FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

July 2, 2010

The Honorable Kay Bailey Hutchison
Ranking Member
Committee on Commerce, Science and Transportation
United States Senate
560 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Hutchison:

Attached please find my responses to the additional post-hearing questions from my appearance before the Committee on April 14, 2010. Please let me know if I can be of further assistance.

Sincerely,

Julius Genachowski

QUESTIONS FOR THE RECORD
SENATOR OLYMPIA SNOWE

I. Broadband Tax Incentives

The Broadband Plan makes several references to the private sector investment that has been made to broadband networks and services. The document even goes as far to state that "due in large part to private investment and market-driven innovation, broadband in America has improved considerably in the last decade."

Back in the Fall, the Commission concluded that a total investment for universal broadband availability for the nation would range from $20 billion to $350 billion depending on the speed of broadband service.

In the Plan, the Commission concludes that in order to achieve the National Broadband Availability Target of broadband speeds of 4 Mbps download and 1 megabit-per-sec upload, the total cost would be approximately $33 billion.

Question: The Plan sets a goal of 100 million U.S. homes should have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps by 2020. Can you pinpoint or elaborate on what the Commission has estimated as the required investment to achieve that goal?

RESPONSE: The Plan's goal for achieving affordable, actual download speeds of 100 megabits per second downstream and 50 megabits per second upstream to 100 million American homes by 2020 is ambitious but achievable. The 100-squared initiative will help ensure America's global competitiveness in the 21st century. A widespread level of affordable high-speed connectivity will encourage innovators to develop the next generation of cutting-edge applications in the American market, for the American people.

The network deployment model developed and referenced in the Plan was aimed at estimating what areas of the country are currently "unserved" by broadband and calculating the level of investment that would be needed to serve those areas. The model was not developed with the purpose of estimating the investment that would be required to build 100 Mbps networks to 100 million households.

One of the main goals of the Plan to is to "maximize investment" but the document seems to be light on recommendations related to financial incentives such as tax credits to bolster capital investment in infrastructure.

Question: Given the significant capital expenditures required to meet the Commission's National Broadband Availability Target and 100-100 goal, why weren't there more recommendations related to tax credit-based incentives? The plan made these types of tax-based proposals to Congress for Research and Experimentation (R&E) and telework practices.

RESPONSE: The Plan includes a variety of recommendations to reduce costs and encourage private sector deployment in broadband networks and applications. The Plan

has recommendations to encourage private sector investment to realize the 100 squared goal by, among other things, fostering competition, driving demand for increased network performance and lowering the cost of deploying infrastructure. These recommendations should help inform consumers about broadband performance, expand services and infrastructure, and reform access to rights-of-way to lower barriers to entry for firms. The Plan also encourages Congress to make the Research and Experimentation (R&E) tax credit a long-term tax credit to stimulate broadband research and development, which is a cost effective way to spur private sector research and investment in broadband networks and applications.

II. National Broadband Plan Impact

The Plan also establishes six long-term goals to serve as a compass over the next 10 years. The first goal is to provide at least 100 million U.S. homes with affordable Internet broadband access with actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second. Providing consumers, developers, and small businesses such high-speed broadband speeds will truly revolutionize the Internet as well as exponentially increase the benefits it provides—users will be able to leverage new and emerging high-bandwidth applications and services that aren't available today or accessible with lower speeds.

But at the same time, the Plan acknowledges that broadband carriers are aggressively upgrading their networks to offer higher speeds and greater capacities. The Plan cites several network upgrades and expansions that are already planned or in the process of being implemented over next 2 to 3 years that will provide approximately 100 million homes with broadband speeds of 20 to 50 megabits-per-second and provide the building blocks to even faster broadband speeds in long-term.

Question: How will the Commission measure the effectiveness of this Plan as a catalyst for accelerating the investment that is currently underway or broadband deployment and adoption in general?

RESPONSE: The Plan includes a variety of recommendations and benchmarks to track progress of broadband deployment and adoption. Implementing the Plan requires a long-term commitment to measuring progress and adjusting programs and policies to improve performance. The Plan's recommendations to monitor implementation include:

a. **Ensuring that the FCC quickly publishes a timetable of proceedings to implement plan recommendations within its authority;**
b. **Publishing an evaluation of plan progress and effectiveness as part of the annual Section 706 Advanced Services Inquiry;**
c. **Creating a Broadband Data Depository;**
d. **Continue to utilize Broadband.gov as a public resource for broadband information; and,**
e. **Publishing a Broadband Performance Dashboard with metrics designed to track broadband plan goals.**

Also, as required by the Broadband Data Improvement Act, the Commission intends to conduct periodic surveys of consumers in urban, suburban, and rural areas in the large business, small business, and residential consumer markets to evaluate the characteristics of broadband service capability and adoption. These periodic national surveys will help track adoption rates over time, which can help measure the effectiveness of the Plan's proposals.

The Plan recommends that the Commission and the U.S. Bureau of Labor Statistics collect more detailed and accurate data on actual availability, penetration, prices, churn and bundles offered by broadband service providers to consumers and businesses, and should publish analyses of these data. The Commission's Broadband Action Agenda includes a proceeding later this year to improve the data the Commission collects on broadband deployment and adoption. By collecting more granular data over an extended time period, the Commission and other agencies can analyze the impact of programs and investment on broadband deployment and adoption.

In addition, the National Broadband Plan recommends Congress and federal agencies promote third-party evaluation of future broadband adoption by including specific requirements and funding for program evaluation and funding to conduct in-depth assessments and longitudinal program assessment.

III. E-rate Reform

One of the E-rate recommendations in the Plan is that the FCC should reexamine specific E-rate rules that appear to limit the flexibility of applicants to craft the most cost-effective broadband solutions based on the types of broadband infrastructure, services and providers available in their geographic areas. While more flexibility could possibly reduce the overall cost of broadband and increase bandwidth, there are concerns about maintaining the integrity of the program. The E-rate program has been very successful, well run, and established procedures for minimizing waste, fraud, and abuse.

Question: Can you elaborate on the FCC's plan with respect to reforming and enhancing the E-rate program but maintaining the integrity and ensuring that increasing flexibility doesn't open it up to more waste, fraud, and abuse?

RESPONSE: In keeping with the National Broadband Plan's vision of improving and modernizing the universal service programs, the Commission is currently examining what is working well and what can be improved in the current E-rate program. Specifically, the Commission is considering several potential reforms that would cut red tape by eliminating rules that have not effectively served their intended purpose, while continuing to protect against waste, fraud, and abuse. For example, the Commission is considering streamlining the E-rate application process, providing greater flexibility for applicants to choose the most cost-effective and educationally useful broadband services. The Commission is also exploring ways to expand the reach of broadband to the classroom, including schools that serve populations facing unique challenges, such as tribal schools or schools for children with physical, cognitive, or behavioral disabilities. Additionally, the Commission is taking

steps to make the E-rate program more user-friendly and is working closely with the Universal Service Administrative Company, which administers the E-rate program under the Commission's direction.

The E-rate program provides two "priorities" for discounting telecommunications services—Priority 1 for external telecommunications and Internet connections and Priority 2 for internal connections/wiring. The Plan recommends that the Commission develop ways that Priority 2 funding can be made available to more E-rate applicants. Given the advancements in information technology and more dynamic content and applications that teachers and students are utilizing, numerous schools are finding that traditional Priority 1 connections (typically T1/T3s) are not enough for the growing demand and usage—that higher bandwidth connections are needed. Libraries have also conveyed the need for greater capacity due to increased patronage.

The Broadband Plan makes numerous proposals related to the Universal Service Fund, in general. As you know, the Universal Service Administrative Company (USAC) is the independent, not-for-profit corporation designated as the administrator of the federal Universal Service Fund by the FCC.

<u>Question:</u> Can you elaborate on how involved the Universal Service Administrative Company (USAC) was in assisting the FCC's development of these recommendations? Were USAC official active participants in discussions?

RESPONSE: As the National Broadband Plan Team developed its recommendations, it obtained information and data from USAC, as necessary, regarding the operation of the existing universal service programs.

The E-rate program provides two "priorities" for discounting telecommunications services—Priority 1 for external telecommunications and Internet connections and Priority 2 for internal connections/wiring. The Plan recommends the Commission develop ways that Priority 2 funding can be made available to more E-rate applicants. Given the advancements in information technology and more dynamic content and applications that teachers and students are utilizing, numerous schools are expressing that traditional Priority 1 connections (typically T1/T3s) are not enough for the growing demand and usage—that higher bandwidth connections are needed. Libraries have also conveyed the need for greater capacity due to increase patronage.

<u>Question:</u> How will the Commission balance the recommendation for increasing Priority 2 funding with accommodating for greater priority 1 funding to meet the growing bandwidth needs of schools and libraries?

RESPONSE: Funding under the E-rate program is essential to enable schools and libraries to maintain current levels of Internet connectivity and to provide access to improved telecommunications and information services as technology advances. High-speed services are needed to handle the applications available today, including online

distance learning and videoconferencing. Schools will need E-rate funding for both the initial implementation of high-speed broadband access and for ongoing costs to maintain and continuously improve their networks. Although the E-rate program has always been able to fund all Priority 1 requests in the past, the demand for internal connections has exceeded the E-rate program's $2.25 billion cap in every year but one since the program's existence. The Commission is currently considering ways to ensure that schools and libraries receive funding for Priority 2 services, with two goals in mind: (1) providing funding for internal connections to more schools and libraries than in the past; and (2) ensuring that a predictable amount of funding is available to schools and libraries for internal connections each year.

IV. Comprehensive Spectrum Policy Reform

One of the main focal points of the Plan is radio spectrum and finding more of it for wireless. While I strongly agree that comprehensive spectrum policy reform is long overdue and paramount to achieving the long-term telecommunications needs of this nation, I am concerned about what seems to be a heavy emphasis on reallocation instead of a more multi-faceted solution that includes fostering technological advancement and more robust spectrum management.

Case in point, there are extensive and detailed recommendations in the Plan to reallocate 120 megahertz of spectrum currently being used by broadcasters as well as the voluntary mobile auction fund, but only general recommendations to encourage technical innovation and spectrum sharing/reuse opportunities that would improve spectrum efficiency. For example, a technology known as femtocell, that can increase capacity by offloading wireless traffic onto broadband wireline networks, wasn't mentioned once in the Plan.

This plan is suppose to be forward thinking but seems to be somewhat stuck in the past by presenting a roadmap that excessively relies on reallocation, which is a zero sum game, instead of a greater emphasis on technological innovation and robust management to increase spectrum efficiency and wireless capacity.

Question: Do you agree that more robust spectrum management policy and technical innovation advancement are just as important, if not more so than reallocation? Can you explain in more detail how the Plan will implement a comprehensive solution to ensure that spectrum is available to meet the future needs of all users—not just wireless broadband?

RESPONSE: I certainly agree that an effective spectrum policy involves much more than allocation decisions. The Plan includes a number of recommendations for spectrum policy initiatives.

For instance, the Plan calls for ensuring greater transparency concerning existing spectrum allocation and utilization. The FCC has already launched, concurrent with release of the Plan, the "spectrum dashboard," which enables user-friendly access to information regarding spectrum bands and licenses. The dashboard will also assist in spectrum policy planning and decision-making, and help promote a robust secondary market in spectrum so that companies can access spectrum to serve a variety of different needs. The Plan also recommends that the Commission move forward with creating methods for ongoing

measurement of spectrum utilization. This too, will help provide a fact base that can inform policymaking so that we can take needed actions to make better use of spectrum. In addition, the Plan calls for a triennial assessment of spectrum allocations to ensure that existing allocations serve the public interest.

I also believe that the FCC should expand incentives and mechanisms for incumbent licensees to yield their spectrum to more productive uses. The Plan sets forth several different mechanisms, including the use of incentive auctions and expansion of tools to facilitate relocation of government users.

V. 500 MHz of New Spectrum Goal

One of the recommendations within the National Broadband Plan is that the FCC should make 500 megahertz newly available for broadband use within the next 10 years, of which 300 megahertz between 225 MHz and 3.7 GHz should be made newly available for mobile use within five years.

While the Plan briefly notes general estimates between 40 to 150 megahertz of spectrum are required for each operator, it wasn't clear as to how the 500 MHz would ultimately be parceled out—spectrum license sizes for new competitors and additional spectrum bandwidth to increase capacity for incumbent spectrum licensees.

Question 1: Can you elaborate on how that 500 MHz will be distributed?

RESPONSE: As the Plan notes, the forecast of the need to make 300 megahertz of spectrum between 225 MHz and 3.7 GHz available by 2015 reflects a set of reasonable assumptions about the evolution of supply and demand for mobile bandwidth. Determinations about whether spectrum is licensed or unlicensed, as well as service rules, will need to be developed. By adopting flexible use policies for this spectrum, and facilitating secondary markets, the Commission will help ensure that spectrum can be put to its highest and best use.

Question 2: How will the Commission balance providing more spectrum to incumbents in order to increase capacity and bandwidth with providing spectrum to new entrants to foster more competition so consumers can have more choices available to them?

RESPONSE: The first priority is to make available additional spectrum. Both incumbents and new entrants will need access to spectrum.

VI. Consumer Broadband Test

The FCC recently launched a free broadband speed test for consumers to check the download and upload speeds of their Internet broadband connection. The premise is that the test will allow consumers to compare the FCC test results with the speeds promised by the broadband provider and allow the FCC to use data collected from the test to analyze broadband quality and availability across the United States.

However, some users have expressed concern about widely varying results. There is actually a disclaimer on the FCC test site stating that the test may not be an accurate representation of connection quality provided by one's broadband provider. An FCC official recently stated that "software-based tools can provide individuals with inconsistent performance results, some of which are out of the control of the ISP." Given the test transfers a small amount of generic data back and forth between a user's computer and a testing server, the path that the data takes could contain numerous hops or links owned and operated by multiple carriers that the consumer is not aware of—even for local end points. In addition, the old adage "you're only as fast as your slowest link" seems to apply. So one could easily see a possible misrepresentation the test would have and the consumer confusion that could result.

<u>Question:</u> Is the FCC concerned about consumer confusion that the Commission's Consumer Broadband Test could create? With varying test results and lack of detailed information presented, it could lead to consumers wrongly accusing their broadband provider of not providing what they are advertising even though, as the FCC official noted, some performance characteristics are out of the ISP's control, correct?

RESPONSE: The Commission recognizes that there are limitations to the online, software-based, speed tests, as you rightly point out. However, these speed tests are not designed primarily to test the performance that a consumer's broadband provider is delivering (and solely responsible for), but rather to provide insight into the actual performance that the consumer experiences on his or her device. In that respect, the software-based tests are extremely valuable.

Beyond performance experienced by the consumer though, we are also interested in performance delivered by an individual ISP, as part of the broader transparency initiative. For that reason, we are also launching a hardware-based speed testing project in partnership with a third-party contractor, SamKnows.

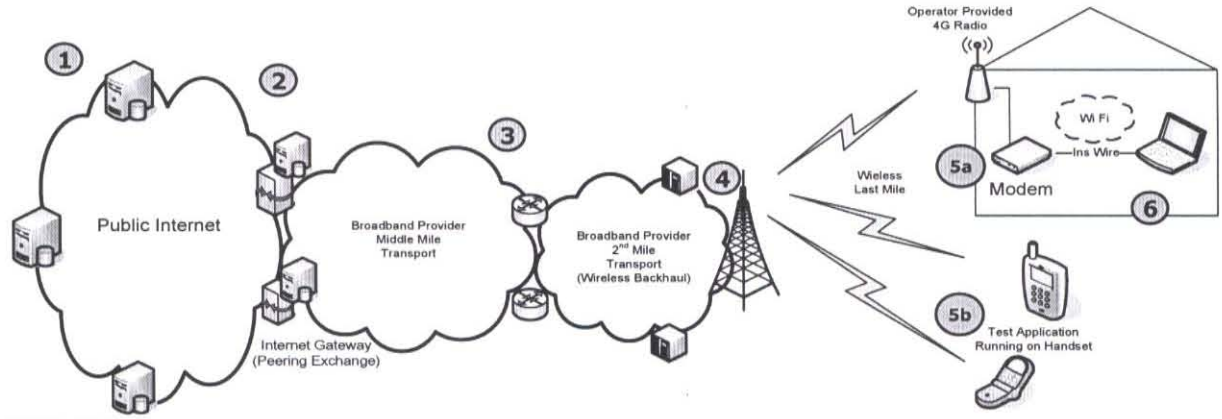
- **The goal of the project is to provide consumers with accurate and complete information about what speeds are delivered to their homes by ISPs.**
- **While measuring performance experienced on an end-user device is valuable as well, ISPs cannot be reasonably held accountable for factors inside of the home that may degrade service. Therefore, this project will rely on scientific, hardware-based testing that will test performance at the point of the user's router.**
- **The initial test will rely on a panel of 10,000 volunteers across ISPs, service tiers and geographies, all of which will be given a customized router that can be easily integrated into their existing home network.**
- **The FCC will make results of this study available later this year on both a publicly accessible website and in the form of a report.**

- **This is the first step in an iterative process to design a specific testing methodology for broadband services and create more transparency and accountability in the broadband marketplace.**

Transparency with broadband performance is a key issue within the Plan but there isn't any real mention of the multitude of factors that affect broadband speeds—the multiple links that exist between consumer and the Internet content they're accessing, equipment performance, the type of data being transmitted, existence of viruses/malware, etc.

<u>Question:</u> What are the FCC's plans to properly address this?

RESPONSE: Many factors affect broadband performance, so, as described above, the Commission intends to employ a two-part strategy to provide improved measurement and reporting of broadband speeds and performance. The first part, tackled by online speed tests at the end-user's device, will provide information on performance experienced by consumers. The second part, tackled by hardware-based testing that sits behind a customer's modem, will provide information on performance delivered by ISPs. As the diagram below illustrates, there are a number of points where performance can be affected:



DEFINITIONS

1. **Public internet content:** public internet content that is hosted by multiple service providers, content providers and other entities in a geographically diverse (worldwide) manner
2. **Internet gateway:** closest peering point between broadband provider and public internet for a given consumer connection
3. **Link between 2nd Mile and Middle mile:** broadband provider managed interconnection between middle and last mile
4. **Aggregation node:** First aggregation point for broadband provider (e.g. DSLAM, cable node, satellite, etc.)
5a. **Household fixed modem/receiver:** CPE (customer premise equipment) typically managed by a broadband provider as the last connection point to the managed network (e.g. fixed wireless modem)
5b. **Consumer device:** Consumer mobile device (phone, laptop, PDA, etc.) wirelessly connected to provider network
6. **Consumer device:** consumer device connected to modem through internal wire or Wifi (home networking), including hardware and software used to access the internet and process content (customer managed)

Software-based testing covers performance for the entire range from point 1 to point 6. However, to isolate just the performance delivered by ISPs, it is important to focus just on point 2 to point 5. The Commission staff is working with a third-party contractor, SamKnows, as well as the ISP community to accomplish this. By placing test devices at the

Customer Premise Equipment (CPE) point, we can remove performance degradation that occurs between points 5 and 6 from factors such as in-home wiring, multiple computers in use, viruses or malware on a device, and other issues. By working with ISPs and independent testing locations to place testing servers on ISP networks and at commonly used peering exchanges, we can remove performance degradation that occurs between points 1 and 2 from factors such as off-network or public Internet traffic that an ISP cannot control.

Although there are a multitude of factors affecting broadband speeds, by performing both of these tests, the Commission hopes to isolate just those factors that ISPs are responsible for. That way, consumers are informed as to whether, when they experience sub-standard performance, the issue is what is delivered by the ISP, or whether the issue is on their device or in their home network. This will lessen the burden on ISPs to deal with customer complaints about performance that they cannot correct, and lessen the burden on consumers that may erroneously purchase higher speed service packages when that may not be the true problem.

VII. Broadband Competition – Current State

The Broadband Plan indicates that approximately 4 percent of housing units are in areas with three wireline providers (either DSL or fiber, the cable incumbent and a cable over-builder), and 78 percent are in areas with two wireline providers. Thirteen percent are in areas with a single wireline provider and 5 percent have no wireline provider.

However, this data seems to conflict with the FCC's most recent semi-annual broadband report, which was released earlier this year in February. Table 13, which details the percentage of Census Tracts with Residential Fixed High-Speed Connections related to the number of providers, indicates that 26 percent of census tracts have three broadband providers and only 1.1 percent of census tracts have no broadband provider.

Table 13
Percentage of Census Tracts with Residential Fixed High-Speed Connections by Technology as of December 31, 2008
(Connections over 200 kbps in at least one direction)

	Number of Providers							
Technology	*Zero*	*One*	*Two*	*Three*	*Four*	*Five*	*Six*	*Seven or More*
aDSL	4.3	40.7	38.4	13.4	2.7	0.4	0.1	0.0
sDSL	96.0	3.8	0.2	0.0	0.0	0.0	0.0	0.0
Other Wireline	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	8.6	79.3	11.6	0.6	0.0	0.0	0.0	0.0
FTTP	86.7	13.0	0.2	0.0	0.0	0.0	0.0	0.0
Satellite	45.2	24.6	24.5	5.6	0.0	0.0	0.0	0.0
Fixed Wireless	87.3	10.2	2.0	0.4	0.1	0.0	0.0	0.0
Power Line	99.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0
aDSL and/or Cable Modem and/or FTTP	1.5	6.6	34.7	35.7	16.2	4.3	0.8	0.2
Any Technology	1.1	2.6	15.1	25.7	26.1	16.7	7.9	4.8

ote: Figures may not sum to totals due to rounding.
ources: FCC Form 477, Part VI and Census 2000.

<u>Question:</u> Can you clarify the differences in the data sets? Which is more accurate in detailing the number of broadband providers consumers have available to them?

RESPONSE: Table 13 displays data that broadband providers submit to the FCC on Form 477. This data collection requires providers to show the number of customers by

technology and speed tier for each census tract in which they offer service. The table then shows the percent of tracts with a given number of providers for each of these technologies.

The NBP highlights a shortcoming of this approach (Ch 4, endnote 6). It states that "...the new 477 data are not ideal for analyzing competition because the data identify providers that operate anywhere in a Census tract and not whether their service areas overlap geographically." So while over half of the census tracts have four or more providers their service territories have an unknown but likely limited overlap.

The NBP (Exhibit 4-A) depicts share of housing units in tracts with 0-3 providers. In partial explanation of how the NBP derived these numbers the endnote states "First, we do not count providers with less than one percent of broadband subscriptions in a given Census tract under the assumption that a provider with such a small number of subscribers is probably not available to a large part of the tract. Second, we identify cable overbuilders (such as RCN) in the data, which allows us to make reasonable assumptions about where cable companies actually provide service to the same geographic areas. Specifically, we assume that any given area is served by a maximum of one facilities-based DSL provider and one cable provider unless a cable overbuilder is present, in which case we count both cable providers. We also count fiber-specific competitors, but do not double-count telco providers that offer both DSL and fiber in the same tract (such as Verizon DSL and FiOS)."

Another table (Table 10) in the report shows that the number of broadband providers has increased from 1,270 in June 2005 to 1,554 in December 2008—a 22 percent increase over 3 and a half years.

Table 10
Nationwide Number of Providers of High-Speed Connections by Technology 2005 - 2008
(Connections over 200 kbps in at least one direction, in thousands)

	2005		*2006*		*2007*		*2008*	
Technology	*Jun*	*Dec*	*Jun*	*Dec*	*Jun*	*Dec*	*Jun*	*Dec*
aDSL	758	818	833	858	864	856	863	**879**
sDSL	270	269	256	257	242	233	238	**262**
Other Wireline	206	241	246	256	246	250	259	**290**
Cable Modem	227	242	254	279	282	292	296	**341**
FTTP	138	170	187	222	251	276	308	**430**
Satellite	10	4	5	5	5	5	4	**5**
Fixed Wireless	423	463	452	505	484	514	505	**617**
Mobile Wireless	13	15	19	24	19	22	24	**46**
Power Line and Other	18	7	6	6	6	7	6	**5**
Total	1,270	1,345	1,327	1,396	1,374	1,399	1,395	**1,554**

Note: Multiple Form 477 filers within a holding company structure count as one provider.
Source: FCC Form 477, Part I.

<u>Question:</u> From the FCC's point of view is the broadband industry becoming more competitive and do consumers have more options for broadband providers available to them?

RESPONSE: The Plan recognizes that competition is crucial for promoting consumer welfare and spurring innovation and investment in broadband access networks. Competition provides consumers the benefits of choice, better service and lower prices. The Plan analyzed available data to assess the current state of competition among wireline

broadband services and mobile wireless broadband services, and the competitive dynamics across different broadband technologies. However, the Plan does not analyze the market power of specific companies or reach definitive conclusions about the current state of competition for residential broadband services. Rather, the Plan includes a variety of recommendations designed to spur competition and innovation across the three elements of the broadband ecosystem—networks, devices and applications

With regard to broadband networks, the Plan makes recommendations intended to ensure that consumers have the information they need to make decisions that maximize benefits from these services. Increased transparency will likely drive service providers to deliver better value to consumers through better services. The Plan also focuses on ways to increase competition in the wholesale broadband market—including issues associated with high-capacity circuits, copper retirement, interconnection and data roaming.

As the Commission considers rulemakings to implement these recommendations, the Commission looks forward to participation from the public and interested parties to ensure that the goals of increased competition are realized.

VIII. Broadband Classification

Broadband Internet access services are currently classified as information service, which is defined as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing."

Some have suggested reclassifying broadband as a telecommunications service, which is defined as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received."

Without question, there has been a significant evolution in the telecommunications industry and the networks—from the legacy tip & ring circuit-switched PSTN voice network to the high-bandwidth, dynamic routing, IP packet-based networks of today, where there is a convergence of various data types. Today's broadband networks employ numerous protocols, various caching and queuing technologies, DNS/IP addressing, as well as encoding and decoding (codecs) technologies that allow consumers to utilize countless services and applications online. Very simply, there is an extensive amount of processing, storing, and converting activities on a broadband network than the legacy phone network with regards to the User Network Interface (UNI) connection.

Question 1: In your opinion and from a pure definitional standpoint, which definition is more appropriate for broadband access services? Do you believe a new definition or classification (such as "Internet Service" or "Broadband Service") may be required to better reflect broadband Internet access services?

RESPONSE: In the *Brand X* decision, 454 U.S. 967 (2005), the Supreme Court held that it is ambiguous whether cable modem service, one form of broadband Internet access service, is an integrated information service or includes a telecommunications service component.

A majority of six Justices are on record as saying that classification of cable modem service is a call for the FCC to make and that "the Commission is free within the limits of reasoned interpretation to change course if it adequately justifies the change" (*id.* at 1001); one of the six "just barely" accepted the FCC's information service approach; and the three remaining Justices expressed the view that the agency *must* classify a separable telecommunications service within cable modem offerings. In light of that decision, I believe the FCC has discretion in deciding whether broadband Internet access service includes a telecommunications service component.

As you know, Chairmen Rockefeller, Waxman, Kerry, and Boucher have announced they will start a process to develop proposals to update the Communications Act. A limited update of the Communications Act could lock in an effective broadband framework to promote investment and innovation, foster competition, and empower consumers. I have committed all available Commission resources to assisting Congress in its consideration of how to improve and clarify our communications laws.

<u>Question 2:</u> Would reclassification of broadband Internet access service as a telecommunications service change the ability of service providers to deal with online copyright theft? What should be done to maximize security for copyright holders from a technology standpoint?

RESPONSE: I do not believe that classification of the transmission component of broadband Internet access service as a telecommunications service would have any effect on the ability of service providers to deal with online copyright theft. The National Broadband Plan recognizes (at page 58) that "[t]he Internet must be a safe, trusted platform for the lawful distribution of content." The Plan acknowledges (at page 17) that digital piracy is an ongoing problem. The Plan notes promising developments in technology to prevent piracy, such as content finger-printing, and lauds industry-led initiatives to develop guidelines for dealing with piracy. I am hopeful that continuing advances in technology, development of industry guidelines, and enforcement of copyright laws will curb piracy without stifling innovation or overburdening lawful uses of copyrighted works.

<u>Question 3:</u> Additionally, would reclassification have any implications for the ability of service providers to deal with computer viruses or spam, or even to implement cyber security measures? As a member of the Intelligence Committee, I am very interested in enhancing—and not impeding—cyber security protections, so I look forward to your comments on this.

RESPONSE: As you know, section 1 of the Communications Act explains that the Commission exists "for the purpose of the national defense [and] for the purpose of promoting safety of life and property through the use of wire and radio communication." Cybersecurity is a growing concern, and the Commission has recently begun two proceedings to assess our needs in this area: we have launched an inquiry on the ability of

existing broadband networks to withstand significant damage or severe overloads as a result of natural disasters, terrorist attacks, pandemics or other major public emergencies; and we have begun a proceeding to seek public comment on the proposed creation of a new voluntary cybersecurity certification program that would encourage communications service providers to implement a full range of cybersecurity best practices. We will examine the records of these proceedings closely, along with the record generated in response to the Notice of Inquiry on our legal framework. To the extent that the Commission possessed the necessary authority to address cybersecurity, as well as online copyright theft, computer viruses or spam before *Comcast*, the "third way" classification framework discussed in the Notice of Inquiry on our legal framework would protect that authority. If, on the other hand, the Commission decides to maintain the information service classification, jurisdictional issues would be addressed on a case-by-case basis, in light of the particular details of the proposal at issue.

QUESTIONS FOR THE RECORD
SENATOR JOHN ENSIGN

1. Chairman Genachowski, last month the Washington Post wrote that "it is curious that the [FCC] faults the market for failing" when "the number of Americans who have broadband at home has grown from 8 million in 2000 to nearly 200 million last year." The National Broadband Plan itself notes that broadband providers invested $130 billion into their networks over the last two years, during a major recession. I have to agree with the Washington Post editorial board—I don't see signs of gross market failure that might justify the sort of government spending and increased government intervention recommended by the Plan. How is it that you and your team came to such a different conclusion?

   RESPONSE: In the Recovery Act, Congress directed the FCC to develop a National Broadband Plan that would "seek to ensure that all people of the United States have access to broadband capability and [to] establish benchmarks for meeting that goal," as well as promote the use of broadband infrastructure in advancing a number of national purposes like health care delivery, education, and energy independence and efficiency.

   In 2009, I said that our steps to fulfill this Congressional directive would be data-driven – not starting with conclusions, but using data to develop analysis – not just accepting data, but digging into data to find concrete solutions that supersede ideology – and that can make a difference in the lives of real Americans.

   To complete the Plan, the FCC launched 36 staff-level public workshops attracting over 2,500 participants; issued 31 Public Notices, generating over 23,000 comments totaling more than 74,000 pages; and used new media tools including our broadband blog, which received over 1,200 comments, all of which were entered into the official record.

   The data we gathered from this process showed that on many quantifiable metrics, the United States faced significant gaps. The FCC team found that roughly 14 to 24 million Americans lack access to broadband infrastructure that can support today's applications, and that roughly 80 million American adults still do not use broadband at home. Only 16% of public community colleges have high-speed connections comparable to research universities. And nearly a decade after 9/11, the nation's first responders still lack access to a nationwide, interoperable wireless public safety network.

   To be sure, today's broadband ecosystem is vibrant and healthy in many ways – in large part, due to the large investments that private sector providers have made. In order to meet the high goals for American technological leadership that we set in the Plan, private sector investment will be essential. That's why the plan takes steps to drive innovation and investment in the broadband ecosystem long into the future – yielding innovations, devices and services we cannot dream of today. These solutions

– making 500 MHz of spectrum available for mobile broadband use and reforming the Universal Service Fund in a revenue-neutral manner to make broadband available to every American – are not intended to displace the role of private investment. Rather, they are targeted to maximize the fruits of that investment in a way that speeds the deployment, adoption and use of broadband in the ways Congress intended and for the benefit of all Americans.

2. Chairman Genachowski, one of the National Broadband Plan's goals is to have 100 million households served by 100 megabit broadband within 10 years. Achieving this goal will obviously require tens of billions of dollars to be invested into broadband networks. The Plan, however, recommends net neutrality restrictions; suggests broader unbundling mandates; and leaves the door open to using outdated monopoly telephone regulations for broadband. Most people I talk to say that heavy-handed regulations like these will deter the private-sector investment you need to reach your 100 to 100 target. If such policies would result in less investment, isn't the FCC be undermining its own goals by pursuing these regulatory policies?

   RESPONSE: I start with the belief that the private sector must play the leading role in extending broadband networks across our nation, to ensure we realize our ambitious 100 X 100 goal. Promoting private sector investment is a key focus of the National Broadband Plan and a key priority for the FCC, including through initiatives to reduce barriers to broadband deployment; reform the Universal Service Fund to support broadband; and provide high-level rules of the road to preserve the free and open Internet as an engine for economic growth and private investment, both in and on top of broadband Internet platforms.

3. Chairman Genachowski, in your testimony before the House Commerce Committee, you left the door open to pursuing involuntary proposals to reallocate broadcaster spectrum. While you and I agree on the importance of finding more spectrum for wireless broadband, I believe we must exhaust every possible voluntary proposal before even talking about involuntary mechanisms. Do you agree? And if so, will you commit to us today that you will not consider <u>any</u> involuntary proposals until the FCC has completed its consideration and implementation of <u>all</u> possible voluntary mechanisms?

   RESPONSE: I believe, and the staff at the FCC believes, that a voluntary approach can work, and our goal is to first employ all possible voluntary mechanisms. We believe a voluntary approach with proceeds sharing will allow the market to determine the best use of spectrum, allowing the right amount of spectrum demanded by the market to flow to its highest valued use, while creating value for everyone in that chain of stakeholders (broadcasters, consumers, and broadband providers).

QUESTIONS FOR THE RECORD
SENATOR GEORGE LEMIEUX

1. Last year, Congress approved a stimulus bill directing more than $7 billion in funding for broadband deployment. While some of the funds have now gone out, the funding did not go out quickly, and many of the largest broadband providers would not participate. Since this money was allocated before this plan was created, are you concerned that billions of dollars in funding are being misspent in a fashion that is devoid of a strategic plan? Has your staff been coordinating with the Department of Commerce and the Department of Agriculture to ensure that their funding plans complement the broadband plan we are considering today?

   RESPONSE: The Commission coordinated extensively with the executive branch and provided its technical and other expertise to the Departments of Commerce and Agriculture during the development of their Recovery Act grant and loan programs, and our agencies remain in contact on matters of broadband policy. While the grant and loan programs were implemented prior to the completion of the National Broadband Plan, as required by law, I believe that those programs are complementary to the proposals in the Plan. The plan explicitly mentions the BTOP program in several places, highlighting how this first investment in broadband will impact the broadband ecosystem, and how best to measure and learn from those early investments to improve decisions in the future. In addition, the Plan emphasizes the importance of deploying facilities to consumers who do not have access to broadband or who face other obstacles to adoption, such as affordability, and recommends a variety of different tools to advance these goals.

2. As you know, spectrum availability has been of concern as our nation's technologies develop. We must be working to find ways to free up spectrum for new technologies. In the National Broadband Plan, it is stated that to free up spectrum broadcasters will be asked to volunteer to give up some of their spectrum (of which they already gave some up for the digital transition). What is the plan should these broadcasters not volunteer more of their spectrum?

   RESPONSE: I believe, and the staff at the FCC believes, that a voluntary approach can work, and our goal is to first employ all possible voluntary mechanisms. We believe a voluntary approach with proceeds sharing will allow the market to determine the best use of spectrum, allowing the right amount of spectrum demanded by the market to flow to its highest valued use, while creating value for everyone in that chain of stakeholders (broadcasters, consumers, and broadband providers). We intend to focus our efforts on voluntary mechanisms so as to best ensure their success.

3. As you know, in recent years, internet piracy and intellectual property protection has been a mounting problem. The National Broadband Plan would be a perfect opportunity

to address this issue. The current plan does not mention piracy and has little mention of intellectual property protections. Why was there no acknowledgement in your plan of the piracy problems that plague our entertainment and software companies online? With the rollout of this plan, almost every American will have access to broadband. With greater broadband speeds and availability, what is being done to protect the content from being stolen?

RESPONSE: The National Broadband Plan recognizes (at page 58) that "[t]he Internet must be a safe, trusted platform for the lawful distribution of content." The Plan acknowledges (at page 17) that digital piracy is an ongoing problem. The Plan notes promising developments in technology to prevent piracy, such as content finger-printing, and lauds industry-led initiatives to develop guidelines for dealing with piracy. The Plan does not include any specific recommendations for ensuring that expanding broadband deployment will not increase the amount of piracy of copyrighted works. I am hopeful that continuing advances in technology, development of industry guidelines, and enforcement of copyright laws will curb piracy without stifling innovation or overburdening lawful uses of copyrighted works.

4. Do you believe public safety needs or will need more than 10 MHz of spectrum for voice, video, and data? If yes, by when? If they do, then why not just allocate the spectrum now? Why should we try to solve this problem later if we already have the solution in front of us now? Will it not cost more to solve the problem later and create problems with interoperability because systems will be on different spectrum bands?

RESPONSE: Currently there is 10 MHz of dedicated capacity in the 700 MHz band available for use for public safety broadband communications. This spectrum is available today and, because of its propagation and other technical attributes, provides a solid platform for deployment of a nationwide, interoperable public safety broadband network. This 10 MHz of dedicated capacity is the necessary core on which to build the public safety network and will provide public safety with more than adequate capacity and performance required to support day-to-day and emergency communications.

Technology advances in the LTE air-interface standard will likely make it possible for non-contiguous spectrum to be part of the network. Accordingly, should additional capacity be required in the future, this technology, in conjunction with the interoperability requirements imposed by the FCC's Emergency Response Interoperability Center will ensure that interoperability is not compromised.

The 700 MHz band, where this spectrum is located, is particularly exciting as new 4G technologies, such as LTE, are just beginning to be deployed to support advanced data communications. Public safety, by being able to deploy their networks now and in the near future, can capitalize on these technologies and this

commercial deployment, ensuring a technological evolution path and reducing costs by leveraging these commercial technologies.

More specifically, in deploying its network in this core spectrum, public safety can enter into incentive-based partnerships with commercial entities to deploy their network in a cost-effective manner that utilizes these state-of-the-art commercial 4G technologies and leverages commercial infrastructure. In this way, public safety will recognize approximately $9 billion in cost savings for the construction of the network and potentially tens of billions in savings in operating costs. Unfortunately, as I will discuss a little later, if the D block is reallocated to the public safety community, it is likely that these cost savings will not be recognized because significant cost-efficiencies will squandered. If this occurs, the mere expense of the network will make it extremely unlikely that the network will be nationwide, leaving portions of the country without access to these critical public safety communications services.

FCC technical staff has spent considerable time and effort ensuring that the 10 MHz of dedicated spectrum available to public safety will provide more then adequate capacity and performance for day-to-day and emergency communications. Our analysis, which we released publicly this week, demonstrates through the examination of several real-life large-scale emergencies, that allowing public safety to build out their broadband network on the core 10 MHz of dedicated spectrum supports these critical communications requirements. When analyzing capacity, an important point to keep in mind is that spectrum does not equal capacity. By deploying advanced, 4G wireless technologies and cellular network architecture, public safety can achieve much greater capacity than they have achieved in the past. Further, based on the past evolutionary trends of commercial technologies, if the public safety network is deployed utilizing non-proprietary commercial technologies, capacity and performance of the network is likely to improve in the same amount of spectrum.

However, we also recognize that it is impossible to plan for the worst emergency. Accordingly, it is critical to provide public safety with a backstop of additional capacity for use when they need it such as when their network is at capacity or otherwise unavailable. Accordingly, the FCC is planning to shortly initiate a rulemaking proceeding that will require commercial operators across the 700 MHz band to provide public safety with roaming and priority access on their networks at reasonable rates. This means that public safety will have access to as much as 60 MHz of additional spectrum – far more then the 10 MHz of spectrum available in the D block. Further, unlike the case of just reallocating the D block, roaming and priority access will provide public safety with access to resilient networks in case their network is rendered unavailable.

Still, there are additional pieces to ensure adequate capacity and performance. First, our cost model recognizes and captures the need for deployable caches of communications equipments, such as cell towers on wheels, to ensure that the public safety community is able to supplement its network during the worst emergencies.

Second, we have also recommended that states and localities should include in their building codes requirements for the installation of in-building transmitters.

5. The National Broadband Plan seems to place a heavy emphasis on public safety having priority access to commercial networks to augment the 10 MHz of dedicated public safety broadband spectrum. How can you be sure that commercial carriers will be willing to provide that access?

   RESPONSE: The Commission will soon commence a proceeding to require commercial networks to offer public safety users priority access and roaming capabilities at reasonable rates. This will ensure that critical communications needs can be met even when public safety broadband networks are at capacity or unavailable.

QUESTIONS FOR THE RECORD
SENATOR DAVID VITTER

1. The FCC's recently released National Broadband Plan makes numerous references to several internal reports prepared by the Omnibus Broadband Team as support for its recommendations.
   - The Broadband Availability Gap Report, cited 22 times
   - Broadband Performance Report
   - Spectrum Reclamation: Options for Broadcast Spectrum Report
   - The Public Safety Broadband Wireless Network Report

   I understand that these reports still have not been made available. Is this true, when do you expect to release these reports so Congress and the public can begin the process of reviewing the analysis underlying the recommendations contained in the Plan?

   RESPONSE: The Broadband Availability Gap Report was released April 21, 2010. The Public Safety Broadband Wireless Network Report was released April 23, 2010. They are available for download at http://www.broadband.gov/plan/broadband-working-reports-technical-papers.html.

   The FCC has already held an open workshop on the Broadband Availability Gap Report to present the broadband team's analysis and take questions from the public.

   The release dates for the Spectrum Reclamation: Options for Broadcast Spectrum Report and the Broadband Performance Report are forthcoming.

2. I know the plan's goal is to reach 100 million households with 100 mbps service. Some analysts believe that we may be on path to reach this goal with current market conditions. Wouldn't it be preferable to let the market investment work instead changing the broadband regulatory structure in a way that many think could provide disincentives to investment?

   RESPONSE: I agree that we should let the market work where it can effectively promote innovation, investment, deployment, and provide consumers with reasonable, affordable choices. As the Commission works through the implementation of the National Broadband Plan recommendations, we will take care to ensure that our policies encourage investment and deployment, promote innovation, and allow consumers to enjoy the benefits of next generation broadband services.

QUESTIONS FOR THE RECORD
SENATOR SAM BROWNBACK

1) In response to a question I asked you during this committee's consideration of your nomination, you stated that you "agree that unthinking or heavy-handed regulation always carries the risk of burdening innovation, investment, and dynamism—and that the FCC must be vigilant in guarding against such an approach."

   I have therefore been surprised about several initiatives you have taken, or are considering since becoming Chairman. You launched into a rulemaking proceeding on network neutrality before having gathered any facts regarding whether there is a problem that needs a regulatory solution. Now that the DC Circuit has rejected the FCC's assertion of authority to impose network management regulations on broadband providers, you are allegedly considering reclassifying broadband services as telecommunications services, saddling such services with common carrier regulations. And some of your recommendations in the National Broadband Plan, such as fiber unbundling, contemplate eradicating the extremely successful broadband policies that began under Chairman Kennard in the Clinton Administration.

   I was glad during your confirmation process that you recognized that heavy-handed regulation runs "the risk of burdening innovation, investment, and dynamism." But you seem to be heading in that very direction, despite the impact that such regulation would have on your, and the Obama Administration's, broadband goals. How are you going to achieve ubiquitous broadband deployment when, by your own admission, you are risking investment by imposing burdensome regulations?

   RESPONSE: Promoting continued investment and job creation, both in the core broadband networks and through Internet-based services and applications that ride on such networks, is a key priority for the FCC and a key focus of the National Broadband Plan. On June 17, the Commission adopted a Notice of Inquiry on a Legal Framework for Broadband. This Notice initiates an agency proceeding to seek public comment on how the Commission should best address the challenge that the D.C. Circuit's *Comcast* decision has handed us, including how the agency can foster predictability and promote innovation and investment. It seeks comment on all options, and invites any ideas for how the Commission should proceed, including: maintaining the current "information service" classification of services such as cable modem and DSL Internet access; classifying broadband Internet connectivity service as a "telecommunications service" to which all the requirements of Title II of the Communications Act would apply; and a "third way" – similar to the highly successful approach that has been used for cell phone services since 1993 – under which the Commission would identify the Internet connectivity service that is offered as part of wired broadband Internet service as a telecommunications service and forbear from applying all provisions of Title II other than the small number that are needed to implement fundamental universal service, competition, and consumer protection policies.

2) If broadband were to be reclassified as telecommunications service, do you think broadband service providers would increase investment in their networks? Please explain your answer.

RESPONSE: These issues are addressed in and in my answer to Question 1 above and in the statements released by myself (Genachowski Statement) and the FCC's General Counsel, Austin Schlick (Schlick Statement), on May 6, 2010 concerning the Third Way. Copies are attached for your convenience. I believe the Third Way I have proposed would encourage investment in broadband networks by providing regulatory certainty, avoiding needless regulation, and enabling the provision of universal service support for broadband deployment. I would also note that the Third Way is modeled on the light touch regulatory treatment for the wireless industry that many have cited as pro-investment and pro-innovation. I remain open to other ideas that will achieve the same objective and provide a sound legal framework, and the Notice of Inquiry adopted at our June 17 Open Meeting seeks comment on all possible approaches, including maintaining the current information services classification for broadband Internet services.

3) Do you believe that a reclassification of broadband services would survive a court challenge? Are you willing to endure years of uncertainty waiting for an answer?

RESPONSE: I am confident that any decision the FCC issues that addresses or relies on Commission authority to implement broadband policies will be challenged in court. For the reasons given in the May 6, 2010 statement by the FCC's General Counsel, I believe that classification of the transmission component of wireline broadband Internet access service as a telecommunications service would survive judicial review. *See Schlick Statement at 6-7.*

4) In the *Comcast* case, the D.C. Circuit held that the FCC had not demonstrated that its regulation of the network management activities of ISPs was reasonably ancillary to express authority provided to the FCC by Congress. But the D.C. Circuit reiterated its two-part test that the Commission is permitted to exercise ancillary authority when (1) Title I covers a particular entity or activity and (2) Commission action is "reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities." Do you agree that the D.C. Circuit's decision does not preclude the Commission from exercising ancillary jurisdiction in the future as long as the agency ties such authority to its "statutorily mandated responsibilities"?

RESPONSE: I agree that the *Comcast* decision does not preclude the Commission from exercising ancillary authority to effectuate statutorily mandated responsibilities. The Notice of Inquiry adopted on June 17 seeks comment on the strongest arguments for use of ancillary authority to realize the FCC's mission for broadband communications.

5) In *Comcast,* the D.C. Court concluded that "[b]y leaping from *Brand X's* observation that the Commission's ancillary authority may allow it to impose *some* kinds of obligations on cable Internet providers to a claim of plenary authority over such providers, the Commission runs afoul of *Southwestern Cable* and *Midwest Video I.*" Doesn't this mean that the D.C. Circuit acknowledges that the FCC can exercise ancillary authority to impose certain rules, but that the FCC must demonstrate that the imposition of such rules is reasonably ancillary to the agency's statutorily mandated responsibilities?

RESPONSE: See Response to Question 3 above.

6) According to Commissioner McDowell's March testimony at the House Energy and Commerce Committee, "[m]ore than half of all Americans have a choice of five wireless providers. Ninety-four percent have a choice of four. Similarly, we lead the world in 3G build-out and adoption." In addition, Commissioner McDowell asserts that "[n]ot only does the United States have one-third of the world's market share of 'mobile apps,' but the American mobile app market has grown over 500 percent since 2007." Given these facts, how did the report conclude that the United States lags in mobile innovation?

RESPONSE: The National Broadband Plan stated that "[t]he United States maintains the greatest tradition of innovation and entrepreneurship in the world—one that combines creativity with engineering to produce world-leading applications, devices and content, as well as the businesses that bring them to market."

However, innovation will be constrained if the FCC does not make additional spectrum available. As the Plan states, "Mobile broadband is growing at unprecedented rates... playing an increasingly important role in our lives and our economy. Mobile broadband is the next great challenge and opportunity for the United States. It is a nascent market in which the United States should lead." Today, the FCC has only 50 megahertz of spectrum in the pipeline that it can assign for broadband use, just a fraction of the amount that will be necessary to match growing demand. As a result, companies representing 5% of the U.S. economy asked the FCC to make more spectrum available for mobile broadband, saying that "without more spectrum, America's global leadership in innovation and technology is threatened."

If we do not make more spectrum available, scarcity of mobile broadband could mean higher prices, poor service quality, an inability for the United States to compete internationally, depressed demand, and ultimately, a drag on innovation.

The Plan concludes that "[b]y any measure, innovation is thriving in mobile and computing devices." I look forward to working with Congress, the industry and stakeholders to ensure that the United States has the spectrum it needs to lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.