

**MEETING OF THE TASK FORCE FOR REVIEWING THE CONNECTIVITY AND TECHNOLOGY NEEDS OF PRECISION AGRICULTURE IN THE UNITED STATES**

**MARCH 28, 2023**

**HELD COMPLETELY VIRTUALLY**

**10:00 AM EDT**      **CALL TO ORDER AND WELCOME,  
ROLL CALL**      Lauren Garry, Designated Federal Officer  
Teddy Bekele, Task Force Chair

Roll Call: [highlighted in yellow if present]

**Teddy Bekele**, Senior Vice President and Chief Technology Officer; Land O'Lakes

Vice Chair:

**Michael Adelaide**, Ph.D., CIO & Special Advisor to the President; South Dakota State University

Members:

**The Honorable Dale Artho**, Commissioner; Deaf Smith County, TX

The Honorable Loranne Ausley, Florida State Senator; Florida State Senate District 3 [no longer on Task Force but was present]

**Sreekala Bajwa**, Ph.D., Vice President, Dean & Director; Montana State University College of Agriculture & Montana Agricultural Experiment Station

**Andy Bater**, Farmer; Fifth Estate Growers LLC

**Julie Bushell**, President, Paige Wireless; Irrigation Association

**Anthony Dillard**, Tribal Councilman; Choctaw Nation of Oklahoma

**Michael Gomes**, Vice President, Strategic Business Development; Topcon Agriculture

**Heather Hampton+Knodle**, Vice President & Secretary; Knodle Ltd. Farms

**Robert Hance**, President & CEO; Midwest Energy & Communications

**Ryan Krogh**, Manager, Production System Program Management; John Deere

Jennifer Manner, Senior Vice President, Regulatory Affairs; Hughes Network Systems, LLC

**Joy Sterling**, Chief Executive Officer; Iron Horse Vineyards

**Jimmy Todd**, Chief Executive Officer & General Manager; Nex-Tech

**Haran Rashes**, Assistant General Counsel for Regulatory Affairs, ExteNet Systems, Inc [on Teams, but not included in roll call. A working group member, but not a Task Force member. Subbing for Jennifer Manner on the update]

Teddy Bekele: announced the agenda

Mapping Update: Kirk Burgee

- Provided overview of broadband data collection authority, data submissions, and challenge process. To date, the team has processed over 4M challenges and continues to do so. Many challenges will not need to go to adjudication, but otherwise the FCC will oversee the

adjudication process between providers and challenger. Will continue to work through the challenge process and support stakeholders/challengers to try and improve the quality of the data and its accuracy.

- New data for the fabric was Due March 1, 2023. The outcome of that collection will be released this spring. It is a result of challenges and other data refinements.
- Clarifies that the focus is not on agricultural lands and we don't have a statutory mandate to focus on it, but is ready to work with stakeholders to make sure that the accuracy of broadband data in those lands is as accurate as possible. Generally open to finding solutions and working with stakeholders, including those on agricultural lands, to try and find solutions to data issues.

#### Overview of Farm Operations and Farm Technology: Heather Hampton+Knodle

- Put together a film to show what precision ag means to Hampton+Knodle Farms. The major issue is that technologists can create solutions but they cannot be used unless there is connectivity.
- A few drawbacks to GPS technology that didn't make it into the film: driver almost falling asleep; driver driving for a mile and not putting the instrument down b/c they took the autosteer for granted; must triangulate based on 3 different towers and has found that if tractor needs to pull from a 3<sup>rd</sup> tower and cannot, it will drive in circles.
- Within film:
  - Some drawbacks of precision ag: expense; depending on GPS can be frustrating b/c they lose signals.
  - Head planter had to make changes to his cellular service to try and account for connectivity issues in the field and make data inputs using precision ag equipment.
  - Internet connectivity is crucial for them, particularly in real time b/c they need to follow real time changes in the prices in grain markets.
  - The importance of connectivity has only grown for them because they are increasingly relying on larger file sizes but face connectivity challenges. E.g., uploading a 1 hour presentation was estimated to take 3 days
  - Feature actual use of precision ag on the farm: e.g, measuring moisture in grain before delivery. They get docked at delivery if moisture is above 15%.
  - There are "pockets" in cell service areas that don't receive service because there are outages of some kind. Believes there should be redundancy in service areas.
  - Provides overview of how some precision Ag equipment is used on their John Deere planting equipment
  - Has a driver shows what input data for an app is needed to complete the delivery process (ticket no., gross, tare, moisture, etc.). Also shows the data that is needed to be tracked and kept for state/federal government organizations and internal purposes (e.g., billing). Connectivity issues have presented challenges in tracking this data.
  - Has worked with University of Illinois to try and optimize results using precision ag, but has had issues with connectivity between equipment to use the technology, particularly in the field.
  - Discusses the possible future direction of precision agriculture e.g., autonomous vehicles will be more common and may adopt that in the farming context and real time testing. To make it happen, there will need to be better signals and compatibility between equipment.
- Discussed some precision ag uses not in film: carbon reporting; MTG units in semis for tracking in cellphones.
- Highlights that needs vary from home to the field. For the home, reliability and adequate bandwidth is critical/needed. For the field, coverage is the key issue but bandwidth will become increasingly important.

- Describes network connectivity issues in their equipment and they have explored how to essentially make their own backhaul on their farm

#### The Future Needs of Precision Agriculture: Drew Garretson, Chief Marketing Officer, Ceres Solutions

- Provides overview of Ceres Solutions. A farmer owned co-op in Indiana and Michigan that provides services and energy solutions for farmers. Helps farmers gain access to inputs and make profitable decisions.
- Main presentation was on its IoT innovation hub. Mission was to find a good way to pre-market field test IoT technologies before offering them to customers. Describes the ecosystem they created to conduct testing in rural SW Indiana, using MSFT airband technology. Describes how they conducted testing on one of their seed hub locations. Describes the challenges in ag (labor, scalability, connectivity, accuracy) and how technology can help solve those solutions, e.g. soil samples are now 70% done via autonomous robots rather than all human labor. Tested a variety of possible IoT technologies to try and find a scalable solution to problems facing farmers—e.g. fertility sensors to measure fertility levels; a camera that identifies insects.
- Describes an open house to share with students and stakeholders what they had learned from the testing.
- Had 4 key takeaways from the IoT innovation hub project: service after the sale wins in ag tech; connectivity is critical for utility; don't be a solution looking for a problem; collaborate well with partners.
- Moving forward as they start to launch IoT innovation 2.0, they must leverage key partnerships, connect with young farmers, further engage students, and continue to replicate the rigor of the processes they put technologies through.

#### Working Group Update: Mapping and Analyzing Connectivity on Agricultural Lands: Sreekala Bajwa

- Has brought in 4 additional speakers since the last meeting. Have 2 more speakers scheduled for the coming weeks. Also had the FCC present on the BDC and the group explore the BDC
- Provides overview of charges
- Made 4 recommendations last year and offers how to build on them:
  - 1) the FCC should adopt standard measurements or KPIs for the BDC map. New discussion points for this year concern issues with the BDC map—lack of outside data; complexity of challenge process; rural producers may need to participate via email or paper. Suggests addressing limitations for agricultural constituents by simplifying the challenge process, issuing an FAQ, and defining and implementing a demarcation point for data collection/reporting
  - 2) FCC partner with USDA for determining and mapping underserved/unserved ag lands, and provides some specifications for what should be included in the map. New for this year, should provide representation from group in the mapping area and the connectivity in the area.
  - 3) There should be intra- and inter agency coordination to create and develop a map. For example, within USDA they should also form an intra-agency task force to coordinate the activities in the USDA. New is greater coordination between federal, state and tribal agencies.
  - 4) New discussion points for BDC map specification and challenge process. Provides recommendation on how to improve the challenge process for mobile data, for simplifying the process, clarifying how to handle when more than one provider covers an area, and showing what user experience is actually like rather than strict speeds (precision ag uses a lot of data)

#### Working Group Update: Accelerating Broadband Deployment on Unserved Agricultural Lands: Haran Rashes

- Provides overview of charges and their guiding principles for recommendations
- Provides overview of the 14 agreed upon recommendations, which concern defining broadband, funding programs for the last acre, build out requirements, interoperability standards, and dedicating spectrum to precision ag, providing incentives for build out, the FCC should work with states to address zoning issues, amongst other issues.
- New recommendations under consideration:
  - During build out, federal, state should use funding to support use of broadband services
  - FCC, NTIA, and USDA should facilitate the ability of parties to get funding from multiple sources
- Will have more speakers to come on the upcoming weeks and work on editing the report, hopefully someone from Congress

Working Group Update: Examining Current and Future Connectivity Demand for Precision Agriculture: Heather Hampton + Knodle

- Provides overview of timeline to deliver the final WG report to Task Force.
- Identified questions from interim report as it moved forward:
  - Is the emphasis in the short term mostly on wireless? Yes, apps are crucial, but also no, more fiber backhaul is also needed now.
  - What do they mean by references to “data”? Considering Data v Knowledge: time, when can a farmer react to information (e.g., does the farmer have time to react to information on food safety?), and quality of data
  - What does farmers being at the core of technology decisions? Farmers need to control the data and believe that the technology will pay off/they can economically justify paying for it
  - Time for “future proofing” begins with the 2023 Farm Bill. Provides description of components of 2023 Farm Bill and parts of it that touch on precision ag and the ecosystem that will make precision ag work
  - What is the significance of edge technology? Edge enables larger data loads and is essential to the future of precision ag technology. Allows local procession and decreases the burden on backhaul
  - Stands by their recommendation in the interim report of 100/100. While they know they can’t build wires to the tractor, they hope to start building the backhaul infrastructure now/future proofing starts now.
- Provides overview of how they are exploring and developing additional recommendations.

Working Group Update: Encouraging Adoption of Precision Agriculture and Availability of High-Quality Jobs on Connected Farms: Julie Bushell

- Goes over previous recommendations through December 2022 that were shared in the preliminary report
- Progress/focus through March 2023: spent the last several months defining and refining recommendations:
  - Considering addressing anonymity of aggregated data and sensitivity of data
  - Clarify collaboration with land grant universities and potential funding
  - Consider recommending what should be offered at a technical and community colleges from a precision ag standpoint. Considering it from opportunities from jobs in soil measurements to wireless networks
- Progress/focus through June 2023:
  - Cyber security, data privacy standards
  - CTE/community college initiative
  - Spectrum allocation for precision ag

- Progress/focus through October 2023:
  - Probably the main focus of the final report
    - To fulfill charge, address metrics the FCC could use to measure and track progress of deployment and precision ag adoption
    - Roadmap for precision ag adoption on farms and ranches

#### To Do Items:

- Teddy and Lauren to confer on how to consider the Farm Bill moving forward and how that fits within the Task Force charges. Is there some way to use the reports submitted in the fall in the context of Farm Bill?
- Generally, we should consider how to take steps to ensure there is adequate backhaul and that network is secure and reliable. How do we address single points of failure in networks? Teddy thinks we should go and find a speaker to address this issue.

#### Timing on Next Steps:

- Lauren provides overview of timing on drafts, editing, and adopting the final report. The report should be submitted by October 6 or earlier. The July 11th meeting is a good opportunity for another discussion on any issues and the executive summary. The last meeting of the year will be November 6<sup>th</sup>, and the Charter ends on December 2<sup>nd</sup>.

Teddy Bekele: called meeting closed at 2:50 EST

Additional detail can be found at: <https://www.fcc.gov/news-events/events/2023/03/precision-ag-connectivity-task-force-meeting-march-2023>