Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act	)	GN Docket No. 09-47
	)	
A National Broadband Plan For Our Future	)	GN Docket No. 09-51
	)	
Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act	)	GN Docket No. 09-137

To: The Commission

COMMENTS—NBP PUBLIC NOTICE #2
CTIA-THE WIRELESS ASSOCIATION®

Congress has directed the Commission to develop a National Broadband Plan that includes "a plan for the use of broadband infrastructure and services in advancing . . . energy independence and efficiency."[1] The Commission has identified Smart Grids – the integration of information and communication applications with the electric power grid – as a promising way to achieve these objectives.[2] CTIA – The Wireless Association® ("CTIA") files these comments to advise the Commission that wireless communications are a critical component of Smart Grid deployments, and commercial wireless networks can readily satisfy, and in fact are satisfying, the communications requirements of Smart Grid applications. The Commission also should

[1] American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 6001(k)(2)(D), 123 Stat. 115 (2009).

[2] *See* Comment Sought on the Implementation of Smart Grid Technology, *Public Notice*, DA 09-2017 (rel. Sept. 4, 2009).

encourage the deployment of commercial networks that serve a multitude of wireless needs, rather than networks that serve a single application.

The benefits of Smart Grid technology can be profound. A recent report issued jointly by Accenture and Vodafone found that wireless technology can be used to reduce carbon emissions in European Union ("EU") member countries by 113 metric tons per year in carbon dioxide equivalent ("CO_2e") and cut energy costs by £43 billion (approximately $70 billion).[3] According to the report, more than 80 percent of these savings would be attributable to smart machine-to-machine ("M2M") wireless communications.[4] The implementation of Smart Grids utilizing wireless technology alone would reduce carbon emissions in the EU by approximately 43 metric tons CO_2e and save £11.4 billion (approximately $18 billion) per year by 2020.[5]

As an initial matter, CTIA notes that National Institute of Standards and Technology ("NIST") is currently developing a framework of "protocols and model standards for information management to achieve interoperability of Smart Grid devices and systems."[6] Just last week, NIST released a draft Smart Grid Framework and Roadmap to aid in the development of "an advanced, secure, electric power grid with two-way communication and control capabilities."[7] According to NIST, a Smart Grid can be broken into seven distinct "domains":

- *Customers* – the end users of the electricity. The end users fall into three categories: residential, commercial building, and industrial.
- *Markets* – the operators and participants in electricity markets.
- *Service Providers* – the organizations providing services to electrical customers and utilities.

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[3] *See* Accenture and Vodafone, Carbon Connections: Quantifying Mobile's Role in Tackling Climate Change at 4 (July 2009) ("Carbon Connections").

[4] *See id*. at 8.

[5] *See id*. at 16.

[6] Office of the National Coordinator for Smart Grid Interoperability, National Institute of Standards and Technology, U.S. Dept. of Commerce, *NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0 (Draft)*, at 8 (Sept. 2009) ("Smart Grid Framework and Roadmap").

[7] *Id.* at 9.

- *Operations* – the managers of the movement of electricity.
- *Bulk Generation* – the generators of electricity in bulk quantities.
- *Transmission* – the carriers of bulk electricity over long distances.
- *Distribution* – the distributors of electricity to (and from) customers.[8]

The report recognized that "[w]ireless technologies can be used in field environments across the Smart Grid," as identified above.[9] NIST established a working group to evaluate the use of wireless technologies in various Smart Grid applications and to develop standards necessary for "effectively, safely, and securely employing wireless technologies for different Smart Grid applications."[10]

In thinking about the innovative use of wireless communications to enable and unleash the benefits of Smart Grids, the Commission should be mindful of how network neutrality rules would be applied to wireless networks used in the Smart Grid space. For example, it is an open question regarding how a non-discrimination regulation would impact devices like smart meters or supervisory control and data acquisition ("SCADA") system equipment.[11] Further, if a provider or vendor devises an innovative Smart Grid communications technology or transmission algorithm to limit the impact of network congestion, would such a technology be permissible under new rules? If so, must the details be fully disclosed? It also is entirely plausible that certain communications in a Smart Grid solution will require prioritization.

Onerous and rigid network management obligations on wireless operators would hamper innovation in Smart Grids by denying operators the flexibility they need to manage networks in an environment of finite spectrum resources and close integration between network, device and utility

[8] *Id.* at 23.
[9] *Id.* at 65.
[10] *Id.* at 66.
[11] Data Security and encryption will be of critical importance. Thus, it remains to be seen whether devices and applications will utilize an "open" architecture. *See* Section III, *infra*.

systems controls. An overreaching network management policy may jeopardize the very relationships that can encourage and advance Smart Grid development and deployment.

I. COMMERCIAL WIRELESS NETWORKS ARE AN INTEGRAL PART OF VARIOUS SMART GRID APPLICATIONS TODAY

Commercial mobile radio service ("CMRS") networks are an ideal solution for Smart Grid applications. These networks deliver economies of scope and scale and are designed to achieve interoperability. CMRS networks also utilize commercially available equipment. Smart Grids should be designed to utilize similar commercially available equipment, rather than proprietary solutions designed for a single energy grid or company.

CMRS networks can deliver the coverage and speed capabilities necessary for Smart Grid applications. 3G technology has been deployed over CMRS networks covering more than 92 percent of the U.S. population, utilizing a variety of technologies to deliver 3G services including HSDPA ("High Speed Downlink Packet Access"), HSUPA ("High Speed Uplink Packet Access"), HSPA+ ("Evolved High Speed Packet Access") and EV-DO and EV-DO Rev. A. These technologies can result in download speeds of up to around 21 Mbps. Over the next several years, carriers will deploy 4G technologies with downlink speeds of 100 Mbps. Because Smart Grid standards continue to be developed, mobile wireless networks will offer even more capability once next generation Smart Grid products are developed.

The U.S. wireless industry has been at the forefront of the movement to bring Smart Grids to reality. First, wireless carriers have developed new, innovative pricing plans for Smart Grid

deployments utilizing CMRS networks.[12] These new plans make it more economical to utilize commercial wireless networks for Smart Grid applications.

Second, many wireless companies have forged partnerships and other relationships to promote Smart Grid deployments. For example, Leap Wireless recently announced that it was sponsoring a new start-up incubator for companies and entrepreneurs in communications and communications convergence, with a particular focus on wireless Smart Grids.[13] Sprint Nextel and Clearwire also have announced that they plan to support Smart Grid deployments as well.[14]

Moreover, a number of mobile wireless providers are already working with utilities and manufacturers have forged partnerships or developed innovative products to facilitate Smart Grid development and deployment – some of which are described below.

Customer Domain Applications. There are numerous examples of customer domain Smart Grid applications, such as smart meters, smart appliances, smart thermostats.[15] Many wireless carriers have developed innovative products to facilitate the deployment of such applications. T-Mobile USA, Inc. ("T-Mobile"), for example, developed a SIM card specifically designed for M2M applications. This M2M SIM is much smaller than traditional SIM cards – it is only about the size of a pin head – and is designed to withstand harsh weather conditions where M2M devices may be deployed.[16] T-Mobile also entered into a strategic alliance with Echelon, a provider of smart meters, whereby T-Mobile's M2M SIM card will be built into Echelon products,

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[12] *See AT&T To Offer Wireless Smart Grid Technology To Utility Companies*, FIERCE WIRELESS, Mar. 18, 2009, *available at* http://www.fiercewireless.com/press-releases/t-offer-wireless-smart-grid-technology-utility-companies-0 (last visited Oct. 1, 2009).

[13] *See* Press Release, CommNexus San Diego, San Diego Wireless Heavyweight Leap Wireless Supports New Start-up Incubator (June 17, 2009), *available at* http://news.prnewswire.com/DisplayReleaseContent.aspx?ACCT=ind_focus.story& STORY=/www/story/06-17-2009/0005045873&EDATE=.

[14] *See* Julien Blin, *Smart grids: The next wireless goldmine?*, FIERCE BROADBAND WIRELESS, May 15, 2009, available at http://www.fiercebroadbandwireless.com/story/smart-grids-next-wireless-goldmine/2009-05-15 (last visited Oct. 1, 2009).

[15] *See* Smart Grid Framework and Roadmap at 28.

[16] *See* Marguerite Reardon, *T-Mobile goes for smart grids*, CNET NEWS, Apr. 23, 2009, *available at* http://news.cnet.com/8301-1035_3-10226418-94.html (last visited Oct. 1, 2009).

and data from the smart meters at customer locations will be transported over T-Mobile's wireless network.[17]

AT&T entered into a similar arrangement with SmartSynch, a smart meter maker that has Smart Grid solutions already deployed at more than 100 utilities in North America,[18] whereby data from SmartSynch's meters are carried over the AT&T wireless network.[19]

Similarly, mobile virtual network operators ("MVNOs") have been established primarily to serve the M2M market.[20] CrossBridge Solutions, for example, is an MVNO that offers wireless utility metering services that can power Smart Grid applications. CrossBridge Solutions utilizes a variety of CMRS services to serve client needs, including Sprint's CDMA/1xRTT/EV-DO wireless network and AT&T's GPRS/EDGE wireless network.[21] KORE Telematics – a specialized MVNO providing M2M wireless service – powers utility metering over the AT&T wireless network.[22]

Distribution and Transmission Domain Applications. The distribution and transmission domains have similar Smart Grid requirements and applications designed for the distribution domain can often be used for the transmission domain as well. For example, Smart Grid

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[17] *See* Ariel Schwartz, *T-Mobile Joins the Smart-Grid Wireless Network Brigade*, FAST COMPANY, May 5, 2009, *available at* http://www.fastcompany.com/blog/ariel-schwartz/sustainability/t-mobile-joins-smart-grid-wireless-network-brigade (last visited Oct. 1, 2009).

[18] *See AT&T To Offer Wireless Smart Grid Technology To Utility Companies*, FIERCE WIRELESS, Mar. 18, 2009, *available at* http://www.fiercewireless.com/press-releases/t-offer-wireless-smart-grid-technology-utility-companies-0 (last visited Oct. 1, 2009).

[19] *See* Katie Fehrenbacher, *Phone Companies Heart Smart Grid: SmartSynch, AT&T Sign Up Texas Utility*, EARTH2TECH, Apr. 16, 2009, *available at* http://earth2tech.com/2009/04/16/phone-companies-heart-smart-grid-smartsynch-att-sign-up-texas-utility (last visited Oct. 1, 2009). Texas-New Mexico Power has already agreed to utilize this solution for 10,000 smart meters in Texas. *Id.*

[20] *See* KORE Telematics, About KORE, *available at* http://www.koretelematics.com/en/corporate/index.html (last visited Oct. 1, 2009); CrossBridge Solutions, Welcome to CrossBridge Solutions, *available at* http://www.crossbridgesolutions.com (last visited Oct. 1, 2009).

[21] *See* CrossBridge Solutions, Welcome to CrossBridge Solutions, *available at* http://www.crossbridgesolutions.com (last visited Oct. 1, 2009).

[22] *See* KORE Telematics, About KORE, *available at* http://www.koretelematics.com/en/corporate/index.html (last visited Oct. 1, 2009).

applications that allow access to real-time system performance data would be essential applications for both of those domains, and commercial wireless carriers already support these applications. In this regard, AT&T reached an agreement with Cooper Power Systems ("CPS") whereby data from outage monitors and voltage sensors will be transmitted wirelessly via AT&T's network.[23] Utilities utilizing the CPS sensors receive real-time data "to efficiently operate their electric grids, reduce the need for on-site inspections, and identify and solve problems that could cause outages or increase system energy losses."[24]

In addition to sensor applications, the distribution and transmission domains must receive data from smart meters in order to access demand. Here again commercial wireless companies already offer solutions. Verizon Wireless has entered into agreements with Ambient Corp. and Itron, companies that provide utilities with solutions for creating Smart Grid communication platforms and technologies. Under these agreements, which are intended to facilitate the deployment of Smart Grid projects across the country, Verizon Wireless will carry the backhaul traffic to utilities from Ambient's Smart Grid platform and Itron's mesh networks that connect smart meters.[25]

Operations Domain Applications. One of the key Smart Grid applications in the operations domain is the ability to integrate SCADA systems into real-time data flows.[26] Both

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[23] *See* Press Release, AT&T, AT&T and Cooper Power Systems to Offer Wireless Smart Grid Sensors (June 24, 2009), *available at* http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26874 ("AT&T/Cooper Press Release"); Jeff St. John, *AT&T Links Cooper Power Systems' Smart Grid Devices*, GREENTECH MEDIA, June 23, 2009, *available at* http://www.greentechmedia.com/articles/read/att-links-cooper-power-systems-smart-grid-devices (last visited Oct. 1, 2009). Under the CPS agreement, AT&T will co-sell the outage monitors and voltage sensors. AT&T/Cooper Press Release at 1.

[24] AT&T/Cooper Press Release at 1.

[25] *See Verizon Wireless and Ambient Join to Offer Smart Grid Communications System*, TRANSMISSION AND DISTRIBUTION WORLD, Mar. 25, 2009, *available at* http://tdworld.com/info_systems/vendor_updates/verizon-ambient-smart-grid-0309 (last visited Oct. 1, 2009); Jeff St. John, *Verizon, Itron Hook Up Smart Grid Communications*, GREENTECH MEDIA, Apr. 1, 2009, *available at* http://www.greentechmedia.com/green-light/post/verizon-itron-hook-up-smart-grid-communications-1315 (last visited Oct. 1, 2009).

[26] *See* Smart Grid Framework and Roadmap at 28.

Sprint and AT&T tout wireless solutions that accomplish this objective.[27] According to AT&T, the use of commercial wireless technology to deliver data to SCADA systems allows utility companies to "process their billing in two hours rather than the two weeks the process usually requires."[28]

II. SOUND SPECTRUM POLICY DICTATES THAT THE FCC SHOULD EMBRACE THE USE OF COMMERCIAL WIRELESS NETWORKS IN SMART GRID DEPLOYMENTS AND SHOULD NOT ALLOCATE NEW SPECTRUM FOR SMART GRID APPLICATIONS

As demonstrated above, commercial wireless networks are finding innumerable ways to advance the communications needs of Smart Grid deployments. In this era of increasing demand for spectrum, it would be inefficient to devote unique spectrum for the creation of new wireless Smart Grid networks when commercial networks can satisfy and, in fact, are satisfying the Smart Grid systems – and a host of other wireless uses at the same time – over the same spectrum.

In recent testimony before Congress, NIST's National Coordinator for Smart Grid Interoperability noted the proposal by the Utility Telecom Council for a new spectrum allocation dedicated to utility communications and observed: "With the high demand for spectrum from many different kinds of radio systems, the concept of dedicating spectrum for one particular application must be considered carefully so as not to use the critical resource inefficiently."[29] The Chief Scientist for SmartSynch, a Smart Grid communications company, put it more directly:

> [T]he good news is that allocating scarce resources just for utility purposes is not necessary. Having utilities do things that are freely and commonly done by other industries is not necessary. The good

[27] *See* AT&T, SCADA, *available at* http://www.wireless.att.com/businesscenter/solutions/industry-solutions/vertical-industry/scada.jsp (last visited Oct. 1, 2009); *Sprint Supports Utility Smart Grid Initiatives across America*, ENERGY CENTRAL, Aug. 8, 2009, *available at* http://www.energycentral.com/intelligentutility/scada/news/vpr/7557/Sprint-Supports-Utility-Smart-Grid-Initiatives-across-America (last visited Oct. 1, 2009).

[28] AT&T, SCADA, *available at* http://www.wireless.att.com/businesscenter/solutions/industry-solutions/vertical-industry/scada.jsp (last visited Oct. 1, 2009).

[29] *Effectively Transforming Our Electric Delivery System to a Smart Grid: Hearing Before the Subcomm. on Energy and Environment of the H. Comm. on Science and Technology*, 111th Cong., 8 (July 23, 2009) (testimony of George W. Arnold, National Coordinator for Smart Grid Interoperability).

> news is that we already have a Smart Grid broadband network made out of multiple Smart Grid broadband networks. They're all available and they've been used for Smart Grid applications for years now, and that is the Public Wireless Network . . . I want to just talk about three key elements of these Public Wireless Network[s]: [t]hey're secure, they're reliable, and they're scalable.[30]

Commercial wireless networks are not dedicated to a single application. These networks serve a multitude of applications for the public, corporations, and all levels of government. CMRS carriers are primarily in the business of building and maintaining communications networks designed to satisfy consumer and enterprise demand. Increasingly, commercial wireless networks are providing critical communications to first responders as well. It would be inefficient to set aside dedicated spectrum for the creation of new Smart Grid-specific networks when commercial wireless networks can readily satisfy the needs of Smart Grid systems.

III. CMRS NETWORKS HAVE SECURITY PROTOCOLS IN PLACE

Commercial wireless networks offer secure communications for a number of large businesses and government entities. AT&T, for example, offers such capabilities for a number of governmental entities that rely on highly secure communications, including the U.S. Department of the Treasury; the U.S. Secret Service; and the U.S. Immigrations and Customs Enforcement; and the Federal Emergency Management Agency of the U.S. Department of Homeland Security.[31]

Commercial wireless carriers also have worked to develop and deploy new products designed to ensure secure communications. For example, the T-Mobile SIM card incorporated into Echelon's smart meters includes security protection in the form of an encrypted key called the International Mobile Subscriber Identity ("IMSI") that uniquely identifies a paying customer with

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[30] Henry Jones, Chief Scientist, SmartSynch, Remarks During the National Broadband Plan Workshop, "Smart Grid, Broadband, and Climate Change," Transcript at 36-37 (Aug. 25, 2009).

[31] *See* AT&T, Homeland Security, *available at* http://www.wireless.att.com/businesscenter/business-programs/government/solutions/homeland-security.jsp?wtLinkName=HomelandSecurity&wtLinkLoc=LN (last visited Oct. 1, 2009); Press Release, AT&T, AT&T Government Solutions Announces $50 Million Wireless Solution Award from FEMA (Jan. 26, 2009), *available at* http://www.corp.att.com/gov/newsevents/press_releases/press_release_01_26_09.html.

a subscriber to service.[32] Similarly, through the Verizon Wireless Open Development Initiative, a third party has developed the RuggedRouter® RX1000 and RX1100 series routers, which are industrially hardened cyber security appliances, each with an integrated router, firewall, and VPN functionality, that are ideally suited for electric power utility applications such as SCADA systems.[33]

Simply put, commercial wireless providers have been dealing with security issues for years and have developed the protocols and safeguards necessary to secure data transported over their networks.

CONCLUSION

For the foregoing reasons, the Commission should seek to encourage reliance on commercial wireless networks for the implementation of Smart Grid applications.

Respectfully submitted,

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[32] *See T-Mobile finds way into smart grid industry*, SMARTMETERS, Apr. 25, 2009, *available at* http://www.smartmeters.com/the-news/515-t-mobile-finds-way-into-smart-grid-industry.html (last visited Oct. 1, 2009).

[33] *See* Press Release, Verizon Wireless, RuggedCom RuggedRouter® Certified On The Verizon Wireless Network To Provide EV-DO Rev A Service (Aug. 27, 2009), *available at* http://news.vzw.com/news/2009/08/pr2009-08-26a.html.