DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

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Comments Regarding the National Broadband Research Agenda

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A. Broadband Technology

Comments under this heading should address research and evaluation as related to broadband technology development and innovation. The broadband technology landscape continues to reflect rapid innovation and advancement, across all levels of the broadband technology value chain, *e.g.,* platforms, networks, devices, services, applications. These advances have yielded a myriad of new products and services, and improved the quality and performance of existing ones. Questions related to technology research follow:

1. What are the critical data and research needs in the areas of broadband technology and innovation?

Comments to Question 1: Mobile interoperability is a critical research need exacerbated by the internet wide transition from the legacy Internet Protocol (IP), version 4 (IPv4) to Internet Protocol, version 6 (IPv6). The IP transition for mobility is a broadband requirement orthogonal to the organizational or enterprise adoption of IPv6. Internet service and telecommunications providers of mobile broadband services are faced with a distinctly different information and communication technology (ICT) that is vastly different in scale from it's predecessor. Broadband technology and innovation are dependent on the address capacity and capabilities of IPv6 due to exhaustion of the American Registry for Internet Numbers (ARIN) IPv4 free pool on September 24, 2015. Mobile interoperability impacts include mobile applications, and internet and cellular infrastructure modernization. References: http://5gmwi.committees.comsoc.org; https://www.arin.net/vault/announcements/2015/20150924.html; https://developer.apple.com/news/?id=05042016a.

2. What specific technology research proposals, and associated methodologies, should be prioritized to support the advancement of broadband technology? And why?

Comments to Question 2: Cybersecurity for IPv6 enabled infrastructure is a priority concern due to increased risk levels introduced by complexities in the internet wide transition from the legacy IPv4 to IPv6. Cybersecurity research is necessary to understand and secure the vast and rapidly developing use of IPv6. Cybersecurity impacts include mobile devices, mobile networks, and the developing IPv6 based Internet of Things: References: http://iot.committees.comsoc.org; http://prod.sandia.gov/techlib/access-control.cgi/2010/104766.pdf.

3. What specific technology research proposals can support federal efforts to foster the access and adoption of broadband technology across rural areas, and other unserved and underserved segments, such as population groups that have traditionally under-utilized broadband technology (*e.g.,* seniors, low-income families, persons with disabilities)?

Comments to Question 3: Large carriers have predominant deployment using IPv6. The growth vector to expand broadband services in rural areas including state, local, tribal, and territorial jurisdictions indicates that small rural internet service and telecommunications providers will have to adopt IPv6 to develop and deploy new broadband internet services for population groups that have traditionally under-utilized broadband technology. Rural area impacts include critical services that depend on smart phone capabilities as part of the communications portfolio. References: http://www.ipv6forum.org; http://www.worldipv6launch.org/measurements/.