, is confirmed in a study submitted to the Commission by ADTRAN. In a White Paper submitted to the Commission in the instant docket, ADTRAN defines broadband speed as a "sustainable data rate . . . that will be experienced by individual subscribers with at least 99 percent probability, even during times of heavy usage."[29] Like Verizon and CTIA, ADTRAN notes the differences between wireline and wireless networks, finding, "the difference between the sustainable and peak data rates is much greater for architectures that use a shared channel in the 'last mile' (nearest the consumer) than for architectures with dedicated resources in the 'last mile.'"[30]

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[28] "No New Wires: Hitting a Triple-Play Home Networking Solution," HomePNA, at 4 (Sep. 2006) (http://www.homepna.org/learn/white_papers/HomePNA_No_New_Wires.pdf) (last viewed Jul. 21, 2009 (11:40)).

[29] *The Commission's Consultative Role in the Broadband Provisions of the Recovery Act: Ex Parte Filing of ADTRAN,* Docket No. 09-40, Attachment: "Defining Broadband Speeds: an Analysis of Peak vs. Sustained Data Rates in Network Access Architectures," at 1 (Apr. 13, 2009) (ADTRAN Data Rates White Paper).

[30] ADTRAN Data Rates White Paper at 1. A major data input to the ADTRAN study was usage characteristics for high-speed Internet. One function that was singled out for attention was video, which according to ADTRAN has increased 100 percent over the past two years and is expected to increase three-fold by 2013. In describing the need for sustainable data rates, ADTRAN explains that video requires data transfer rates at or below the playout rate in order to ensure that the video stream is not interrupted. Moreover, ADTRAN notes that capacity levels necessary to support video will increase as more consumers use the Internet, rather than traditional television, for entertainment. And, unlike web browsing, which can be accomplished successfully as data transfer occurs intermittently while users load and browse pages sequentially, multiple users viewing video requires a larger aggregate capacity to accommodate simultaneous usage. A second driver identified by ADTRAN is home networks, which "driv[es] a

The ADTRAN Data Rates White Paper compares three types of technology: DSL, Hybrid Fiber-Coax (HFC), and Broadband Wireless Access. In DSL, each subscriber loop connection is a dedicated link between the DSLAM and the end-user location. The ADTRAN study assumes typical network deployment characteristics. Where loops are 12,000 feet, download speeds are approximately 6 Mbps, with upload speeds of 1 Mbps.[31] Remote DSLAMS that shorten loops can support download rates of 15-25 Mbps per subscriber.[32]

As opposed to DSL, which provides a dedicated link to each subscriber, HFC utilizes a shared last-mile. Accordingly, the total capacity of any HFC system is shared by all subscribers, whose use at any particular time affects in some measure the capacity that is available to other subscribers. Broadband wireless access, as described above, also relies upon shared last-mile access. The manner of deployment varies, and numerous configurations of network facilities may occur across different locales. Nevertheless, some characteristics are common to virtually all wireless deployments: subscribers closest to the base station will enjoy the strongest performance, while those located farther away, and/or with obstructions between the end-user location and the base station, will suffer weaker performance.

For purposes of its study, ADTRAN relied upon advertised sample offerings that included: DSL in the 768 kbps to 20 Mbps range; HFC in the 256 kbps to 20 Mbps range;

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corresponding increase in both the number of total subscribers on a given network and the usage statistics per subscriber household." *Id.* at 3, 4.

[31] ADTRAN Data Rates White Paper at 5.

[32] ADTRAN Data Rates White Paper at 5.

and wireless in the 256 kbps to 8 Mbps range.[33] In order to determine the performance of each technology, the study contemplated several variables, including the number of subscribers active at any particular time, the type of data being accessed by the users, and the applications and protocols in use.[34] The assumptions of network usage were then applied to all categories of technologies under examination in order to determine how, under standardized usage conditions and within normative parameters of common current network deployment characteristics, each type of technology (DSL, HFC, and wireless) would fare. The study revealed that "[a]nalyzing expected performance for WiMAX deployment is more complex than for either DSL or HFC because there are more variables."[35] Those variables, however, speak also to certain of the inherent susceptibilities of wireless networks, including degradation due to signal path characteristics such as physical obstructions and shared-usage in the last mile. Accordingly, the ADTRAN study contemplated two WiMAX deployment models, and assumed for both sufficient backhaul.[36]

The study measured two usage conditions as base-lines for the study – (a) where 5 percent of active subscribers to total subscribers are using the network, and (b) where 15 percent of active subscribers to total subscribers are using the network.[37] On dedicated last-mile wired networks, the lowest access rate available to a subscriber is fixed,

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[33] ADTRAN Data Rates White Paper at 8.

[34] ADTRAN Data Rates White Paper at 8.

[35] ADTRAN Data Rates White Paper at 15.

[36] ADTRAN Data Rates White Paper at 15, 16.

[37] ADTRAN Data Rates White Paper at 8, 9.

whereas the lowest rate available to subscribers sharing a last-mile network will vary depending on how many other users are active, and the manner in which those other users are active. The ADTRAN study plots expected downstream and upstream rates against a modeled distribution of subscribers in order to generate the probability of rates that would be available to a particular subscriber under a given set of conditions. For example, the study proposes a situation in which a resource of 100 Mbps is shared by 500 subscribers with a 5 percent mean usage level. In that modeled scenario, the 5 percent usage level equates to 25 subscribers, each of which has access to a strict mathematical average of 4 Mbps. Based on the probability factors established in the study, and the fact that users on that network must share the total capacity, it is determined that in practice, "an individual subscriber will have access to 2.5 Mbps with near certainty, but will rarely achieve more than 8 Mbps."[38]

Generally, the conclusions of the ADTRAN study confirm that ADSL usability factors remain virtually constant even as total network usage fluctuates (variations in VDSL depended upon whether a shared network condition is imposed).[39] On shared last-mile networks, such as HFC and WiMAX, however, usability factors decrease drastically as total network usage increases:

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[38] ADTRAN Data Rates White Paper at 10.

[39] ADTRAN at Data Rates White Paper at 12, 19.

Network / configuration	Download Usability Factor		Upload Usability Factor	
	5% usage	15% usage	5% usage	15% usage
ADSL	1.000	1.000	1.000	1.000
VDSL A	1.000	0.525	1.000	1.000
VDSL B	1.000	1.000	1.000	1.000
HFC A	0.028	0.011	0.027	0.011
HFC B	0.048	0.020	0.049	0.020
WiMAX 200	0.031	0.008	0.007	0.002
WiMAX 100	0.059	0.020	0.015	0.006

Source: ADTRAN Data Rates White Paper at 15.

For example, HFC usability factors drop an average of nearly 60 percent when total network usage increases from 5 percent to 15 percent. More alarmingly, WiMAX usability factors plummet, on average, 70 percent when total network usage increases from 5 percent to 15 percent.

Consumers are well aware of these differences between wireline and wireless services. A recent study reveals that 48 percent of Americans would terminate their mobile data plans if they needed to cut back on household expenses, but only ten percent of those surveyed would curtail their home broadband service.[40] The study corroborates conclusions of Free Press, specifically, that "there is no evidence to suggest that any significant portion of mobile data customers are using these services as their *sole* or *primary* residential broadband connection."[41] Although consumer perceptions may

[40] *See,* "Wireline Broadband More Valuable than Mobile Broadband?," Telecompetitor (Jun. 26, 2009) (http://telecompetitor.com/node/1339 (last viewed Jul. 2, 2009 13:41)).

[41] Free Press at 44 (emphasis in original).

change with time, the current subjective attitudes are reflective of the objective findings, namely, that the wired, dedicated last-mile link broadband facilities offer user experience that is more robust than those offerings that rely upon shared facilities in the last mile.[42] These differences must be recognized as policymakers formulate National broadband policy.

As ITTA has stated previously, the Commission must approach the National Broadband Plan from the perspective of seeking to determine how the Plan can best accommodate the types of goals recently articulated by Acting Chairman Michael J. Copps in his recent report, "Bringing Broadband to Rural America: Report on a Rural Broadband Strategy."[43] These included:

> enabling a student at a rural high school to participate in a seminar offered at a distant college, letting a patient in a rural clinic be examined by a specialist located in an urban hospital, or allowing a farm family to use a smart grid to reduce its energy consumption.[44]

Accordingly, when crafting a National Broadband Plan, the Commission should consider policies that enable the deployment of facilities that support those types of applications in all regions of the Nation. In addition to focusing on whether broadband supports core applications identified in the Rural Broadband Strategy Report, a National Broadband Plan that is technology neutral also may provide some consideration of other factors, such as the convenience of mobility or equipment expenses a user may have to incur. For

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[42] By way of example, Covad asserts that copper can provide 100 Mbps, and can be upgraded to 1 Gbps without a need to upgrade the last mile. Covad, Attachment at 14.

[43] "Bringing Broadband to Rural America: Report on a Rural Broadband Strategy," Michael J. Copps, Acting Chairman, Federal Communications Commission (2009) (Rural Broadband Report).

[44] Rural Broadband Report at para. 12.

example, AT&T identifies some factors the Commission may assess when determining the best form of deployment: AT&T cites satellite as a possibly cost-effective form of deployment in the least densely populated areas, but then notes "relatively high up-front customer premises equipment costs," as well as throughput constraints and latency shortcomings that could cause satellite to not meet criteria that might be identified by the Commission.[45]

The Rural Cellular Association (RCA) acknowledges that current mobile technology is not as strong as other technologies, but argues that it is "highly attractive for deployment" in unserved and underserved areas; RCA cites mobility and cost as factors.[46] Assumptions related to costs, however, are subject to question: a study by CostQuest determined that it would cost $22 billion to deploy 3G wireless Nationwide.[47] That level of service, however, would not offer all rural households in a region consistently robust online functionality that rivals service offered via DSL at the household level. These data alone are cause for revisiting the assertion in the Rural Broadband Report that wireless infrastructure costs are "frequently less significant than comparable wired broadband deployments . . . ."[48] In all events, the cost data must be analyzed within a rigorous cost/benefit analysis that considers the strengths and

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[45] ATT at n.57.

[46] RCA at 8, 9.

[47] *High-Cost Universal Service; Federal-State Joint Board on Universal Service: Comments of CTIA-The Wireless Association,* Docket Nos. 05-337, 96-45, Attachment: CostQuest Associates, "U.S. Ubiquitous Mobility Study," at 20 (Apr. 17, 2008).

[48] Rural Broadband Report at para. 142.

weaknesses of various technologies used to deliver broadband. As noted in the Rural Broadband Report, these may include: latency; scalability; weather and environmental conditions; survivability, redundancy, and security; distance and topography; and maintenance and repair.[49]

CTIA argues that comprehensive USF reform should encourage deployment of mobile broadband.[50] ITTA has advocated previously that the USF should contemplate and accommodate the benefits of mobile services. But, the Commission must also consider within both the National Broadband Plan and USF reform the cost/benefits analyses of wired and non-wired mobile services, and weigh capacity, security, and reliability as it devises a mechanism for distributing scarce resources among providers. The Commission must return to the principle of ensuring the deployment of networks that support core applications. Mobile services provide public safety benefits and enable activities borne of the ability to receive data while "on the move." For example, AT&T describes the usefulness of mobile broadband for utility plant monitoring and public safety purposes.[51] Nevertheless, and as described above, the most robust networks for distance learning and and tele-medicine depend upon wired networks – and the Rural Broadband Strategy Report makes it clear that the Commission's first objective should be to support networks that enable applications such as "enabling a student at a rural high

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[49] *See,* Rural Broadband Report at paras. 73-87, respectively. For a comprehensive discussion of latency variations among various broadband technologies, *see A National Broadband Plan for Our Future: Ex Parte Filing of ADTRAN*, Docket No. 09-51, Attachment: "Defining Broadband: Network Latency and Application Performance," (Jun. 23, 2009).

[50] CTIA at 43.

[51] AT&T at 63.

school to participate in a seminar offered at a distant college, [or] letting a patient in a rural clinic be examined by a specialist located in an urban hospital . . . ."[52]

II. THE COMMISSION SHOULD NOT IMPOSE BURDENSOME REGULATIONS THAT DISCOURAGE INVESTMENT.

A. THE COMMISSION SHOULD ENABLE RATIONAL MARKET DEVELOPMENT

The overwhelming majority of parties that submitted comments in the initial round echoed each others' sentiments that broadband is a critical resource that should be made more widely available. The cross-currents in the debate regarding how USF should be reformed to promote broadband deployment evidence the acknowledged fact that some type of external support will be necessary in order to assure deployment in rural and high-cost areas. As explained by Windstream, "[a] subset of customers has been unable to benefit from substantial private investment in broadband, because there is no rational case for deploying high-speed networks to consumers in very high-cost, low density areas."[53] AT&T urges that USF be transitioned to support broadband.[54] In considering how to modernize USF, however, the Commission should not be misled into repeating inefficiencies that have arisen as the USF has been directed to support duplicative competitive providers.

As the Commission formulates a Plan that enables support for networks in high-cost areas, it must avoid actions that disrupt or discourage private investment. Overall, the broadband market is competitive, and the Commission should avoid disrupting that

[52] Rural Broadband Strategy Report at para. 12.

[53] Windstream at 3.

[54] AT&T at 85.

trend. As Qwest advocates, the Commission should continue its deregulatory trend.[55] USTelecom specifies that when implementing the broadband provisions of the American Recovery and Reinvestment Act, the NTIA "should make the FCC Policy Statement, without any expansion, the sole criterion for non-discrimination and network interconnection obligations."[56]

Several parties indicate their preference that the National Broadband Plan should support multiple competing carriers in a single area.[57] While encouraging competition is worthwhile, any government funding for broadband deployment should be focused first and foremost on ensuring that all consumers have access to at least *one* broadband provider that is capable of supporting core online applications. The Commission, and indeed the industry, has witnessed the failure of policies intended to inject government support to would-be competitors in regions that cannot economically support a single provider. As AT&T warns, "stringent unbundling rules do[] not promote facilities-based deployment in rural or otherwise hard-to-serve areas."[58] The results of ill-conceived attempts to support numerous providers in a single region resulted in a burgeoning level of USF support flowing to CETCs, a trend that was restrained only the Commission's wise decision to impose limits on the amount of CETC support pending comprehensive overhaul of the USF. Google describes the perverse results of cannibalizing customer bases in the hopes of achieving impossible self-supporting competition:

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[55] Qwest at 17-22.,

[56] USTelecom at 24.

[57] *See, e.g.,* Rural Cellular Association at 15, 28.

[58] AT&T at 82.

> If in the face of more competitors, broadband providers are forced to amortize the fixed costs of their networks over significantly fewer customers, total broadband costs will rise – and prices will almost certainly have to rise as well, even if profits are squeezed and efficiencies maximized. The only way this situation could be averted would be if a new entrant was not successful in gaining any broadband customers. In this case, overall broadband costs would still increase but the costs would be borne by the new entrant's bondholders and stockholders. If all new entrants gained customers, however, then the incumbents by definition would have fewer customers and hence less revenue to amortize the costs of their networks.[59]

Western Telecommunications Alliance proposes that the Commission should not support more than one wireline broadband network and one wireless broadband network in the same service area until the "National Broadband Network" is completed.[60]

Likewise, mandatory interconnection and other similar requirements should not be imposed; doing so will discourage private investment that is a necessary corollary to public support. While Covad has called for "open access to existing fiber networks, including copper-fiber networks,"[61] many rural and high cost areas will be at risk if their operators are required to provide open access in the manner Covad requests. The Commission has found previously that

> excessive network unbundling requirements tend to undermine the incentives of both incumbent LECs and new entrants to invest in new facilities and deploy new technology. The effect of unbundling on investment incentives is particularly critical in the area of broadband deployment, since incumbent LECs are unlikely to make the enormous investment required if their competitors can share in the benefits of these

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[59] Google at n.45, *quoting* Robert Atkinson, *The Role of Competition in a National Broadband Policy* (Oct. 2007), *cited as available at* http://www.itif.org/files/JTHTL.pdf.

[60] Western Telecommunications Alliance at 17.

[61] *See, e.g.,* Covad, Attachment at 20.

> facilities without participating in the risk inherent in such large scale capital investment.[62]

Private investment will, in most cases, play an integral role in financing network deployment. The imposition of access requirements that tend to mirror Title II interconnection requirements, however, will chill incentives for third-party investor participation.

B. PRIVACY AND NETWORK MANAGEMENT

The Commission should not adopt burdensome regulatory approaches to network management issues. In contending that "[t]echnoloiges that enable filtering, like 'deep packet inspection', are flawed for being over-inclusive (and thus unconstitutional for their chilling effect on free speech) and under-inclusive (and thus a waste of government and private resources)," Public Knowledge, Media Access Project, the New America Foundation, and U.S. PIRG confuse technological function with alternative manners in which it may be employed.[63] Many network management practices, in fact, improve network utility and user experience. As AT&T imparts,

> DPI is a *technology,* not a practice. The focus of government and industry efforts should be on establishing acceptable *practices* with regard to consumer privacy, not mandating or restricting the *technology* providers use. That is particularly the case with DPI, which has many beneficial network uses utterly unrelated to consumer privacy concerns. Even Free

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[62] *Review of the Section 251 Unbundling Obligations of Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability: Report & Order and Order on Remand and Further Notice of Proposed Rulemaking,* Docket Nos. 01-338, 96-98, 98-147, FCC 03-36, at para. 3 (2003).

[63] Public Knowledge, Media Access Project, the New America Foundation, and U.S. PIRG at 11. It is not clear from the comments how DPI implicates Constitutional concerns related to the First Amendment.

> Press concedes that "DPI technology itself need not be anti-consumer if it is used to resolve congestion or security concerns."[64]

Accordingly, Public Knowledge, et al., call for a so-called "fifth principle" that entitles consumers to "communicate any lawful data with the destination of their choice without any degradation or preference the consumer has affirmatively requested"[65] should be avoided.

Network management is a wholly necessary part of rational network operations. The American Cable Association agrees, stating the Commission need only apply the four principles,[66] and Embarq agrees that "the Broadband Policy Statement is sufficient."[67] In its quest to ensure wider broadband deployment, the Commission must not promulgate regulations that discourage private investment. Verizon cautions that non-discrimination obligations can lead to "intrusive" common carrier-type regulation.[68] Past experience demonstrates the success of current policy – as AT&T notes, only two cases of alleged discrimination have emerged for the Commission's adjudication.[69] The current approach of case-by-case adjudication based on the Commission's Internet Policy Statement[70] is best suited to the rapid evolution of technology, applications, and

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[64] AT&T at n.162 (internal citation omitted).

[65] Public Knowledge at 7.

[66] American Cable Association at 3.

[67] Embarq at 9.

[68] Verizon at 90.

[69] AT&T at 98, 99.

[70] *See, Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities (Docket No. 02-33); Review of Regulatory Requirements for Incumbent LEC*

consumer demands. Cable modem has remained unregulated, without a need for Commission intervention.

The key to rational network management guidelines is clear information for consumers: end-user demands will ultimately drive carrier practices. And, as evidenced in the Comcast and Madison River proceedings, the Commission has the wherewithal to guide companies toward proper practice (the lack of need for detailed guidelines for carriers is, in fact, supported by the fact that the Commission has been called upon to correct carrier actions only in those two instances).

As ITTA stated in its initial comments, ITTA supports self-regulation as the most effective method to ensure user privacy. Self-regulation is a particularly effective tool in technologically-oriented environments, where rapid evolution of applications and services can outpace regulators' ability to address changing situations. And the industry's interest in self-regulation is evidenced by the July 2, 2009, release of "Self-Regulatory Principles for Online Behavioral Advertising,"[71] which indicate a willingness of many different online advertisers to engage in self regulation. This view corresponds with cautionary comments submitted by industry in the instant proceeding. While it appears that some would ban useful technologies in anticipation that some misuse may

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Broadband Telecommunications Services (Docket No. 01-337); Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services – 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements (Docket Nos. 95-20, 98-10); Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities (Docket No. 00-185); Internet Over Cable Declaratory Ruling (Docket No. 00-185); Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities (Docket No. 02-52): Policy Statement, FCC 05-151 (2005).

[71] American Association of Advertising Agencies, Association of National Advertisers, Council of Better Business Bureaus, Direct Marketing Association, Interactive

occur, the Commission must not promulgate a plan that would stymie useful innovation based on unfounded concerns.

III. CONCLUSION

The National Broadband Plan should support the establishment and continued evolution of networks that enable maximum capacity, reliability, security, and scalability. Functionality that is available in urban areas should serve as the benchmark for successful rural deployment. The Commission should refrain from imposing regulations that deter investment. Together, these guiding principles, as described above, should result ultimately in greater broadband deployment and consequent consumer benefits across the Nation.

Respectfully submitted,

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Advertising Bureau: "Self-Regulatory Principles for On-Line Behavioral Advertising," (Jul. 2009) (www.ana.net/advocacy/getfile/15279 (last viewed Jul. 17, 2009, 14:38)).