From:	Strenkowski, Jeffrey R.
To:	BOCrfc2015
Cc:	Wang, Catherine
Subject:	Broadband Opportunity Council
Date:	Wednesday, June 10, 2015 4:02:50 PM
Attachments:	Deere Comments.pdf

Dear sir or madam,

Please find attached comments on behalf of Deere & Company in response to the Broadband Opportunity Council Notice and Request for Comments (Docket No. 1540414365-5365-01, RIN 0660-XC019). Please do not hesitate to contact me should you have any questions concerning this filing.

Kind regards,

Jeff Strenkowski

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BEFORE THE
RURAL UTILITY SERVICE, U.S. DEPARTMENT OF AGRICULTURE,
AND THE
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION,
U.S. DEPARTMENT OF COMMERCE

In the Matter of	)	
	)	
Broadband Opportunity Council Notice	)	Docket No. 1540414365-5365--01
And Request for Comment	)	
	)	RIN 0660-XC019

COMMENTS OF DEERE & COMPANY

Deere & Company (NYSE: DE) ("Deere"), by its undersigned attorneys, submits these comments in response to the Broadband Opportunity Council ("Council") Notice and Request for Comment in the above-referenced docket.[1] Deere is a world leader in providing advanced agricultural and other equipment and services to customers that cultivate, harvest, transform, enrich and build upon the land to meet the world's dramatic increasing need for food. Deere has delivered innovative farming equipment since 1837, and today, is pioneering state-of-the-art data and information solutions designed to greatly enhance productivity and environmental safety.

Deere shares the President's commitment to accelerating the deployment of advanced services,[2] particularly to rural areas where farming and other agricultural operations are concentrated.[3] Deere believes that there are a number of actions that the Executive Branch can

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1 *Broadband Opportunity Council Notice and Request for Comment*, 80 Fed. Reg. 23785 (Apr. 29, 2015) ("*Notice*").

2 *See* Memorandum for the Heads of Executive Departments and Agencies, *Expanding Broadband Deployment and Adoption by Addressing Regulatory Barriers and Encouraging Investment and Training*, March 23, 2015, *available at https://www.whitehouse.gov/the-press-office/2015/03/23/presidential-memorandum-expanding-broadband-deployment-and-adoption-addr*.

3 *See* Fact Sheet: Next Steps in Delivering Fast, Affordable Broadband, March 23, 2015, available at *https://www.whitehouse.gov/the-press-office/2015/03/23/fact-sheet-next-steps-delivering-fast-affordable-broadband*.

take in order to promote public and private investment in rural broadband. All Americans, including those in rural areas, should have access to affordable technologies that will empower them to learn, work, create and innovate. To that end, Deere strongly supports efforts to expand broadband services in rural areas, especially to those portions of rural areas where significant economic activity takes place but that have historically been left out of broadband deployment efforts.

I. The U.S. Agricultural Sector is a Vital Element to the National Economy

Deere encourages the Council to consider specific, real-word needs of rural Americans and economies in its review of broadband deployment, especially wireless broadband, and its examination of ways to remove regulatory barriers and accelerate broadband deployment in rural areas. The federal government has long recognized that Americans living in rural areas disproportionately lack sufficient access to broadband services, especially when compared to urban and suburban areas. As the Council considers ways to advance broadband deployment and adoption, it is important that all parties keep in mind the tremendous benefits the entire country has derived from efforts to expand communications services and infrastructure to rural areas that support the nation's agricultural sector . While the expansion of fixed and wireless voice communications has radically expanded the economic opportunities for Americans in these areas, even greater benefits can and should result from the reorientation of U.S. policy to proactively promote fixed and wireless broadband deployment to rural communities and less populated areas throughout America. Deere therefore urges the Council to focus its efforts on rural areas where increased access to affordable broadband will ultimately benefit us all.

Farmers and ranchers in rural America increasingly rely on broadband access to manage and operate successful businesses and on-the-ground agricultural operations. Increased

deployment of fixed broadband services has enabled numerous rural Americans to manage businesses from their homes and offices. Access to wireless broadband is required for machine to machine ("M2M") communication, which is an increasingly important element of the agricultural economy. While fixed broadband has penetrated the residential and business areas of many rural communities, the cropland areas where farming is done lags behind in adequate mobile broadband access. By supporting increased broadband deployment to those areas where most farming operations occur (*i.e.*, in the fields), the U.S. economy will benefit through increased economic efficiency in the agricultural sector, improved environmental stewardship, and enhanced food security. The positive benefits of rural broadband deployment to the agricultural industry also spill over to other aspects of rural life including consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private-sector investment, entrepreneurial activity, job creation and economic growth.

Expansion of rural broadband in agricultural areas should be a top priority of the Council. Expanded broadband deployment in unserved and underserved rural agricultural areas will also benefit important rural economic, educational, healthcare and other public interest goals. Deere supports rural broadband funding that promotes deployment of the full range of infrastructure necessary to support innovative broadband solutions in rural areas, including areas where construction, forestry, agriculture, and mining machines operate. This includes support for wireless broadband, wired facilities, and other infrastructure that supports broadband services.

Summary:

- Agriculture is a key driver of the U.S. economy and national security. It provides jobs and opportunity in rural areas, and indirectly supports numerous other rural anchor institutions.
- The Council should focus its efforts on rural customers whose increased access to affordable broadband will ultimately benefit the entire U.S. economy.
- Farmers and ranchers in rural America are increasingly relying on broadband access to manage and operate successful businesses.
- Access to mobile broadband is essential for farmers and ranchers to utilize machine to machine ("M2M") communication.

II. High-Tech Agriculture Requires Increased Wireless M2M Internet Broadband

The U.S. agricultural economy is increasingly high-tech and mobile. Expanded broadband facilities and services are critical economic drivers to rural communities. In particular, high speed broadband is not only essential to business centers in rural towns and traditional anchor institutions, it is also an essential service for agricultural operations that form the economic heart of many American rural communities. Agricultural producers are facing growing demands to produce more food, fuel and fiber for a growing, more prosperous world population, and they must do so with limited resources and increasing regulation. Not only is it critical that farm buildings have access to high speed broadband to communicate with their customers and vendors, follow commodity markets, gain access to new markets around the world, and manage regulatory compliance, but more and more farmers are demanding capability for M2M communications from the field that make possible significant improvements in real-time productivity and cost management.

Over the past several decades, technology has enabled farmers to achieve ever greater levels of productivity. The first wave focused on optimizing the vehicle. The second wave

focused on optimizing the fleet. The third wave is focusing on connecting the farmer "in the cab" to the cooperative, agronomist, or other agriculture service providers who can help reduce input costs, increase yields, and further enable sustainable farming practices.

Much of the future of enhanced farming efficiency and productivity turns on the grower's ability to gather, process, and transmit data using advanced information and communications technologies. Technology-equipped machine solutions enable agronomic decision-making to advance productivity, improve agriculture profitability and global competitiveness, and optimize inputs for continuous environmental improvement. With superior, precise, site-specific data, a farmer can analyze and carefully adjust their farming methods to be the most efficient, most economical, and most environmentally friendly possible, thus improving productivity and sustainability.

However, enabling farmers to utilize M2M data fully requires significant improved communications capacity and access to high speed mobile broadband. Today, many of Deere's customers are challenged with a lack of adequate cellular coverage in the fields where agricultural equipment operates. Deere's JDLink™ data service, for example, currently relies on the cellular telephone network to transmit telemetric machine operation data. The lack of coverage needed for these solutions to transmit telemetric data from the machines is already a concern, but the shortfall in coverage will only become more problematic as data volumes increase.

Due to significant gaps in cell coverage in rural areas where farm machines operate, today JDLink™ data transmissions have only a 70% successful call completion rate. Absent significant improvements in cell coverage in cropland areas, Deere expects that this figure will drop to about 50% in two to three years as agricultural demand for broadband services increases.

These data communication services depend on stable, reliable high speed connections to equipment operating in remote locations. This is not a problem that can be resolved by relying on satellite services or even more spectrum. In addition to fiber-to-farm buildings, rural areas need more wireless antenna towers, all of which must be connected by fiber backhaul to the broadband network provider. Towers provide the wireless coverage--the problem is there are simply not enough towers in the cropland areas where significant productivity enhancements could be gained. The Council should examine ways to remove regulatory barriers to the deployment of tower and backhaul infrastructure in rural areas, and seek to stimulate business funding for this critical national infrastructure.

Summary:

- Enhanced farming efficiency and productivity turns on the grower's ability to gather, process, and transmit data using advanced information and communications technologies.
- Technology-equipped machines enable agronomic decision-making to advance productivity, improve agriculture profitability and global competitiveness, and optimize inputs for continuous environmental improvement.
- Enabling farmers to utilize M2M data fully requires significant improved communications capacity and access to high speed mobile broadband.
- Rural areas need more wireless antenna towers, which in turn must be connected by fiber backhaul to Internet backbone.
- The Council should examine ways to remove regulatory barriers to the deployment of tower and backhaul infrastructure in rural areas, and seek to stimulate business funding for this critical national infrastructure.

III. The Council Should Consider Alternative Metrics When Considering Broadband Penetration

Historically, broadband penetration has been evaluated by population coverage, and in some recent limited cases, by road-mile coverage. While those metrics have generally

demonstrated year-over-year broadband penetration growth, other geographic-based metrics demonstrate systemic and ongoing deployment gaps. As it considers policies aimed at enabling greater broadband penetration, the Council should recognize that broadband deployment metrics should account for user segments with more of a geographic-based need for mobile broadband coverage rather than population-based. Examples of geographic-based users include:

i. Public safety (local, state and FirstNet)

ii. Transportation (smart cars and positive train control)

iii. Utilities (oil, gas, electric and water)

iv. Agriculture (JDLink™ from John Deere)

While a road mile metric is a good first step to recognize gaps in broadband deployment beyond residential user locations, it does not adequately cover significant areas of agricultural operations in which access to broadband services is increasingly important, including to support innovative M2M operations on the farm. For this reason, Deere urges the Council to examine "cropland" coverage as it considers broadband deployment gaps in the United States. Given that agricultural operations are an important --and often the most important -- economic driver in many rural areas, the Council cannot promote broadband deployment where people work and to empower innovation if it does not recognize the need for broadband on cropland.

This step would also be consistent with state efforts to support cropland broadband deployment. Iowa's Governor Branstad, for example, has launched a "Connect Every Acre" initiative recognizing the importance of achieving mobile broadband coverage for Iowa's major areas of cropland. For an agricultural powerhouse like Iowa, with 26 million acres of cropland producing over $10 billion per year in corn and over $6 billion per year in soybeans, vital improvements in efficiency and productivity are a priority and can be achieved with the use of

intelligent M2M data technology. This technology, however, depends on access to mobile broadband for communications and data flow in cropland areas.

Summary:

- The Council should recognize that broadband deployment metrics should account for user segments with more of a geographic-based need for mobile broadband coverage rather than simply population coverage.
- The Council should examine "cropland" broadband coverage as it considers deployment gaps in the United States.
- The Council cannot promote broadband deployment where people work if it does not recognize the need for broadband on cropland where broadband services are actually put to use directly in agricultural operations.

IV. Conclusion

Deere appreciates the Council's efforts to review ways that the Executive Branch can accelerate deployment of broadband services and looks forward to working with the Council and its members towards a common goal of promoting rural broadband deployment.

Respectfully submitted,

DEERE & COMPANY

/s/

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Dated: June 10, 2015