Statement of the
American Farm Bureau Federation

TO THE HOUSE COMMITTEE ON SMALL BUSINESS

RE: TECHNOLOGY IN MODERN AGRICULTURE AND DATA PRIVACY

February 11, 2014

Presented by:
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Chairman Graves and Ranking Member Velázquez, Members of the Committee: Thank you for the opportunity to testify on behalf of the American Farm Bureau Federation and the Missouri Farm Bureau Federation. I am here today to discuss how the advancement of technology is affecting modern agriculture.

I own and operate a farm about an hour north of Kansas City in Maysville, Missouri. Both of my grandfathers farmed in the Maysville area as does my father today. In fact, while I am here before you, Dad is fighting the cold and snow to get our farm work done, just like he does every day regardless of the weather. My wife, Kelly, and I farm with my parents, raising waxy corn, soybeans, wheat and cattle. It gives me a sense of pride to be farming the same land that my parents and grandparents did. My wife and I are happy to be raising a little boy who loves everything to do with farming and a little girl who loves everything that's pink.

I am excited to share with you how my father and I are incorporating new technologies into our day-to-day operations. I will also offer perspectives from my fellow Farm Bureau members developed through our organization's recently completed annual policy development process. Our new policies regarding "big data" and unmanned aircraft systems (UAS), as well as our rural infrastructure, are relevant to today's discussion.

After graduating college I worked for a while as a manager for a construction company before returning to the farm when the opportunity to join our family operation arose. While I did not envision being the new "tech guy," that role has become a large part of my responsibility as our farm, and our use of technology, has grown. A couple weeks ago, I spent a day trying to fix a problem I was having downloading data from our combine to my computer. As a young man 20 years ago, that is not how I envisioned working on the farm. While this wave of cutting-edge tech equipment for farming does sometimes have drawbacks, it has ushered in a new world of benefits that outweigh those complications.

I do want to be clear that no matter how advanced a new program or system is, or how accurate a touted device may be today or even years from now, technology cannot take all of the risk out of farming and ranching. Expensive equipment, adverse weather, volatile global markets and changing regulations are simply part of the life we lead.

On our farm we use Global Positioning Systems (GPS) on several pieces of equipment to handle a multitude of different functions. The application rig we use to apply crop protection products is equipped with auto steer. This feature is not new to agricultural equipment, but is a great help with this particular piece of machinery. Allowing a computer to guide the machine increases accuracy, reduces operator fatigue and allows me to more closely monitor its performance. Our new application rig is also equipped with the AIM Command system, a new method of application that uses pulse width modulation and computer assistance to manage flow and droplet size specific to the product being applied. This ensures a consistent pattern will be maintained at any speed and the chances of offsite application are greatly reduced. It also decreases operator errors. On our rig the computer turns the tips on and off based on the GPS signal, ensuring the product is applied where needed. This upgrade paid for itself in the first year through reduced input costs.

The most important piece of equipment on our farm is the planter because it is very difficult to fix a poorly planted crop, although Mother Nature gives us a "do over" from time to time. We use a lot of products manufactured by the company Precision Planting. We have added aftermarket parts, such as a precision monitor to track everything from seed placement to the amount of force used to put the seed in the ground. In most of our corn fields, we typically plant around 30,000 seeds per acre. If even one of those seeds is planted too close to another, my monitor will alert me, identify in which of the 16 planter rows it occurred and exactly when it happened. I also have an iPad synced to my planter monitor running software that allows me to do real time mapping and data analysis in the field.

When any farmer plants in an irregular shaped field, the potential for over-planting increases. As planters have increased in size, so too has the potential for overplanting. To reduce this potential, we equipped our planter with point row clutches. The point row clutches rely on a GPS signal to shut them off whenever crossing into any part of the field that has already been planted. Not only does this save seed cost, but it helps eliminate yield loss from plant overcrowding in double planted areas.

Three of my tractors are equipped with auto steer. At $10,000 per machine for an economy system, it is not cheap to put auto steer on a tractor. All of the technology we have discussed did require a sizable investment. But we have determined that the benefits outweighed the costs. We feel that the reduction in inputs as well as operator fatigue alone pays for these investments. The same may not be true for our neighbor down the road and certainly not for every farm or ranch.

For years, farmers have used technology advances to better match varieties of seeds, production inputs and management practices with specific field characteristics. Additionally, many farmers have had the ability to map yields with a GPS receiver. While farmers have been experimenting with this technology for well over a decade, only now is the industry starting to consider all the uses of this transformative technology.

Agribusiness firms are offering and designing "prescription" type services for farmers, enabling them to apply seed and fertilizer in varying amounts across their fields using the technology I described earlier. Just recently, Dad and I met with an agronomist to discuss prescriptions for our farm. Many farms across the Midwest have soil types and yield potential that vary widely; our land is no different. With the technology available today, we can merge 10 years' worth of data to get a more complete picture from which to make management decisions.

We have maps generated by our planter, yield maps from our combine, and advanced Light Detection and Ranging (LIDAR) soil maps that we can now combine to generate useful prescriptions for maximizing yield and reducing inputs. If a yield map shows a soil type with a lower yield potential, the prescription can then call for a lower seeding rate and less fertilizer in that management zone. Similarly, if the LIDAR elevation map shows the lower ground is more productive, we can increase the plant population in those zones.

It is the combination of these different maps that is leading to new breakthroughs. Mini weather stations and weather services with field specific data will only help to improve the accuracy of prescriptions as we go forward. The ability to overlay data from our planters with data from our combine is a very recent development. This one advancement has given us a wealth of farm specific information that can now be generated in the combine. Ten years ago it took careful planning and a support team with special in-field scales to tediously test a few acres and generate only a fraction of the data we can have instantly in our combines today. This will lead to increased yield as farmers and agronomists now have better tools for selecting the corn and soybean varieties best suited for each individual farm.

This use of an individual farmer's data to design a different program for each acre in a field that may span 200 or more acres will augment the farmer's years of experience with satellites and algorithms. The new technology undoubtedly will help make farmers more efficient and allow the use of fewer inputs while increasing their overall level of outputs and profitability. While companies have collected and analyzed agronomic, yield and other farm level data for some time, the amount of real-time information gained at a micro-level unit is a big change that has largely taken place within the last two years and is of concern to our organization.

Several agricultural equipment firms have introduced technology whereby the data from combines is uploaded every few seconds to the Cloud. If a large agribusiness firm had access to real-time information from 1,000 or more combines randomly spread across the Corn Belt, that information would be extremely valuable to traders dealing in agricultural futures. Traders have traditionally relied on private surveys and U.S. Department of Agriculture (USDA) yield data. These yield estimates are neither timely nor necessarily accurate. But now, real-time yield data is available to whoever controls those databases. Virtually every company says it will never share, sell or use the data in a market-distorting way – but we would rather verify than trust.

From Farm Bureau's perspective, one of the most important issues related to "big data" goes directly to property rights and "who owns and controls the data" (Attachment 1). The risks to privacy that the farmer faces, such as his pesticide or GMO usage that may be an accepted practice but politically unpopular, are of great concern.

In addition, a farmer's information is valuable to the companies, so farmers should have a say in and be compensated when their data is sold. Farmers need to protect their data and make sure they bargain wisely as they share their data with suppliers and companies who desire access to their information.

Farmers are rightly concerned about data privacy. Even if an individual operator does everything to the best of his ability, following all the applicable rules, regulations, and best management practices, there is still concern that the Environmental Protection Agency (EPA) or one of the numerous environmental organizations that plague agriculture might gain access to individual farm data through subpoenas or an overall-clad Edward Snowden type.

Related to this issue, Farm Bureau supports the use of unmanned aircraft systems (UASs) for commercial purposes including agriculture, forestry, and other natural resource uses (Attachment 2). As the law stands now, if I wanted to hire someone to scout my crops with a UAS, they

would be subject to the same FAA regulations as a commercial jet. Requiring a UAS to have a tail number may be a bit excessive in my personal opinion.

Our organization believes the operator of an UAS should be required to gain the consent of the landowner and or farmer if the UAS will be surveying or gathering data about the landowner's property below navigable airspace. We oppose a federal agency using UASs for the purpose of regulatory enforcement, litigation, and as a sole source for natural resource inventories used in planning efforts or surveying and gathering data without the consent of the landowner and or operator below navigable airspace.

The future is truly exciting in terms of technological advancement in agriculture, but we should not overlook the gaps that exist, particularly in rural areas.

High-speed broadband services have great potential for expanding business, healthcare, and education opportunities in our communities. According to the Federal Communications Commission's (FCC) Broadband Statistics Report,[1] the broadband availability gap between urban and rural areas nationwide is narrowing (100 percent available in urban areas versus 94.2 percent available in rural areas). In 2012 my county, DeKalb, ranked 87th out of 114 counties (plus St. Louis City) in terms of broadband speed greater than 25 Mbps and 2834th out of 3234 U.S. counties and territories.[2]

Until last fall, we had tried three different satellite Internet providers. The last one was fair at times, but the first two were awful--high maintenance, high cost and low speed. We now have high speed internet through our rural electric cooperative's fiber-to-the-home network, a project made possible through federal loans and grants. The added competition in our area helped us find an Internet package that better fits are needs.

The switch from analog to all-digital television in 2009 is another issue that continues to impact rural residents. On its website, the FCC describes Digital Television (DTV) as an "advanced broadcasting technology that has transformed the television viewing experience." I believe that most people in my hometown would agree that their TV viewing experience certainly changed, but not for the better. Even with a digital converter box and an antenna, only one broadcast station in St. Joseph has a signal strength rated as "moderate." St. Joseph is about 40 miles from our farm. No stations in Kansas City, about 70 miles southwest of Maysville, have signal strength above "weak." (Attachment 3).

This is the reason farmer and rancher voting delegates at the Missouri and American Farm Bureau Federation annual conventions adopted policy urging the FCC to examine ongoing problems resulting from the analog to digital conversion and work with broadcast stations to ensure the continued availability of free local programming.

Cell phone reception continues to be a problem in rural areas even though wireless companies have made strides in expanding service. I frequently travel 36 Highway, a four-lane road that

[1] http://www.broadbandmap.gov/download/reports/national-broadband-map-broadband-availability-in-rural-vs-urban-areas.pdf
[2] www.broadbandmap.gov/rank

runs east to west in northern Missouri, and always lose reception and drop calls even though I have service with a large carrier and multiple companies have towers along 36. Our organization supports the FCC working with cell phone companies to increase interoperability among towers.

I find it ironic that I can upload yield data in real-time from my combine to the Cloud as I am picking corn yet it is difficult to watch local programs on my television or have a cell phone conversation in certain spots in my area. I hope the committee will share these concerns with the FCC since they affect farmers and other small business owners in rural areas.

As I have learned by attending county Farm Bureau board meetings and young farmer conferences, what works on my farm may not necessarily be feasible for my neighbor. America's farms and ranches vary in size and scope, and farmers need a variety of tools in the toolbox. I do not expect you to share my level of enthusiasm for pulse width modulation or point row clutches, but I hope you are excited about farmers' use of technology to increase efficiencies, better manage inputs such as fertilizer and ultimately help us better serve consumers from my hometown to Brooklyn, New York.

Attachment 1: American Farm Bureau Federation (AFBF) proprietary data policies as adopted by voting delegates at the 95th Annual Meeting held January 2014.

1. Proprietary data collected from farming and agricultural operations is valuable, should remain the property of the farmer, and warrants protection.
2. We support:
2.1. Efforts to better educate farmers and ranchers regarding new technology or equipment that may receive, record, and/or transmit their farming and production data;
2.2. Requiring companies that are collecting, storing, and analyzing proprietary data to provide full disclosure of their intended use of the data;
2.3. Formation of standardized protocols regarding privacy and terms of conditions to ensure a standard definition of all components within the contract. We should be an active participant in developing these protocols;
2.4. Compensation to farmers whose proprietary data is shared with third parties that offer products, services or analyses benefitting from that data;
2.5. Multiple participation options being included in all contracts;
2.6. All proprietary information between the farmer and the company remaining between the two entities. This would not preclude a farmer from sharing data with whomever he/she chooses (e.g., a consultant);
2.7. Utilizing all safeguards to ensure proprietary data is stored at an entity that is not subject to a Freedom of Information Act (FOIA) request;
2.8. The farmer's right to enter into agreement and their rights to sell their proprietary data to another producer (e.g., in a land sale);
2.9. Private companies entering into agreements which would allow for the compatibility/updating of equipment and updating of software;
2.10. The right of a farmer to have access to their own data, regardless of when it was shared with a company; and
2.11. The right of the producer who no longer wishes to participate in aggregated data sharing with a private company, to remove their past aggregated data from the company's database and revoke that company's ability to sell or use that data in the future.
3. We oppose any federal agency or FOIA-eligible entity from serving as a data clearinghouse for all proprietary data or aggregated data collected by private companies.

Attachment 2: American Farm Bureau Federation (AFBF) unmanned aircraft systems (UAS) policies as adopted by voting delegates at the 95th Annual Meeting held January 2014.

1. We support:
1.1. The use of unmanned aircraft systems (UASs) for commercial purposes (i.e., agriculture, forestry, and other natural resource use);
1.2. Requiring the operator of the UAS to gain the consent of the landowner and or operator, if the UAS will be surveying or gathering data about the landowner's property below navigable airspace; and
1.3. The regulation of UASs as recreational aircraft.
2. We oppose:
2.1. A federal agency using UASs for the purpose of regulatory enforcement, litigation and as a sole source for natural resource inventories used in planning efforts;
2.2. UASs surveying and gathering data without the consent of the landowner and or operator below navigable airspace; and
2.3. FAA regulations of UASs as fixed-winged aircraft.

Attachment 3: http://transition.fcc.gov/mb/engineering/dtvmaps/

DTV Reception Maps

Use this program to check for the DTV signals that are available at your location. For more information on antennas, see the Antenna Guide.

Signal strength calculations are based on the traditional TV reception model assuming an outdoor antenna 30 feet above ground level. Indoor reception may vary significantly.

Signal Legends

Strong | Moderate | Weak | No Signal

Callsign	Network	Virtual Channel	Band
Click on callsign for detail			
KQTV	ABC	2-1	Hi-V
KCPT	PBS	19-1	UHF
KCTV	CBS	5-1	UHF
KMBC	ABC	9-1	UHF
KSMO	MYTV	62-1	UHF
KCWE	CW	29-1	UHF
WDAF	FOX	4-1	UHF
KTAJ	TBN	16-1	UHF
KPXE	ION	50-1	UHF
KMCI	IND	38-1	UHF
KSHB	NBC	41-1	UHF