

**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
NBP PUBLIC NOTICE # 28**

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SUMMARY

In evaluating potential private and public financing vehicles, the Commission should focus on the funding requirements for middle mile systems, for which the lack of private investment is much more acute than for last mile networks. The creation of middle mile infrastructure is key to the achievement of universal broadband coverage and will encourage the development of competitive and innovative last mile markets. By focusing on the role of such networks, the Commission will fulfill its statutory obligation to identify “the most effective and efficient mechanisms for ensuring broadband access by all people of the United States.”

The discussion of infrastructure requirements for the National Broadband Plan must begin with agreement on a definition of what broadband is, a task with which the Commission has yet to come to grips. For many parts of rural America, the goal of “future proof” transmission capabilities requires the deployment of fiber optic middle mile systems. It is often difficult to justify a purely commercial business case for such systems, and some level of public grant funding should, as a result, be anticipated.

KKCC concurs with the Broadband Task Force’s “guiding principles” that private sector investment is essential to the success of a National Broadband Plan, and that competition drives innovation and better choices for consumers. Public support for middle mile systems should, therefore, be conditioned in ways to stimulate and reward the recipient’s entrepreneurial behavior. Recipients of public funding for middle mile projects should be able to demonstrate a sustainable business model; they should be encouraged to match private investment with public support; they should be required to be operated on a non-discriminatory, carrier-neutral basis; they should be legally guaranteed rights of interconnection with all accessible last mile

providers; and they should be evaluated for the public cost-savings that they will generate over the operational life of the system.

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Kodiak-Kenai Cable Company, LLC (“KKCC”), by its undersigned counsel, hereby responds to the Commission’s Public Notice seeking comment on the potential private sector and government funding vehicles for financing broadband deployment projects in rural and other high cost areas.¹

I. BACKGROUND

KKCC is a native-owned limited liability company that operates a 600-mile submarine fiber optic telecommunications system, the Kodiak Kenai Fiber Link, connecting the 60,000 residents of Kodiak Island and the Kenai Peninsula in Alaska with Anchorage. KKCC is currently an applicant under both the Rural Utility Service (“RUS”) Broadband Infrastructure Program (“BIP”) and the National Telecommunications and Information Administration (“NTIA”) Broadband Technology Opportunity Program (“BTOP”) for funding the construction of a new undersea fiber optic cable, the Northern Fiber Optic Link (“NFOL”). NFOL would build on the existing Fiber Link network, creating a backbone system providing high-speed

¹ DA 09-2610, released December 18, 2009.

broadband to western and northern Alaska, the geographically largest remaining unserved area of the United States. The proposed middle mile system is described more completely in KKCC's recently filed comments in response to NBP Public Notice # 11, addressing the role of middle mile and second mile networks in the Commission's development of a National Broadband Plan.² KKCC will respond to the Commission's inquiry regarding potential private and government funding vehicles from the perspective of a middle mile operator, with emphasis on the unique challenges posed by the vast and challenging unserved portions of the nation's largest state.

II. DISCUSSION

A. The Private Investment Challenge for Middle Mile Infrastructure

The Commission's NBP Public Notice # 28 correctly identifies the lack of private financing for network deployment as one obstacle to broadband access in rural communities.³ However, based on the white papers cited in its Public Notice, the Commission's focus seems to be on the lack of investment in last-mile infrastructure.⁴ KKCC submits that this focus is misplaced. The lack of private investment is much more acute with respect to middle-mile infrastructure because of the extremely high levels of up-front capital investment required. Therefore, like the construction of the interstate highway system in the 1950s and 1960s, this is an instance in which public financing can make the biggest difference. Once dependable middle-mile infrastructure is in place throughout the nation, and available on a non-discriminatory basis, private entities will be encouraged to invest in innovative last-mile infrastructure, confident that the return on their investment will not be impaired by backhaul capacity that is either limited or

² Comments of Kodiak-Kenai Cable Company, LLC, GN Dockets 09-51, 09-47 and 09-137, filed November 4, 2009, at 1-3.

³ NBP Public Notice # 28, at 1.

⁴ See *id.*, at 1 n. 4, referencing *ex parte* filing on behalf of Hiawatha Broadband Communications, Inc.

unreliable, or both. Thus, in order to fulfill its statutory mandate of identifying “the most effective and efficient mechanism for ensuring broadband access by all people of the United States,”⁵ the Commission should focus instead on finding solutions for the deployment of middle mile, backbone broadband networks in all parts of the United States.

In its initial report on RUS and NTIA funding awards for broadband infrastructure made pursuant to the Recovery Act, the White House National Economic Council wrote: “The ‘middle mile’ provides the critical link between the Internet backbone and the local networks that connect homes, businesses, and community institutions.”⁶ The White House Report cited the federal government’s funding of the development of a backbone network in the 1980s for the embryonic Internet that has spawned “the phenomenal growth of the Internet service provider industry” in the last quarter century.⁷ In its interim report to the Commission, the Broadband Task Force identified the existence of a “middle mile gap” in the national broadband network.⁸ The Broadband Task Force also identified among its “guiding principles” for policy choices in developing the National Broadband Plan that private sector investment is essential, and that competition drives innovation and better choices for consumers.⁹ KKCC supports these principles and believes that they dictate the need for proper attention by the Commission to the critical role of middle mile networks in the national broadband strategy. As has been demonstrated in years past with previous transforming technologies (*e.g.*, train, telegraph,

⁵ American Recovery and Reinvestment Act of 2009, Pub. L. 111-5 (hereinafter, “Recovery Act”), §6001(k)(2)(A).

⁶ “Recovery Act Investments in Broadband: Leveraging Federal Dollars to Create Jobs and Connect America,” Executive Office of the President, National Economic Council, December 17, 2009 (hereinafter, “White House Report”), at 4.

⁷ *Id.*, at 4-5.

⁸ “National Broadband Plan Policy Framework,” Powerpoint presentation at the Federal Communications Commission open meeting, December 16, 2009 (hereinafter, “Interim Broadband Report”), at slide 7.

⁹ *Id.*, slide 5.

electricity, automobile), widespread implementation is not possible without the infrastructure to support it. So it is with high speed data transmissions: it is only through the creation of effective middle mile broadband networks that last mile markets will be able to access the data necessary effectively to utilize the Internet and emerging communications technologies. Moreover, once such middle mile transport is available, the stage is set for competition among last mile providers to be spawned and to grow.

A clear example of broadband strangulation due to lack of infrastructure can be seen in Alaska. In the remote regions of the state that KKCC seeks to serve, last mile local telecommunications systems exist and, increasingly, competition is emerging in these markets. However, in the absence of robust backhaul networks, data transport is choked off, making it infeasible for even competitive technologically advanced last mile providers to offer meaningful broadband offerings to their end users. For example, in southwestern Alaska, United Utilities, with the aid of public grants, constructed a high-capacity "second mile" microwave system linking a significant number of small communities. Yet, this terrestrial network depends on satellite backhaul. As a result, the end users of this system remain deprived of accessing the Internet at next-generation speeds.

In contrast to this are areas closer to the urban centers in the state where a reliable broadband infrastructure exists. In these locations, advanced broadband technologies are made readily available to the public, and are widely utilized. By focusing on the middle mile component as the critical missing link for many rural and otherwise hard to serve areas, the Commission will establish the infrastructure necessary for promoting unregulated, market-driven

innovation, which the Administration, speaking through the NTIA, states must remain “the hallmark of the Internet economy.”¹⁰

B. Reaching Consensus on the Definition of Broadband

Any discussion of infrastructure requirements in the context of the National Broadband Plan must begin with a seminal agreement on what broadband is. Without reaching consensus on this fundamental topic, there is no way that the Commission can rationally establish either goals or methodologies to achieve those goals within the context of a Broadband Plan. The highest priority for public financing should be on the infrastructure needed to fully support broadband services. This raises a fundamental question that the Commission has not yet answered: what is meant by broadband service? Because if broadband service means service that provides consumers with relatively slow speeds and frequent interruptions, the necessary infrastructure is considerably different than if we intend to provide consumers with high speed, reliable service.

In turn, this raises an even more fundamental question: what types of uses do we want the broadband service to make available to consumers? If we want consumers to enjoy the benefits of distance learning, telemedicine, social networking, and file-sharing, the definition of broadband service must be robust enough to support future innovations with respect to those uses. At a minimum, this means the delivery of interactive, real-time and full-motion, high definition video content.

While the Commission sought input into the definition of broadband and other statutory terms under the Recovery Act in its initial Notice of Inquiry for the development of a National

¹⁰ Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce, to Julius Genachowski, Chairman, Federal Communications Commission, filed in GN Docket 09-51, January 4, 2010 (hereinafter, “NTIA *Ex Parte*”).

Broadband Plan¹¹ and in its first NBP Public Notice,¹² there has been a surprising lack of public debate on this issue in the ensuing months, and a virtual dearth of progress made in reaching any form of consensus. The Interim Broadband Report presented as recently as December 16, 2009 at an open Commission meeting did not include any indication as to how “broadband” would be defined, although KKCC was encouraged to see that the Report did note the problems for consumers presented by the widespread disparity between advertised and actual delivery speeds.¹³ The NTIA and RUS did little to advance this dialogue by adopting in their first Notice of Funding Availability under the Recovery Act as a condition for funding eligibility a minimum *advertised* broadband speed that would be insufficient to support such critical applications as distance learning and telemedicine.¹⁴

In order to ensure that the Commission works with a “future proof” concept of broadband, the Commission will have to adopt a functional definition that assures, at a minimum, the delivery of interactive, real-time and full-motion, high definition video content, both in a down and upstream mode in a multi-user fixed and mobile environment. Clearly, technology is moving at a very rapid pace and a definition of broadband that is incapable of supporting these functional specifications will run the risk of becoming obsolete even before it is agreed upon, as it will be forever incapable of supporting such critical applications as distance learning, telemedicine/telehealth, social networking, video file-sharing and mobile security and surveillance. The Commission must also ensure that the National Broadband Plan encompasses a high level of reliability for broadband delivery, and that it not condone for this purpose

¹¹ A National Broadband Plan for Our Future, *Notice of Inquiry*, GN Docket 09-51, FCC 09-31, released April 8, 2009.

¹² NBP Public Notice # 1, DA 09-1842, released August 20, 2009.

¹³ Broadband Interim Report, slide 22.

¹⁴ 768 KBps upstream, 200 KBps downstream. 74 Fed.Reg. 33104, 33108 (July 9, 2009).

transport media that are subject to seasonal, weather-related or other episodic outages. Broadband transport is only as good as the quality of the the data received. Therefore, the Commission's National Broadband Plan must establish a benchmark not only for speed, but also for the quality and reliability of the transported signal.

C. The Importance of Fiber Optic Middle Mile Networks

If this is what we mean by broadband service, the supporting infrastructure, both middle-mile and last-mile, must meet the same high standards. Between these two segments, it is high-quality, non-discriminatory middle-mile infrastructure that lays the foundation for high quality, innovative last-mile infrastructure, not the reverse. The federally-funded interstate highways allowed goods to move efficiently from one commercial center to another, thereby allowing private enterprise to flourish at both the point of production and the point of consumption. Today, the goods are in the form of electrons, but the principle is the same.

The vast and topographically inhospitable reaches of Alaska's western and northern regions, which are the target markets KKCC seeks to serve through the NFOL, exemplify the fact that some parts of rural America will require fiber-optic technology as the only viable backbone solution for broadband delivery. Once combined transport requirements reach 155 MBps and above in an area, the only effective transport mode is at optical wavelengths requiring a fiber-optic-based transmission backbone. Satellite and terrestrial wireless systems operate by means of radio frequency (RF) technology. In a digital regime, the number of digits physically capable of being transmitted per MHz of RF capacity is limited. Whereas a satellite provides the benefit of large coverage areas for delivery, its content throughput cannot compare to the transmission rates achievable at the much higher frequencies delivered via optics technology. Moreover, while fiber-optic technology requires a large initial investment, once installed, its

transmissions are not susceptible to degradation by weather and other ambient conditions to the extent that terrestrial wireless and satellite solutions are.

In the northern latitudes of Alaska, where satellites face particularly perilous limitation through their highly restricted look angles, little controversy remains that satellite technology cannot offer a viable substitute to terrestrial fiber optic networks for the delivery of next-generation broadband requirements. Both the Regulatory Commission of Alaska¹⁵ and General Communication Inc.,¹⁶ the largest integrated provider of telecommunications services in the state, are on record as agreeing with KKCC that satellite technology is incapable of supporting sufficient broadband throughput speeds.¹⁷

Terrestrial wireless technologies face the added shortcoming of line-of-sight and distance limitations which make them an unsatisfactory solution for long-haul, backbone systems. In Alaska, where significant distances over rugged, vertically divergent terrain separate population centers, line-of-sight transmission is not only expensive, but is usually impractical. In addition, large tracts of land have been withdrawn from commercial use through designation as federal or state parks, refuges and preserves, the permitting process for an extensive microwave backbone system would be particularly onerous, if not impossible (see maps of federal and state “withdrawn” lands attached in Exhibit 1).

¹⁵ Comments of the Regulatory Commission of Alaska, Report on a Comprehensive Rural Broadband Strategy, GN Docket 09-29, filed March 25, 2009, at 5-6.

¹⁶ Comments of General Communication, Inc., Report on a Comprehensive Rural Broadband Strategy, GN Docket 09-29, filed March 25, 2009, at 3-4; Comments of General Communication, Inc., A National Broadband Plan for Our Future, GN Docket 09-51, filed June 8, 2008, at 8.

¹⁷ See also Comments of the State of Alaska, NTIA/RUS Request for Information, Docket 090309298-9299-01, filed April 9, 2009, at 3; University of Alaska Comments, NTIA/RUS Request for Information, Docket 090309298-9299-01, filed April 9, 2009, at 2-3.

Recent *ex parte* filings in this proceeding by the U.S. Department of Justice and NTIA emphasize the potential importance of wireless technologies for delivering broadband to hard-to-serve rural areas and the concomitant importance of making additional spectrum available for commercial wireless applications.¹⁸ Examination of these filings, however, reveals that they are focused on the use of wireless solutions for last-mile (or, possibly, even for what the Commission has previously referred to as “second” mile) markets and that they *assume* the existence of adequate middle mile systems to support last mile providers. Indeed, NTIA’s *Ex Parte* expressly concludes that, “along with providing new spectrum for broadband uses, it will remain important for the Commission to assure competitive access to high capacity wireline backhaul facilities.”¹⁹

D. The Need for Public Support in the Middle Mile

The relative lack of fiber optic backbone systems in unserved and underserved rural areas of the country is the result of a lack of access to capital for such projects. As a general principle, it is difficult to construct a viable business case for a satisfactory return on investment, given the significant capital requirements for deploying rural middle mile fiber optic networks and the relatively small and widely dispersed populations that such systems would serve.²⁰ It is for this reason that many parts of rural America depend for their broadband needs, by default, on the inadequate delivery capabilities of satellite-based systems. In preparing its BIP and BTOP applications, KKCC examined the numbers, and determined that it could not make a convincing commercial business case to deploy the NFOL using private investment (or debt) resources alone. In fact, it would have been unable to construct its existing Kodiak Kenai Fiber Link

¹⁸ See *Ex Parte* Submission of the United States Department of Justice, GN Docket 09-51, filed January 4, 2010; NTIA *Ex Parte*.

¹⁹ NTIA *Ex Parte*, at 5.

²⁰ See White House Report, at 6.

network absent public funding support it received for the benefit of its anchor, federal customer. Moreover, KKCC will require that a substantial portion of any public funding that it receives to deploy its proposed backbone network be made in the form of a grant. The NTIA recognized this fact in its recent *ex parte* presentation to the Commission, when it stated:

“The economics of providing wireline broadband Internet access service suggest that market forces alone may not produce additional entry. Fixed broadband infrastructure, unlike the Internet-based services and applications that ride upon it, involves very substantial sunk costs and rather low marginal costs associated with adoption and usage by incremental households [citation omitted]. Because of the large fixed and sunk costs of wireline networks, it is likely that additional wired competitors will enter only those markets with the greatest density of users.”²¹

Within this context, KKCC suggests that it would be a mistake to focus public funding on last-mile infrastructure, or to waste public funding on middle-mile infrastructure that lacks the capacity and reliability to support the kinds of innovative services that last-mile providers are capable of providing to consumers. By directing public financing toward high-quality, middle-mile infrastructure, the federal government can do what private investors cannot do alone, leaving private capital to focus on serving the evolving needs of retail consumers. Significantly, in their recently issued Request for Information, NTIA and RUS asked whether their planned second funding round for BIP and BTOP should be limited to funding middle mile infrastructure projects that will connect to key community anchor institutions. The RFI observed:

“Such [middle mile] projects also have the potential to stimulate the development of last mile services that would directly reach end users in unserved and underserved areas. Additionally, installing such middle mile facilities could have a transformative impact on community development by driving economic growth.”²²

²¹ NTIA *Ex Parte*, at 3.

²² NTIA/RUS Joint Request for Information, Docket 0907141137-91375-05, November 16, 2009, 74 Fed. Reg. 58940, at Section II.A.1.

In this regard, the broadband loan programs that RUS has administered over a number of years under the Farm Bill would not, in themselves, provide adequate support for the construction of a NFOL backbone network.²³ The BIP and BTOP programs established under the Recovery Act, therefore, offer a rare opportunity for the realization of critically needed rural fiber optic, backbone systems, a reality that warrants recognition by the Commission in the context of its emerging National Broadband Plan. Yet, KKCC concurs with the spirit of the Broadband Interim Report that any such interventions by the federal (or state) governments should be tailored to attract and sustain the role of private capital and the innovation it brings with it, rather than to ignore or replace it. Public support for middle mile networks should be conditioned, therefore, to stimulate and reward the recipient's entrepreneurial behavior.

First, it goes without saying that any recipient of public funding must be able to demonstrate a viable and sustainable business case for its enterprise, taking into account the contribution of capital from the public source. Those enterprises that are unable to do so, as alluded to in the Public Notice,²⁴ should not be eligible for public support since that would represent a waste of taxpayer dollars and, hence, poor public policy. The BIP and BTOP programs have both properly conditioned eligibility on the applicant's ability to make such a business case.

Second, scarce public resources should, to the extent possible, be matched with private equity and debt resources as a means of stimulating and attracting private participation in the market. Again, both the BIP and BTOP programs properly are designed to reward applicants that maximize the level of private capital they are able to contribute in relation to the amount of

²³ Government-backed loan guaranties will similarly play little role in the present economy with commercial interest rates at record lows.

²⁴ NBP Public Notice # 28, at 1.

public funding requested. Federal funding should go first to areas that, “but for” the infusion of some federal investment, would not be able to attract private financing for broadband infrastructure. KKCC represents a telling example of the success of this approach. The successful implementation of the KKFL system, and the benefits to the communities that it serves, clearly support the advantage of cooperative public and private funding. Although KKCC has not yet been awarded funding under either the RUS or NTIA Recovery Act broadband programs, its potential for securing public grant and debt support has been leveraged to attract significant additional private investments in the planned NFOL. This additional private investment would never have been financially justifiable without the potential for a significant federal investment. In addition, KKCC’s status as a potential recipient of public funding in support of its backbone network has attracted inquiries from potential customers regarding availability of capacity on the proposed system.

Third, any middle mile system qualifying for public support should be required to offer its capacity to last-mile providers on a non-discriminatory, carrier-neutral basis, and that it not offer retail services in competition with such last mile operators. In this manner, public investment in middle mile infrastructure will spur the development of competition in the last mile sector, where it provides the greatest benefit to consumers. Moreover, while sound fiscal policy would dictate against public support for competing middle mile providers, last mile operators obtaining capacity on a carrier-neutral basis would not perceive the presence of a monopoly provider.

Fourth, it is similarly important that broadband middle mile facilities that are deployed with the assistance of public funding be accorded the legal right to interconnect with all other carriers, so that no carrier can create a self-serving bottleneck and hinder competition. A model

for this requirement is found in Section 251(a) of the 1996 Telecommunications Act,²⁵ which establishes basic interconnection obligations to promote competition at the local exchange level. For backbone networks developed with public assistance, the inability to interconnect with all last-mile carriers would thwart the very purpose for which the public funding was intended. The requirements in Section 251(b) of the Act²⁶ would have an equally beneficial effect when applied to public funding recipients. That provision could be applied to prohibit publicly supported middle mile operators from installing network features, functions or capabilities that would violate (i) the requirement in the Act ensuring access to the network by persons with disabilities,²⁷ and (ii) the requirement in the Act to promote “nondiscriminatory accessibility by the broadest number of users and vendors of communications products and services to public telecommunications networks.”²⁸

Finally, when evaluating middle mile projects for public support, funding agencies should consider not only the immediate costs that construction of the system will require, but the potential for savings to the public over the life of the project. Federal and state governments collectively expend billions of dollars each year (including through the Commission’s universal service program) in supporting education, health, public safety, housing and research programs. A middle mile network, like NFOL, that will actually spur the development of commercial, and even competitive, last mile service providers can reduce operational demands on the public treasury. For projects with long-life cycles, as is true for many fiber-optic systems (NFOL, for example, has a 25-year design life), such savings can ultimately exceed the initial cost to the public of helping the system become operational. Middle mile broadband infrastructure projects

²⁵ 47 U.S.C. § 251(a).

²⁶ 47 U.S.C. § 251(b).

²⁷ 47 U.S.C. § 255.

²⁸ 47 U.S.C. § 256.

that can demonstrate they will support community anchor, scientific and military institutions should be evaluated for their potential public benefit, as well as cost.

These conditions would help ensure that operators of middle mile broadband networks benefiting from the receipt of public support will, in fact, become a part of what the NTIA envisions as “the Internet’s innovation ecosystem.”²⁹ If adopted as part of the National Broadband Plan, they would also help fulfill the Commission’s statutory mandate to provide a “detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public.”³⁰

III. CONCLUSION

The Commission’s analysis of “the most effective and efficient mechanism for ensuring broadband access by all people of the United States” should focus on the critical role that middle mile infrastructure plays in delivering broadband to rural, hard to reach parts of the country. In many parts of rural America, including Alaska, fiber-optic middle mile networks will be required for the delivery of next-generation broadband services and capabilities. Often, the deployment of such systems depends on some level of public funding support in the form of

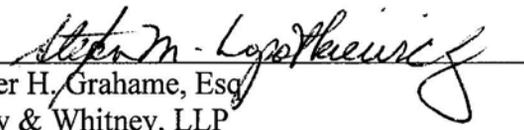
²⁹ NTIA *Ex Parte*, at 2.

³⁰ Recovery Act, § 2001(k)(2)(B).

grants. The National Broadband Plan should recognize that public support for middle mile broadband infrastructure is, on balance, a good investment in that it enables the development of last mile competitive markets contributing to an “innovation ecosystem.”

Respectfully submitted,

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