REMARKS OF FCC COMMISSIONER BRENDAN CARR

AT THE SENATE BROADBAND CAUCUS, CONNECTING AMERICA EVENT

"AGRICULTURE AND BROADBAND FOR STRONG RURAL COMMUNITIES"

WASHINGTON, DC

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Thank you to Senator Capito, Senator Boozman, Senator Heitkamp, Senator Smith, Senator King, and Senator Klobuchar for your remarks today and for the important, bipartisan work you are doing with the Senate Broadband Caucus to help bring more broadband to more Americans. I appreciate the chance to join your discussion about the vital role that broadband plays in agriculture and our nation's rural communities.

In my time on the Commission, I have seen both sides of the digital divide—communities that have broadband and the economic benefits that come with it—and those that are still working to get their fair shot at next-gen opportunity.

Broadband means access to new jobs for Americans, from the workers who manufacture and deploy broadband infrastructure, to the app economy that runs over high-speed networks, and the businesses that use these connections to reach customers around the world. It enables companies large and small to operate more efficiently and productively—including the many agriculture producers who use broadband in their day-to-day business operations. And it helps ensure that rural communities have access to the same essential services, including healthcare and education, that are enjoyed by the rest of the country.

Over the past few months, I have met many Americans that have broadband or want it in their communities. Their stories reinforce the need for the FCC to keep pressing ahead with policies that will promote broadband infrastructure deployment across the country.

Last week, I met Whitney from Lambert, Montana. Her family runs a farming and ranching operation in the northeast corner of Big Sky Country. The area is famous for being the farthest place in the country from a Starbucks. It's about 190 miles to the closest green-aproned barista. A run to the grocery store is a 100-mile drive round trip. The nearest big city, Billings, is five and a half hours away.

Yet Whitney is an Instagram star. She makes money by using her smartphone to produce and upload what have become viral videos. She calls one of her more famous videos "Crossfit for Cows,"[1] and it's been viewed millions of times. It shows Ghost, one of her 1,200 pound Herefords, rolling a straw bale across a snow-covered field. Whitney can get 4G LTE when she's in the field because there's a cell tower not far away that was put up to cover a highway that runs through the area. But we know that there are millions of rural Americans who either lack 4G LTE service altogether or are being served only by subsidized providers. That is why the FCC is allocating up to $4.53 billion over ten years—to help close this gap and bring 4G LTE to even more Americans. Everyone may not have the same social media skills as Whitney, but they should at least have the same opportunity at next-gen connectivity. So I am glad to support the FCC's efforts in our Mobility Fund proceeding.

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[1] https://twitter.com/DirtRoadDreamr/status/686318702980141057.

Now, Instagram stardom is a new career created by the Internet. But even some of the oldest jobs in rural America can be saved or enhanced with the help of a fast connection. In Milford, Nebraska, I talked with Landon—he works in one of the last remaining jobs for the American cowboy. He's a pen rider at a feed lot that can house up to 15,000 cattle. The pen rider's job is to maintain the health and welfare of the herd from horseback. They look for signs of injury or illness—cows that should be pulled out and provided with an antibiotic or other treatment. The problem is that cattle tend to hide their symptoms and try to blend in with the larger herd making it difficult for even the most experienced pen rider to get the job done.

This is where broadband makes a difference. There's a Lincoln, Nebraska-based start-up called Quantified Ag that's built what they call "Fitbit for Cattle."[2] It's a small, connected tag that's attached to a cow's ear when they arrive at the feed lot. It measures the cow's temperature, tracks its head and body movement, and can pick up on issues that are tough for any human to spot. Every morning, data from the cows are uploaded and analyzed by the company. If the data show a cow that is outside the normal range of measurements, a small red light starts flashing on the cow's ear tag. The pen rider spots the light and can then move in for a more detailed analysis.

The preliminary results indicate that the technology is helping to improve outcomes for the herd, saving time and money, and reducing the use of antibiotics and other treatments. By reforming our broadband infrastructure deployment rules, we can make it easier to deploy these and other technologies to communities across the country, which could help replicate the successes we are seeing in this one example.

Another helpful effort will be to advance the Precision Agriculture Connectivity Act, which Senator Fischer and I talked about while we were on a tour through the Cornhusker State.[3] This bill aims to help bring high-speed Internet access to 95% of agriculture lands by 2025.

So we know the need for broadband in rural America. And we know the lost productivity and the lost job opportunities when fast connections are lacking. And yet the struggle to connect rural America— the financial cost, and the sheer sweat and elbow grease it takes—is hard to understate.

I saw this for myself a few weeks ago when Senator Thune hosted me in South Dakota. In Chancellor (pop. 268), I met Tyler who ran a tech startup from his home. He lived on part of his family's old homestead, which continues to be used as part of a larger farming operation. Tyler needed a better, faster, and more reliable broadband connection, so here's what he did. He asked a broadband provider to run fiber to the closest accessible point to his house, which happened to be an old wooden utility pole. Tyler says he had to enter the pole's location as his "home address" to ensure that the broadband provider would run fiber to that point. He then set up a high-speed wireless link to bridge the gap between his house and the fiber connection. Turns out, this setup worked well to bring broadband to Tyler's house. Tyler looked around and realized he could help bring more broadband to his neighbors in Chancellor by doing the same thing.

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[2] https://twitter.com/BrendanCarrFCC/status/1001476240442888192.

[3] U.S. Senator Deb Fischer and FCC Commissioner Brendan Carr, *Agriculture and Connectivity*, Norfolk Daily News (May 29, 2018), http://norfolkdailynews.com/blogs/agriculture-and-connectivity/article_313f71d0-633c-11e8-91f1-f725de833061.html.

So Tyler decided to go into the broadband business with his brother, Jason. They now run a small Wireless Internet Service Provider or WISP called Leap Communications. Connecting rural South Dakota is not easy work. And you can't be afraid of heights to do it.

Tyler took me on a tour of one of his deployments. We started out 180 feet above nearby Parker, South Dakota, on top of the town's water tower.[4] The view on top was almost worth the vertical climb up three series of ladders. Once up there, he showed me a wireless backhaul antenna that he uses to send data to a fiber link a few miles away. Swinging carefully around to the other side of the tower, he showed me a fixed wireless link that beams broadband about nine miles away to a nearby farm. We visited that farm and spoke with Duane, who runs the operation.[5] Duane told me that he used to go to church regularly to improve his connection. You see, before he had fixed wireless, Duane did not have broadband at the farm. So he would use the church Wi-Fi to upload the massive data sets he collects on his tractors and combines. Now, Duane says he still goes to church, but with a broadband connection provided by Jason's company, he can spend his time there focused on a higher purpose.

From back here in D.C., it's often hard to appreciate the sheer quantity of data that today's farmers and ranchers need to get their jobs done. Talking with Jason helped bring this point home.

At 36 years old, Jason has worked on farms and ranches for 20 years.[6] He was born in West Michigan's farm country only a few miles from the crop supply company where he now works in Moline, Michigan. There's no paved road to his job. To get there, he crisscrosses railroad tracks that run through town and, this time of year, the drive takes you past mounds of dry fertilizer and potash, ready to be spread in the adjacent fields.

Jason's job is to collect silos worth of data — drone-based images detailed enough to track even small changes to a single leaf, real-time information about soil moisture and chemistry, LiDAR-based maps that identify the micro-climates within each plot of land, and bales of information gathered by sensors on his connected combines and sprayers.

When I visited with him a few weeks ago, it was clear that Jason has the tech expertise that would be in high demand 2,000 miles away in Silicon Valley. But he's chosen to raise his family in Moline. He told me he's never been more optimistic about the future of farming.

The challenge, Jason explained, is getting all this data up into the cloud where it can be analyzed and put to productive use. This is where a quirk of history gives Moline an advantage. You see, the community got its start in the 1870s when the Grand Rapids and Indiana Railway passed through. Why does that matter? Today, broadband providers have run fiber along the tracks. So Jason was able to tie in to the broadband running along his operation.

Now, Jason can upload the gigabytes of data he collects and leverage the horse-power of cloud-based artificial intelligence to put this information to work.

The results are remarkable. Jason now sends real-time data to his connected combines that can make precise and dynamic adjustments, often on an inch-by-inch basis, to everything from the pace, depth, and type of seeding to the nature and amount of fertilizer. He can track and spot issues with

[4] https://twitter.com/BrendanCarrFCC/status/1002214042017193984.

[5] https://twitter.com/BrendanCarrFCC/status/1002209979837927431.

[6] https://twitter.com/BrendanCarrFCC/status/991458172899651585.

individual plants before they become a problem for the entire crop. He even talked about an IoT device that can capture pests, upload their images, and then use AI to identify them and recommend a solution.

With these broadband-enabled, smart ag applications, Jason estimates that farmers are seeing at least a 30% increase in productivity and crop yields, not to mention a significant reduction in the use of fertilizer, pesticides, and water.

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So how do we help more agriculture producers achieve these results? At the FCC, we are committed to taking steps to close the digital divide and ensure that everyone has access to the opportunities that broadband enables. But we have more work to do to bring better, faster, and cheaper broadband to more Americans like Whitney, Landon, Tyler, and Jason. This means we need to keep cutting the regulatory red tape that needlessly drives up the costs of deploying broadband infrastructure. We need to keep freeing up spectrum for next-generation uses. And we need to continue supporting rural broadband providers through programs like our Connect America Fund. I look forward to working with the folks in this room and all stakeholders as we continue the work to connect every community in our country with next-generation opportunity.