

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	GN Docket 09-51
A National Broadband Plan for our Future)	
)	GN Docket 09-47
)	
)	GN Docket 09-137

COMMENTS OF KODIAK-KENAI CABLE COMPANY, LLC

Kodiak Kenai Cable Company, LLC (“KKCC”), by its undersigned counsel, hereby responds to the Commission’s Public Notice seeking comments on defining “broadband” in connection with, *inter alia*, the Commission’s development of a National Broadband Plan, as called for by the American Recovery and Reinvestment Act of 2009 (“Recovery Act”).¹ KKCC submitted comments in response to the Commission’s Notice of Inquiry in GN Docket 09-51 (“Broadband Plan NOI”),² and welcomes this new opportunity to participate in dialogue with the Commission on the establishment of this critical definitional term.

I. OVERVIEW

In addition to the comments it submitted in response to the Commission’s Broadband Plan NOI, KKCC commented in response to the Joint Request for Information issued by the Rural Utilities Service (“RUS”) and the National Telecommunications and Information Service (“NTIA”) regarding the authority of those agencies under the Recovery Act to make loans and grants for the construction and deployment of broadband systems.³ KKCC’s advocacy in both the Commission’s Broadband Plan NOI and in response to the RUS/NTIA

¹ DA 09-1842, released August 20, 2009.

² Comments of Kodiak Kenai Cable Company, LLC, submitted June 8, 2009 (hereinafter, “KKCC Initial Comments”).

³ Comments of Kodiak Kenai Cable Company, LLC, submitted April 13, 2009, Docket No. 090309298-9299-01.

Joint Request for Information was informed by its participation in the competition for loan and grant funding under both the RUS Broadband Infrastructure Program (“BIP”) and the NTIA Broadband Technology Opportunity Program (“BTOP”). On August 19, 2009, KKCC submitted a BIP/BTOP application for funding of construction of a submarine fiber optic cable middle-mile system to provide backbone broadband capacity to western and northern Alaska.

KKCC understands that the Recovery Act provides a unique and timely opportunity for the United States to make a quantum advance in broadband availability for its citizens. The Act both mandates the Commission’s development of a National Broadband Plan by February 2010 and provides \$7.2 billion in appropriations to RUS and NTIA to make funding decisions for the deployment of broadband infrastructure and services by September 2010. To make the most of this rare opportunity, KKCC believes it is essential that the federal agencies responsible for these programs do what has not been done to the present by setting meaningful goals for the nation’s broadband resources. The adoption of such goals must begin with a durable definition of what “broadband” is in terms of what applications are driving the burgeoning use of the Internet today and are likely to continue to do so for the foreseeable future.

With this in mind, KKCC has advocated, and now continues to propose, adoption of a functional definition enabling broadband applications that in turn defines the capacity and data speed, rather than one that is only defined in terms of capacity and data speed that can become antiquated almost as soon as it is agreed upon. ***KKCC proposes that “broadband” be defined as enabling, at a minimum, the delivery of interactive, real-time, full-motion, high definition video content, both in a downstream and upstream mode to and from the end user.*** Without these capabilities, a transmission pipe will be unable to provide adequate levels of support for such critical applications as interactive distance learning and effective

telehealth/telemedicine functionalities that KKCC seeks to support in the unserved areas of Alaska. KKCC also believes the definition of “broadband” needs to be sufficiently robust to support the rapid migration to social networking and mobile video applications on the Internet that in particular are being increasingly embraced by younger consumers. Finally, to be effective, this functional standard must be achievable and measurable not solely on the basis of an isolated, individual end user, but by multiple users of high-capacity applications operating in a high-usage environment. In other words, the Commission’s definition of broadband must be a practical yet robust one that will inform the design of networks for today’s and tomorrow’s Internet usage.

Statistics maintained by the Organization of Economic Cooperation and Development identify a protracted decline in per capita access to broadband resources in the United States as compared to other developed countries in recent years.⁴ For the service area in Alaska where KKCC seeks to deploy its backbone fiber-optic network, these comparative statistics are particularly devastating. A new study by the Communication Workers of America (“CWA”) ranks Alaska among the most poorly served states in the country in terms of broadband access, with average download speeds of 2.3 Mbps.⁵ This compares to average download speeds of 20.4 Mbps in South Korea, 15.8 Mbps in Japan, 12.8 Mbps in Sweden and 11.0 Mbps in the Netherlands.⁶ With average reported download speeds on a national basis of 5.1 Mbps, the United States compares unfavorably with these other developed countries, according to the CWA Report. Even more significantly, KKCC’s independent

⁴ See, e.g., Average advertised download speeds, by country (September 2008), www.oecd.org/sti/ict/broadband.

⁵ Even this low rate is heavily skewed by the urban areas on Anchorage and Juneau, and the communities of rural Alaska are barely able to afford the oversubscribed T-1 satellite links that currently provide backbone transmission for them.

⁶ Speed Matters: Affordable High Speed Internet for America (August 2009) (hereinafter, “CWA Report”), at 9. See www.speedmatters.org.

research reveals that, with the exception of five communities out of a total of 142, the entire western and northern region of Alaska that KKCC seeks to serve has access to average download speeds below 768 kbps (*see* Exhibit A attached). At these speeds, the user has difficulty sustaining access to such basic Internet services as email, simple Web browsing, and streaming music.⁷ Worse yet, access to email file attachments, file-sharing and advanced Web browsing applications are not available at these speeds, and more advanced applications of critical importance to the residents of the area, such as distance learning and telemedicine, cannot even be seriously considered. The Camai Clinic in Naknek, for example, recently reported to KKCC that, due to the lack of adequate broadband access in that Alaska community, it took the health care provider 27 hours to upload one set of health records that the federal government requires be maintained in electronic format; this experience will be repeated and compounded with each periodic report that rural clinics like that in Naknek are required to submit.

While the methodology by which comparative national broadband access and usage calculations are compiled is subject to debate and interpretation, the issue is clearly one of national concern. This is evidenced by the Congressional directive in the 2008 Broadband Data Improvement Act that the Commission, in its annual reports on the status of advanced telecommunications services pursuant to Section 706 of the Communications Act, must include information comparing the extent of broadband service capability in the United States versus other countries.⁸ The United States' mediocre standing among developed nations in terms of broadband access is reflective of the fact that policy makers in the United States have historically tolerated ineffective standards for measuring broadband achievement. As recently as 2008, the Commission's definition of "advanced services" was fulfilled by

⁷ *Id.*, at 5.

⁸ 47 U.S.C. §§ 1301-1304. *See* Comment Sought on International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act, DA 09-741, released March 31, 2009.

Internet access lines providing speeds of just over 200 kbps in each direction.⁹ In its order last year adopting new Form 477 reporting standards for broadband transfer speed categories, the Commission found that “upload speeds of less than or equal to 200 kbps...continue to be a common offering in the broadband services market.”¹⁰

If the United States is to make true strides toward achieving effective current- and next-generation broadband access for its citizens, it must set the bar higher, and establish meaningful goals and standards. KKCC’s proposed functional definition was designed to achieve that purpose. The definition of “broadband” in the BIP/BTOP Notice of Funding Availability as two-way data transmission with *advertised* speeds – not even demonstrable speeds -- of only 768 kbps downstream and 200 kbps upstream¹¹ via terrestrial networks was, therefore, deeply disappointing to KKCC, as it implied that the Recovery Act funding administrators were not prepared to commit the country to securing infrastructure capable of delivering effective next-generation broadband. In its new Public Notice, the Commission has signaled its readiness to revisit this issue boldly, recognizing that *advertised* throughput rates often differ from *rates actually experienced by end users*, and that other network characteristics, such as latency and reliability, must be factored into the determination of what comprises effective broadband services.

KKCC submits that, in formulating this central definition, the Commission should not try to utilize a bottom-up approach, building on specific performance indicators, but instead

⁹ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, 23 FCC Rcd 9615, 9631-32 (2008).

¹⁰ *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice Over Internet Protocol (VoIP) Subscribership*, 23 FCC Rcd 9691, 9701 (2008).

¹¹ 74 Fed.Reg 33104, 33108 (July 9, 2009).

should embrace a top-down vision of what the functional requirements of broadband access are and will be in the near term to end users. This functional standard will in turn inform the design of networks enabling multiple users to realize simultaneously the agreed operational requirements in a high-usage environment. The specific characteristics and performance indicators of the broadband definition will then be dictated by that functional objective, rather than retard the achievement of the functional objective.

II. RESPONSE TO THE COMMISSION'S SPECIFIC QUESTIONS

1. Form, Characteristics and Performance Indicators.

(a) The form that a definition of broadband should take. Consistent with KKCC's recommendation, the form of the definition of broadband should be a functional one that will drive the design of networks. In this regard, it must be a definition that will not be satisfied by a "snapshot" representation of what upload and download speeds a single user acting in isolation will realize. As the Commission recognizes and KKCC has determined from its independent analysis, advertised throughput speeds often differ materially from empirical experience, particularly when multiple users access the network simultaneously. The definition must instead be one that will apply, and must be met, during high-usage periods by multiple subscribers with broadband applications running simultaneously.

(b) A single definition, or multiple definitions. KKCC believes that the definition of broadband, a central element of the National Broadband Plan now under development, as well as of other national programs, must be a single one and must be technologically neutral. The Commission should be careful, however, not to dilute the definition's standards to accommodate the lowest common denominator, in this case technologies with weaker broadband throughput capabilities such as satellites. Instead, all technologies should be encouraged to meet the functional requirements of the end user when accessing the Internet for today's and tomorrow's applications.

(c) Whether an application-based approach to defining broadband would work. As evidenced by its recommended definition, KKCC endorses this approach, provided that the applications-based standard is sufficiently robust. Specifically, KKCC recommends that the application should at a minimum anticipate the delivery of interactive, real-time and full-motion, high definition video content, both in a downstream and upstream mode to and from the end user. Moreover, this functional standard should define the capabilities of the network as a whole, not those of a single user. To reflect real-world needs, multiple users accessing the network simultaneously must be capable of using this application, as opposed to a single user acting in isolation.

(d) The key characteristics and specific performance indicators that should be used to define broadband. The definition can include such specific performance indicators as throughput, reliability and latency. However, these indicators should be determined from the applications-based approach addressed in paragraph (c), rather than serve as the starting point for developing a definition.

(e) The segments of the network each performance indicator should measure, such as the local access link to the end user or an end-to-end path. Critically, from KKCC's perspective, the specific indicators will have meaning only if measured on an end-to-end network path, and in high-usage periods.

(f) How specific factors should be taken into account. As discussed above, KKCC believes that traffic loading and diurnal patterns must specifically be accounted for in a functional definition of broadband. The requirement to be met is one driven by multiple users operating simultaneously in a high-usage environment. The definition, therefore, is one that will drive the design of successfully operating networks. Latency, jitter and reliability standards are simply indicators, not to be confused with the achievement of the functional goal. Achieving specific standards for each of these indicators effectively represents a policy

decision to be made within the context of designing networks that can support the functional objective KKCC espouses in this proceeding.

KKCC also recognizes the desirability of supporting mobile applications. However, it views the development of backbone networks capable of supporting an agreed functional broadband requirement as the essential first step. Sufficiently robust backbone networks will be prerequisites to supporting fixed and mobile broadband applications alike. The network should not be designed to support mobile applications *per se*, but rather to support the functional requirement. Once that benchmark is established, the network can be sized to support specific desired applications.

(g) Whether different performance indicators or definitions should be developed based on technological or other distinctions. As noted in Part I of these Comments, as well as in paragraph (b) above, KKCC recognizes that the varying capabilities of different technologies could be used to justify the adoption of different performance indicators. The importance of a unified definition of broadband and of technological neutrality in the Commission's administration of a National Broadband Policy, however, are of overarching importance to the interests of the end user and to the public interest more generally. Therefore, KKCC believes that varying performance indicators should be eschewed. The need for a wired backbone system remains fundamental to the successful operation of fixed and mobile broadband applications alike.

(h) The feasibility and verifiability of measuring different performance indicators. KKCC agrees that whatever definitional standards are adopted must be capable of verification to ensure the integrity of publicly funded programs built on these standards. The functional requirement at the heart of KKCC's proposed definition must be verifiable at the end-user level, and must be demonstrable in a high-usage environment with multiple end users operating simultaneously.

2. **Thresholds.** As explained above, KKCC believes there is little utility in attempting to identify specific performance indicators and associating thresholds with them in the abstract. Instead, thresholds of operation should be identified to support an agreed functional definition of broadband. Those thresholds must be capable of supporting large numbers of users operating simultaneously on shared networks. Thresholds can be meaningfully derived from a top-down vision of the functional requirement of broadband. The minimum throughput thresholds identified in the BIP/BTOP Notice of Funding Availability and in footnote 12 of the Public Notice are woefully inadequate to support the functional definition that KKCC recommends the Commission should consider.

3. **Updates.** KKCC agrees that the Internet and broadband networks have been characterized by rapid evolution, and represent a frontier today in technological development. In KKCC's view, however, the Commission should define a functional definition of broadband that it believes is necessary to support contemporary commercial, telemedicine, educational, smart grid and public safety operations.¹² In other words, the Commission should set the bar high enough from the outset to enable advanced performance applications, and then measure progress toward meeting that goal, rather than setting the bar low initially and having constantly to raise it in order eventually to reach a meaningful level.

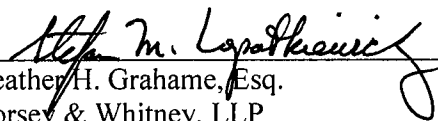
Given the current state of deployment of broadband facilities in the United States, as demonstrated in the CWA Report,¹³ the KKCC functional definition is not achievable today, but represents a goal for the country. It will take several years for this goal to be reached. KKCC believes the Commission should adopt this goal now and set a time table for its achievement as a national mandate. Without setting such an ambitious goal, broadband deployment and usage in the United States will likely continue to lag behind that of other

¹² See description of throughput speed ranges for various online applications in CWA Report, at 5.

¹³ *Id.*, at 1-3.

developed countries. The attainment of that goal can be measured through milestones and reported on by the Commission at least annually. Once this goal is achieved, the Commission will be in a position to decide, together with the Congress and the Administration, whether the United States will want to establish itself as a leader in the development of broadband goals internationally. That determination will help inform the Commission's future program for updating the definition of broadband. By that time, new technologies will have been developed, new infrastructure deployed, and new customer and end user needs will have been identified which will help help inform the Commission's decision. To attempt to "update" the definition of broadband now, even before the new national policy mandated by Congress is in place and before new infrastructure and expanded educational projects funded under the Recovery Act are completed, could serve to confuse the issue for all.

Respectfully submitted,


Heather H. Grahame, Esq.
Dorsey & Whitney, LLP
1031 West 4th Avenue
Suite 600
Anchorage, AK 99501

Stefan M. Lopatkiewicz
Dorsey & Whitney, LLP
1801 K Street, N.W.
Suite 750
Washington, D.C. 20006

Counsel to Kodiak-Kenai Cable Company, LLC

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EXHIBIT A

Survey of Fastest Download Speeds By Community in Western and Northern Alaska

Community	Provider	Residential Speed - download/upload
Adak	Adak Tel	128kbps/96kbps
Akiachak	Unicom	56kbps
Akiak	Unicom	56kbps
Akutan	GCI	56kbps
Alakanuk	Unicom	56kbps
Aleknagik	GCI	256kbps/56kbps
Ambler	Inutek	256kbps/64kbps
Anaktuvuk Pass	GCI	256kbps/56kbps
Aniak	Alascom	384kbps/384kbps
Anvik	GCI	256kbps/56kbps
Atka	GCI	56kbps
Atmoutluak	GCI	256kbps/56kbps
Atkasuk	GCI	56kbps
Attu	military?	
Barrow	GCI	1.5mbps/256kbps
Bethel	GCI	1.5mbps/256kbps
Brevig Mission	GCI	256kbps/56kbps
Buckland	Inutek	256kbps/64kbps
Chefornak	Unicom	256kbps/64kbps
Chevak	GCI	256kbps/56kbps
Chignik	GCI	256kbps/56kbps
Chignik Lagoon	GCI	256kbps/56kbps
Chignik Lake	GCI	256kbps/56kbps
Chuathbaluk	GCI	256kbps/56kbps
Clark's Point	GCI	256kbps/56kbps
Cold Bay	ITC	256kbps/256kbps
Crooked Creek	GCI	256kbps/56kbps
Deering	Inutek	256kbps/64kbps
Dillingham	Nushagak	256kbps/128kbps
Diomede	GCI	256kbps/56kbps
Eek	Unicom	256kbps/64kbps
Egegik	GCI	256kbps/56kbps
Ekwok	BBTC	256kbps/56kbps
Elim	GCI	256kbps/56kbps
Emmonak	Unicom	56kbps
False Pass	GCI	256kbps/56kbps
Flat		None
Galena	GCI	256kbps/56kbps
Gambell	GCI	256kbps/56kbps
Golovin	GCI	256kbps/56kbps
Goodnews Bay	GCI	256kbps/56kbps
Grayling	GCI	256kbps/56kbps
Holy Cross	GCI	256kbps/56kbps
Hooper Bay	Unicom	56kbps
Huslia	GCI	256kbps/56kbps
Igiugig	BBTC	256kbps/56kbps
Iliamna	GCI	256kbps/56kbps
Ivanof Bay	GCI	256kbps/56kbps
Kaktovik	GCI	256kbps/56kbps
Kaitag	GCI	256kbps/56kbps
Kasigluk	GCI	256kbps/56kbps
Kiana	GCI	256kbps/56kbps

EXHIBIT A

Survey of Fastest Download Speeds By Community in Western and Northern Alaska

Community	Provider	Residential Speed - download/upload
King Cove	ITC	256kbps/256kbps
King Salmon	BBTC	256kbps/56kbps
Kipnuk	Unicom	256kbps/64kbps
Kivalina	GCI	256kbps/56kbps
Kobuk	GCI	256kbps/56kbps
Kokhanok	GCI	256kbps/56kbps
Koliganek	BBTC	256kbps/56kbps
Kongiganak	Unicom	256kbps/64kbps
Kotlik		None
Kotzebue	OTZ	1.5mbps/256kbps
Koyuk	GCI	256kbps/56kbps
Koyukuk	GCI	256kbps/56kbps
Kwethluk	GCI	256kbps/56kbps
Kwigillingok	Unicom	256kbps/64kbps
Levelock	BBTC	256kbps/56kbps
Lime Village	GCI	256kbps/56kbps
Lower Kalskag	GCI	256kbps/56kbps
Manokotak	GCI	256kbps/56kbps
Marshall		None
McGrath	GCI	256kbps/56kbps
Mekoryuk	GCI	256kbps/56kbps
Mountain Village	Unicom	56kbps
Naknek	BBTC	256kbps/56kbps
Napakiak	GCI	256kbps/56kbps
Napaskiak	GCI	256kbps/56kbps
Nelson Lagoon	GCI	256kbps/56kbps
New Stuyahok	BBTC	256kbps/56kbps
Newhalen	GCI	256kbps/56kbps
Newtok	Unicom	256kbps/64kbps
Nightmute	Unicom	256kbps/64kbps
Nikolski	GCI	56kbps
Noatak	GCI	256kbps/56kbps
Nome	GCI	1.5mbps/256kbps
Nondalton	GCI	256kbps/56kbps
Noorvik	GCI	256kbps/56kbps
Nuiqsut	GCI	256kbps/56kbps
Nulato	GCI	256kbps/56kbps
Nunam Iqua	Unicom	56kbps
Nunapitchuk	GCI	256kbps/56kbps
Oscarville	GCI	256kbps/56kbps
Pedro Bay	GCI	256kbps/56kbps
Perryville	GCI	256kbps/56kbps
Pilot Point	GCI	256kbps/56kbps
Pilot Station	GCI	256kbps/56kbps
Pitkas Point		None
Platinum	GCI	256kbps/56kbps
Point Hope	GCI	256kbps/56kbps
Point Lay	GCI	256kbps/56kbps
Pope-Vannoy Landing		None
Port Alsworth	GCI	256kbps/56kbps
Port Clarence	military?	
Port Heiden	GCI	256kbps/56kbps

EXHIBIT A

Survey of Fastest Download Speeds By Community in Western and Northern Alaska

Community	Provider	Residential Speed - download/upload
Portage Creek	GCI	256kbps/56kbps
Prudhoe Bay	ACS	800kbps-1.0mbps
Quinhagak	Unicom	256kbps/64kbps
Red Devil	GCI	256kbps/56kbps
Red Dog	GCI	56kbps
Ruby	GCI	256kbps/56kbps
Russian Mission		None
Saint George		None
Saint Mary's	GCI	256kbps/56kbps
Saint Michael	GCI	256kbps/56kbps
Saint Paul		None
Sand Point	ITC	256kbps/256kbps
Savoonga	GCI	256kbps/56kbps
Scammon Bay		None
Selawik	Inutek	256kbps/64kbps
Shageluk	GCI	256kbps/56kbps
Shaktolik	GCI	256kbps/56kbps
Shishmaref	GCI	256kbps/56kbps
Shungnak	GCI	256kbps/56kbps
Sleetmute	GCI	256kbps/56kbps
South Naknek	BBTC	256kbps/56kbps
Stebbins	GCI	256kbps/56kbps
Stony River	GCI	256kbps/56kbps
Takotna	GCI	256kbps/56kbps
Teller	GCI	256kbps/56kbps
Togiak	GCI	256kbps/56kbps
Toksook Bay	Unicom	256kbps/64kbps
Tuluksak	GCI	256kbps/56kbps
Tuntutuliak	Unicom	256kbps/64kbps
Tununak	Unicom	256kbps/64kbps
Twin Hills	Unicom	56kbps
Ugashik		None
Unalakleet	GCI	56kbps
Unalaska/Dutch Harbor	ITC	168kbps/168kbps
Upper Kalskag	GCI	256kbps/56kbps
Wainwright	GCI	56kbps
Wales	GCI	256kbps/56kbps
White Mountain	GCI	256kbps/56kbps