

“The Connected World: Examining the Internet of Things”
Senate Committee on Commerce, Science, and Transportation
February 11, 2015

Response to written questions for the record

Chairman John Thune, thank you for the questions. My written response follows.

Question 1

Yes, generally these trends help farmers adopt technology in greater numbers and this is evidenced by the price of cellular data transmission falling slightly over the last several years. We expect to see this trend continue, and through better wireless technology, the ability to move greater amounts of data over fewer discrete cellular bands; further driving data transmission costs down.

Question 2

Farmers in California have been devastated by what now is a four-year drought. Farmers have begun to deploy a greater number of soil moisture sensors to increase the understanding of the amount of available water they do have. Technology like moisture sensors provide accurate management tools that take the guess work out of irrigation. We see farmers save from 5-25% of their overall water through these methods.

In understanding crop demand, soil conditions, weather and limiting factors such as ground and surface water farmers can plan both short term and seasonal water needs. Because of the IoT and better data, farmers have a stronger understanding of their need and the ability to better manage their water use.

Senator Roy Blunt, thank you for your questions. My written response follows.

Question 1

Wireless connectivity varies based on a number of factors but are most impacted by topography, crop canopy density, and antenna height. We've seen poor connectivity outcomes where both factors are challenging, in some cases a few hundred feet of range to ranges of 10-miles where we have ideal conditions. While we don't need to see every installation achieve 10-mile range, we need reliably to cover a full section (640 acres) in most cases.

Question 2

The bandwidth demand in agriculture is not as significant as other demands such as online learning or telemedicine. We can reliably move most data (excluding large image files) over relatively low bandwidth speeds, less than 10Mbps. More importantly is the coverage area. If large agriculture areas go uncovered, the

industry will continue to rely on cellular and satellite for communication, which is costly and less than reliable.

Question 3

In all fairness, I am not fully versed on the Mobility Fund. In my opinion the changes to increase 4G services with Phase II funding must not inadvertently allow whatever level of data service, which support IoT, in rural markets to deteriorate. In addition, in order to ensure IoT data services don't diminish over time the FCC should consider grouping areas that lack 2G coverage in an auction separate and apart from those areas in which carriers are seeking to upgrade from 2G, 2.5G and 3G services to 4G services. This, in my opinion, will enable lower cost carriers a means to support the vast amount of connected devices in rural markets.

Question 4

The American Farm Bureau, given it's breath of farm knowledge, 6 million members, industry relations, and capacity to engage farmers in dialog regarding their concerns and needs was able to develop these principles without government agency support.

While I'm not an expert on other sectors their make up or challenges, I firmly believe in the power of collaboration. The most efficient and realistic method of developing principles is for industry and it's customers to work together. In this way needs, fears, opportunities, and challenges can be discussed and solutions can be agreed upon that will achieve actual success once implemented.

I thank Chairman Thune and the committee for their questions.

Lance A Donny