June 10, 2024

The Honorable Russ Fulcher

Thank you for the opportunity to give additional testimony concerning on-farm rural broadband access.

The two questions I have been asked to answer concerning on-farm rural internet access are listed below along with my responses.

1. What are the challenges facing farmers when it comes to securing wireless connectivity at their facilities?

   The challenges farmers face in California when trying to access on-farm wireless connectivity has been the lack of providers available to serve our farms. Our one and only provider has been extremely limited in capacity to provide decent service over the past 10-15 years. With only one available provider, we were forced to pay high fees and receive extremely low internet speeds. There was absolutely no competition when it came to internet access for our farm which left us with speeds of 15mbps down and 7mbps up at best. We were forced to put in multiple services so that we could operate our voice over internet phones and another provide basic access for our office personnel for emails and online meetings. At best we had service interruptions and lack of bandwidth during online meetings and phone calls, especially during covid when the majority of the meetings were virtual. So many times, the computer screen would freeze due to poor service and we would have to try to reconnect. During phone calls, calls would be unintelligible or would drop completely. During the past 7 years, I tried unsuccessfully to bring fiber into the farm to increase speeds. I did received a quote from ATT for fiber installation which came back at $1.5 million dollars for service of 20mbps up and 20 mbps down along with a $550 per month service fee. We rejected their offer.

   Only in the past year, we were approached by a second company, Cal.net to bring in broadband service to us at a reasonable price and with high speed, 100mbps up and 100 mbps down. This service was only offered to us and unfortunately our neighbors at this time are not being served. This service will hopefully be offered to others in our area soon. This is the first opportunity we have had to have high-speed internet offered in our area.

   I understand that trying to put fiber to many farms that are spread out over a wide area isn't always the most effective way to provide broadband service. In the days when we relied on traditional landline phones, we always had service disruptions due to cut wires from farm equipment and people shooting at or damage to above ground wires. It seems that high speed wireless is the best, cost effective approach for delivering internet to rural locations.

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I believe that lack of financial return to providers due to the few numbers of rural residents has been an impediment to getting high quality internet to rural areas. I believe that as competition begins, we should see improvements in cost and speeds for many rural, underserved farms and communities.

2. How could adopting wireless technologies better improve your yield?

When thinking about how high-speed internet can help my farm and my neighbors, I think back on when cell phones first became available. There was the novelty of being able to make a call from my vehicle in a farm field, but did I ever believe that I would be able to photograph, send information, and communicate with email at the touch of a button while in my farm fields? I couldn't imagine the possibilities.

And now, bringing high speed internet to the farm environment, the same challenges exist, what will be developed in the future may be beyond my imagination-but I know it will be a necessity.

What I do know is that having high speed broadband on-farm is already changing the way I farm. This is just the beginning of making my farm more productive and efficient in so many ways. There are two ways I can improve my profitability on-farm;

1. by increasing yields and quality of my crops
2. by decreasing my expenses, or both.

In all regions of the United States that require irrigation to produce food or fiber, we understand that water is our livelihood. Where water is expensive or lacking in quantity, every drop is critical for a farmer. I have been implementing on farm automation of irrigation systems for my field crops so that water is added uniformly and only exactly when needed. . This is just the beginning of where we are headed by incorporating new technology into my farm.

Agriculture is on the verge of a digital and data revolution on a scale that has never been seen on the farm. Tractor mounted sensors will be able to photograph while doing passes in the fields and accumulating data that can be downloaded to the cloud and maintained so that models can interpret exactly what is going on in each field on a real time basis. Data that will project insect populations, disease infestations, populations of beneficial insects all without the time and expense of sending someone to the field. I will be able to do real yield projections, allowing me to take advantage of pricing at an earlier stage of crop development. I will be able to determine if my plant growth is progressing in a normal fashion or if harvest will be on time or delayed. Detailed information on all of our crops will be available by incorporating new technology that can transfer this information back to a dashboard that can be monitored on a minute-by-minute basis. By incorporating this data I will become a more efficient farmer, only using the inputs necessary to produce a crop in a sustainable way. The data acquired will help farmers build databases that we can use for future years and will make us more efficient and affect decisions that will make our net income increase.

I know that the future will include new automation. Many of the jobs that are now being done with manual labor can be converted by automating, from automated weeding to autonomous tractors to robotic harvesting equipment. We know that on farm labor is in short supply and continuing to be more difficult to obtain along with becoming a much more serious cost for all growers. By automating, as other industries have done, we can reduce costs while

improving productivity-why should agriculture be left out? We will be needing fewer but more highly trained employees that can operate these new on-farm systems.
Farmers in rural communities haven't had the ability to explore these new technologies due to the lack of high-speed broadband technology. We have been limping along with slow, low-capacity internet that no one would or should accept. We know that serving rural farms and communities doesn't have the same return to the providers, but with all the new sensors and technology farmers want to implement, the IoT will provide additional usage and income for rural internet providers as we implement these new technologies.

To be able to be more precise in all my on-farm operations including tracking all of my equipment, automatically diagnosing issues with my farm equipment before having catastrophic failures, electronic timecards for my employees, weather applications and notifications, monitoring below ground aquifers, downloading aerial photos of crop growth along with real time cameras in fields that can determine moisture stress, all require high speed internet access.
Envisioning a future that will automatically determine water and fertilizer needs and automatically make the applications will save millions of dollars on farms.

I believe that as we acquire new technology, farm usage of internet will explode. Usage of internet to simplify complex operations while increasing yields and reducing our input costs will be the new norm. We will be able to manage our crops more efficiently and more accurately to keep American farms in a more competitive position in world trade. This will also give us the ability to increase food security in the United States by producing food and fiber at a lower cost, keeping American farms viable and long term more sustainable.
This means that the American farmer will be economically more sustainable which equates to a more stable rural community while being able to provide a long term, competitively priced food supply for the American public.

Without highspeed internet to rural farms and communities, none of this will be possible. Please provide the funding necessary that will allow connectivity to rural areas throughout America. We are on the beginning of a technology revolution in American agriculture, please help us get there.

Sincerely,

Don J. Cameron
Vice President/General Manager