



Connect Minnesota Summit

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JOHN DEERE

Outline

- 1. Megatrends**
- 2. Why Precision Ag?**
- 3. M2M in Agriculture**
- 4. Public Policy Efforts**
- 5. Next Steps...**



**Iowa farm after big storm
September 2013**

Megatrends & Key Drivers in Agriculture

Today & Tomorrow



Growing demand for more food, feed, and fuel



Global markets and more volatility



Farm size growth and specialization



Environmental sustainability and compliance



Reduced skilled labor



Precision agriculture

Why Precision Agriculture?

Yield & Cost Optimization



Smart Use of Resources



Challenge of Regulation



GPS-Enabled Precision and Rural Broadband

The screenshot shows the JDLink web interface. At the top left is the JDLink logo. The navigation menu includes DASHBOARD, REPORTS, and ADMIN/SETTINGS. The ADMIN/SETTINGS menu is expanded to show Alert Escalation, Geofence & Curfew (highlighted), Company Preferences, Terminal Setup, Users & Groups, and Equipment Groups. The user profile shows 'John Deere Act.# 0000' with links for Feedback, Help, and Log Out. The main content area is titled '8360R Tractor' and features a 'Geofence' section with a 'Delete' button, a 'Width(ft): 93258.9704' field, a 'Height(ft): 70975.8424' field, a 'Longitude: -89.9519' field, and a 'Latitude: 34.6398' field, all with an 'Apply' button. A 'Search Map' field with a 'GO' button is also present. The map shows a location near Memphis, Tennessee, with various map controls and a 'Map' button. A 'Alert Rules' button with a clock icon and '(1)Machines' is also visible.



INCREASES:

- Yield
- Efficiency
- Productivity



DECREASES:

- Environmental Impact
- Inputs
- Costs
- Theft

Public Interest

- Food security
 - Maintain competitive domestic agriculture
- Food affordability
 - Real-time actionable information
- Environmental sustainability
 - Protect and even improve the environment
- Government reports: farm program & conservation
- GDP growth
 - Adds jobs and stimulates growth

An investment in mobile broadband that covers cropland is a direct investment into the productivity of that cropland



JDLink™ Enabled Machines



Agricultural Equipment

Construction & Forestry Equipment

What is Telematics Anyway?

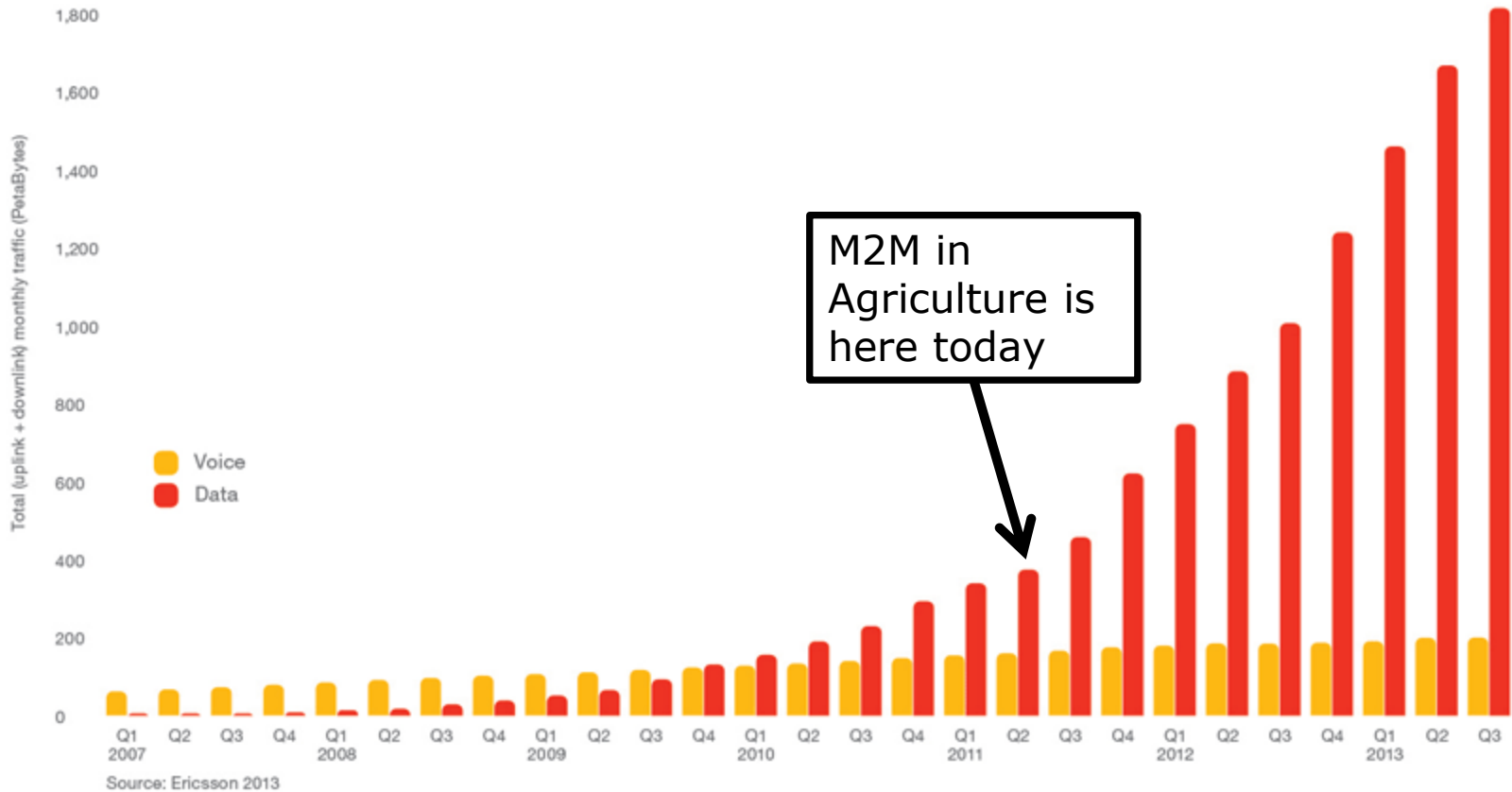
- Provides previously unknown insights on how the machines are used
- Improved Dealer Services to customers especially in the area of machine availability/uptime through Expert Alerts
- Use the data to predict and prevent downtime
- Predict conditions which lead to fault and correct before fault occurs



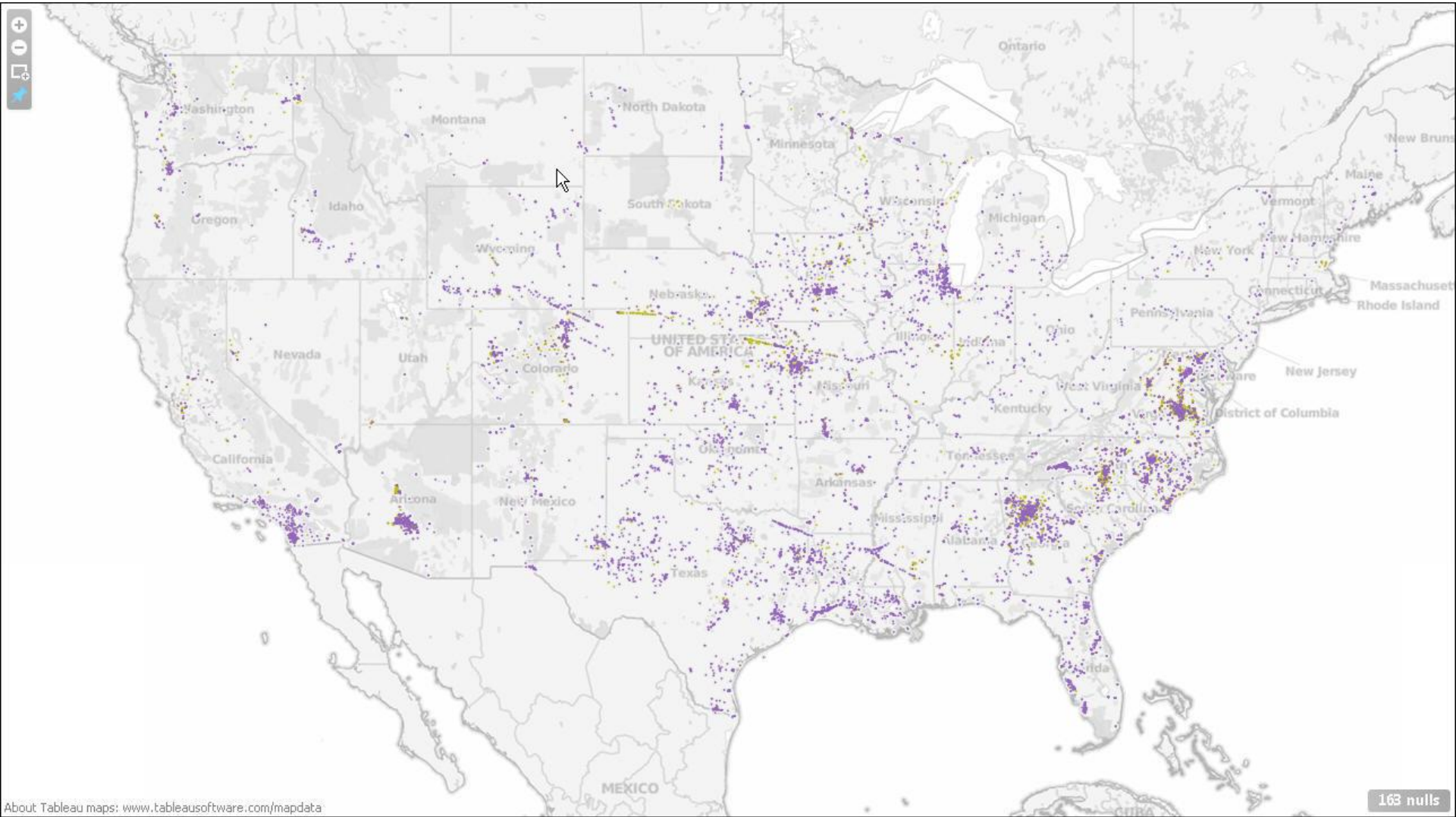
**No unplanned downtime
is one goal**

M2M in Agriculture

Will Mirror Consumer Cell Phone Growth

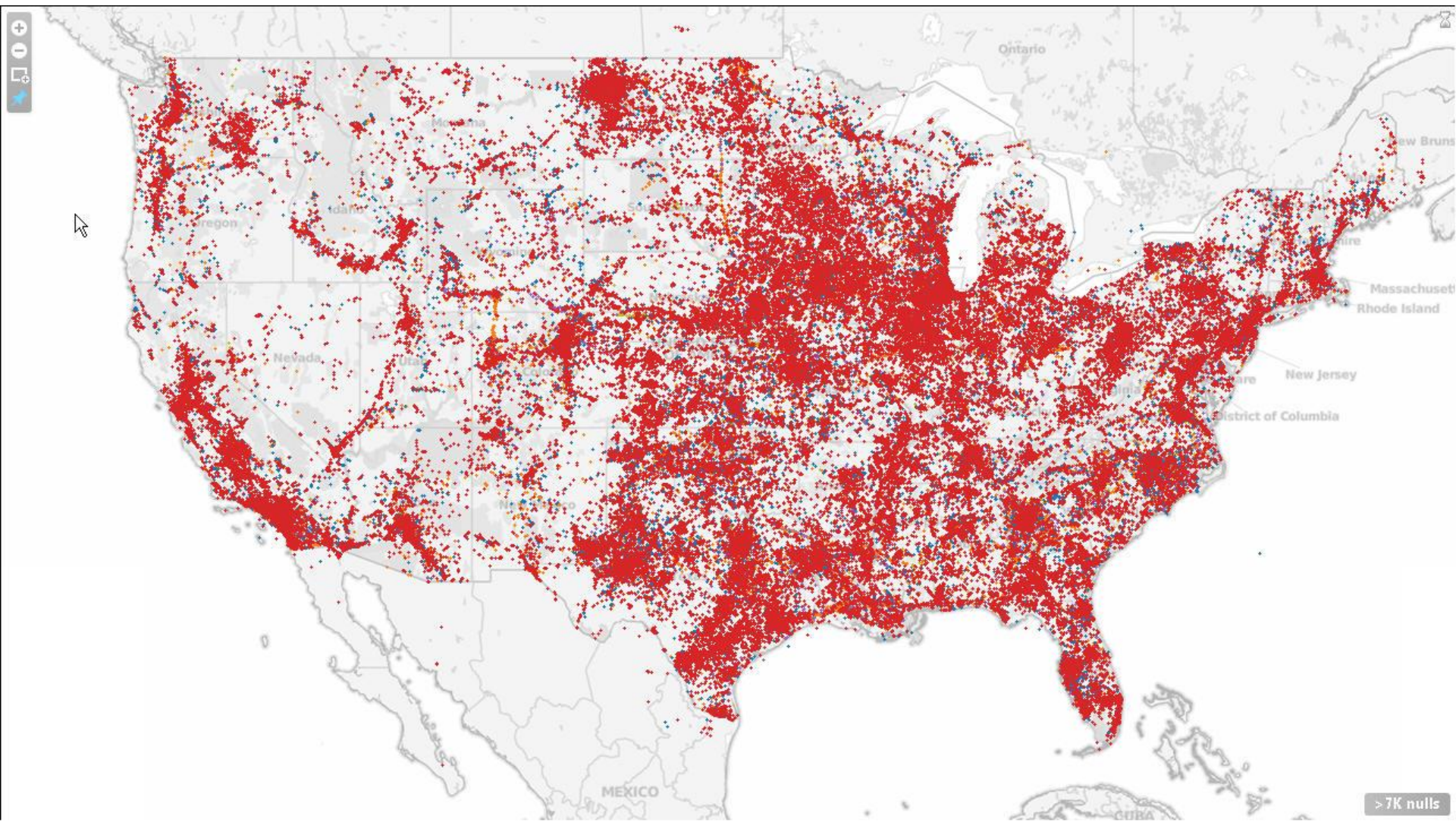


2008

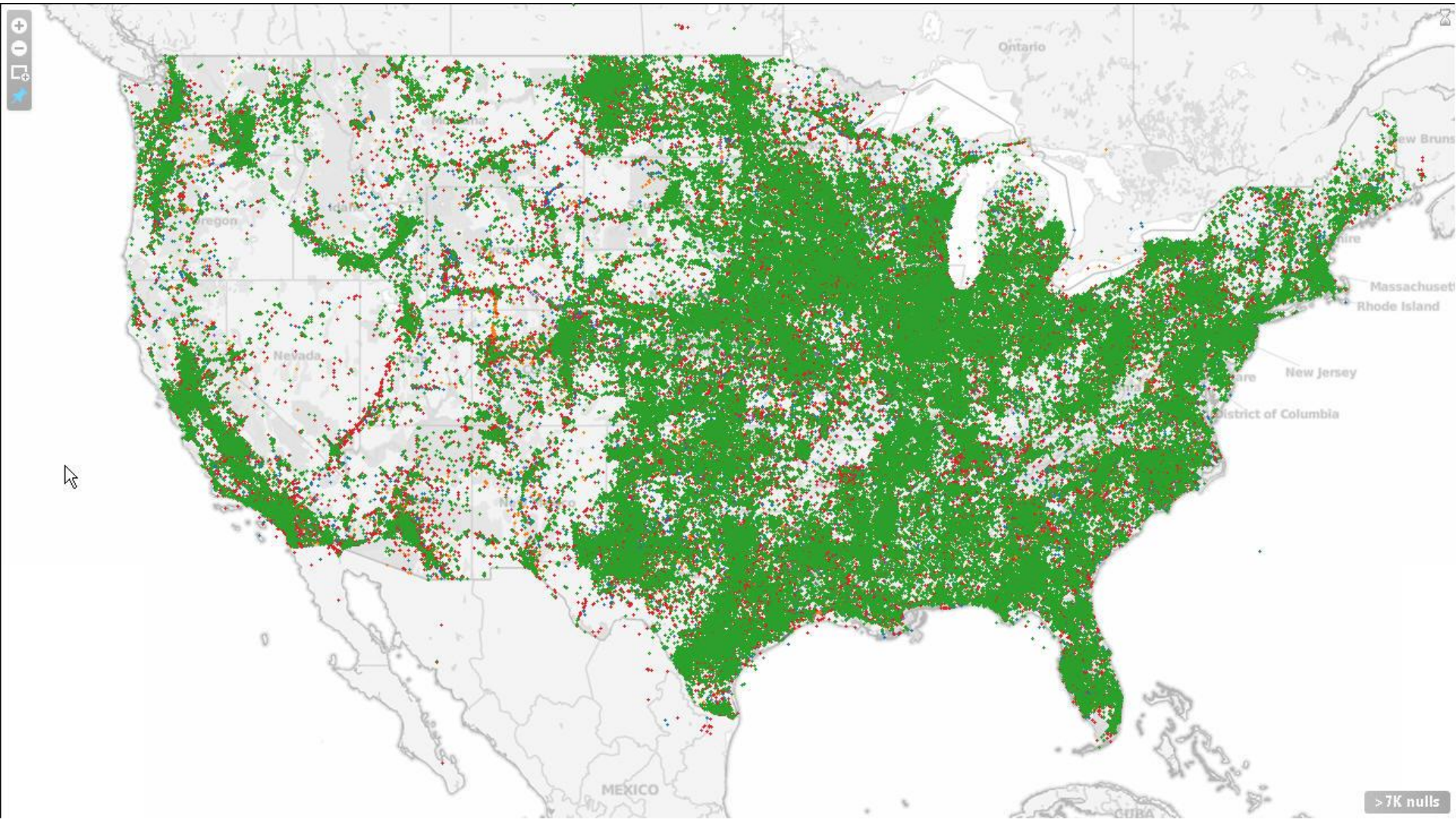


About Tableau maps: www.tableausoftware.com/mapdata

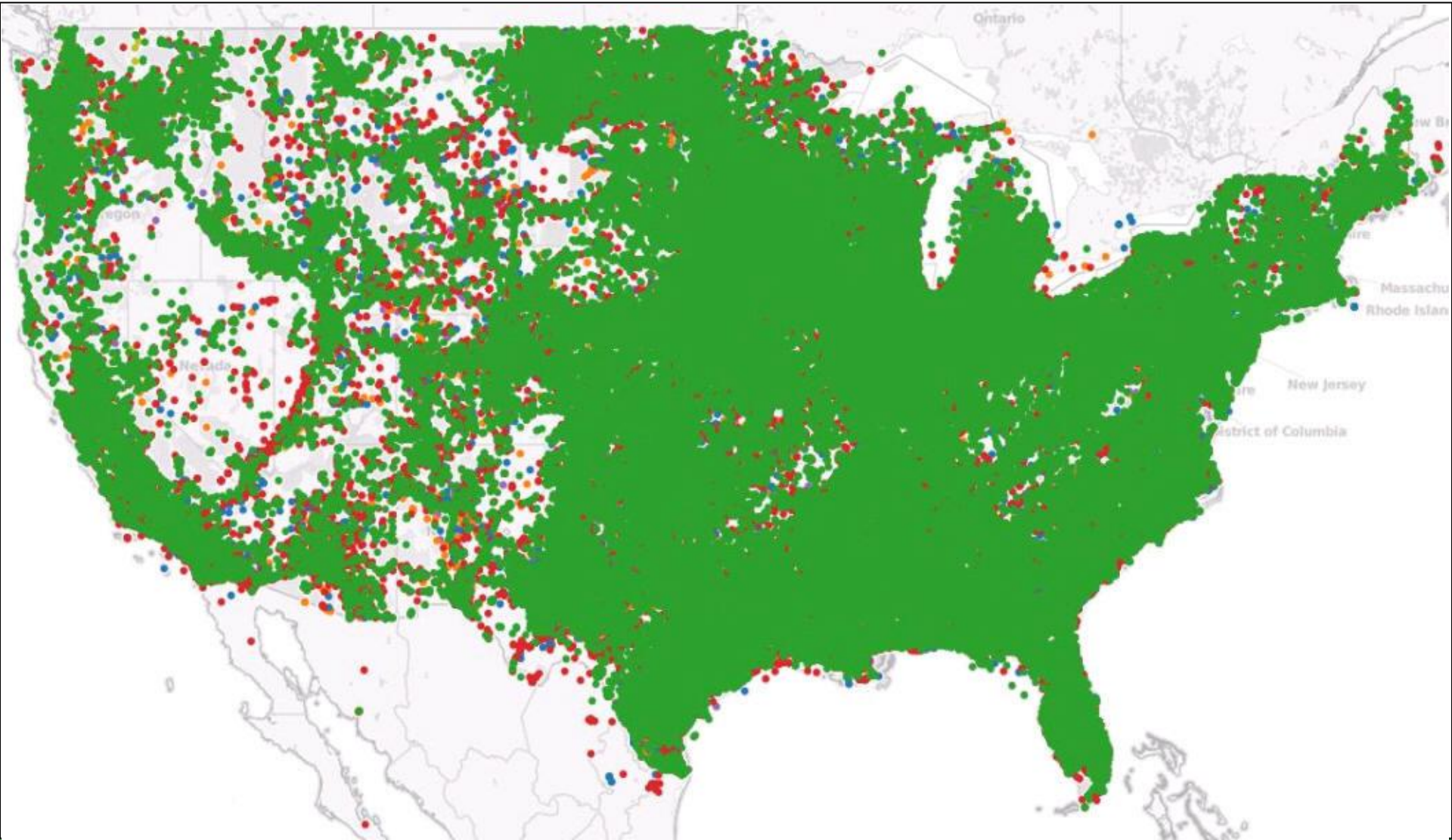
2011



2012

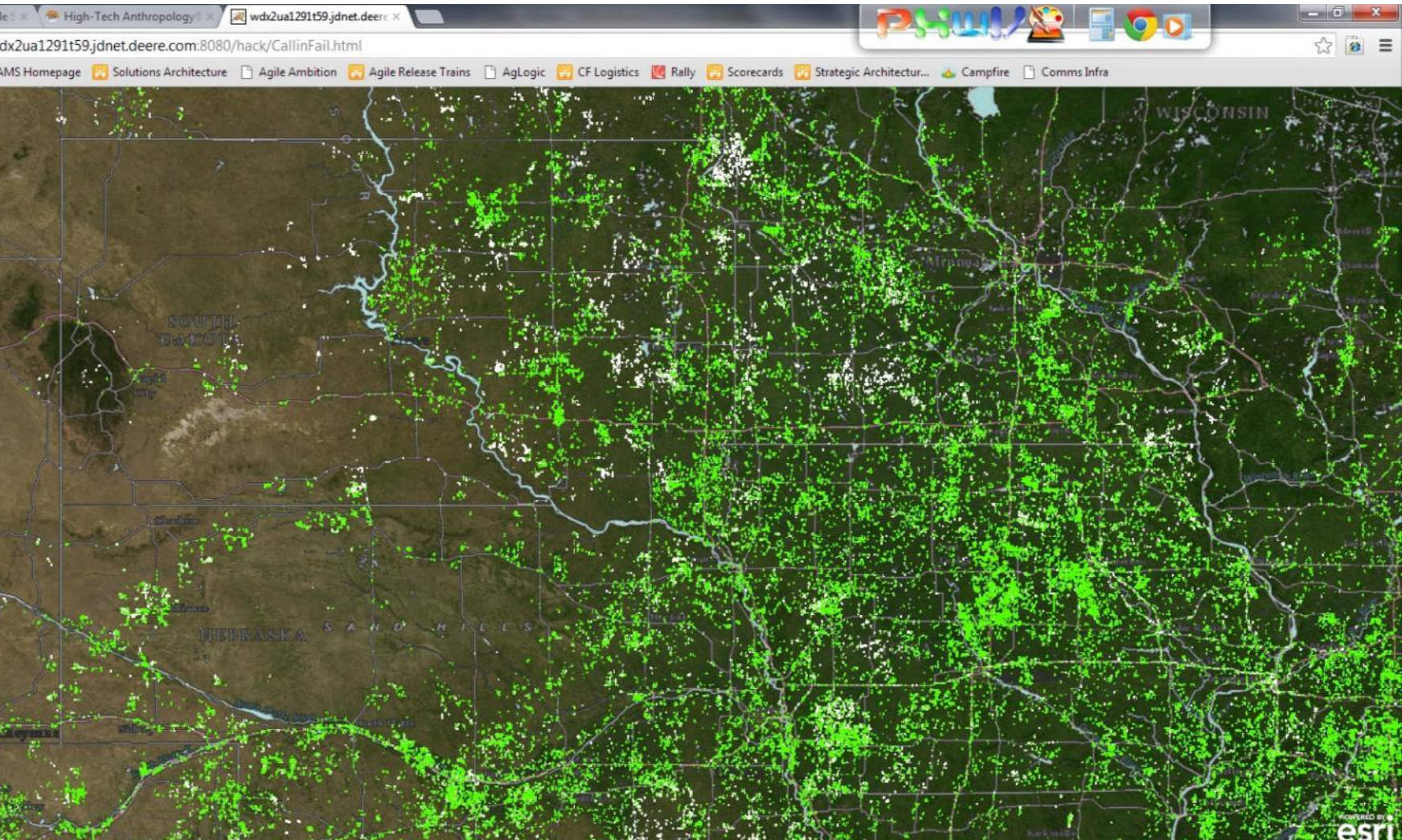


Future - 2018



Upper Midwest Call Log Map

(Green – Successful, White – Failed)



What Are We Doing About It?

PROBLEM



SOLUTION



Rural Broadband Working Group



- Have met with all five FCC Commissioners and
- Jonathan Chambers/Office of Strategic Planning
 - Need to count people and modems
 - Will ask FCC to add “Cropland” as a new area for directing Universal Service Fund (USF)

* Co-Chairs

Universal Service Fund Advocacy

- The FCC should continue to ensure that Universal Service Fund (USF) funding is properly focused on bringing broadband to the unserved and underserved rural areas
 - Small rural carriers should also be eligible for support to provide stand-alone broadband services that are not tied to traditional telephone services
 - Add “Cropland” as a proxy for Ag M2M
 - Support FCC Chairman Wheeler in abolishing the Quintile Regression Analysis (QRA)
 - Allow small rural carriers to use USF for middle miles



The problem is there are simply not enough towers

FCC's Rural Broadband Experiment

- We teamed with Mediacom to submit a joint non-binding letter of intent
- Proposal is for portions of Audubon County and Carroll County in SW Iowa
- Looking for a complete team for the FCC's RBB Experiment to find a new model for USF support

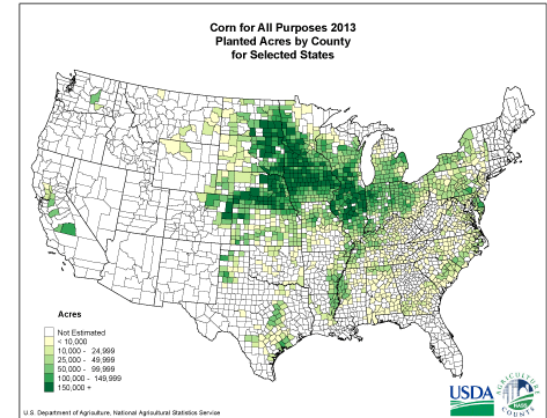


JOHN DEERE

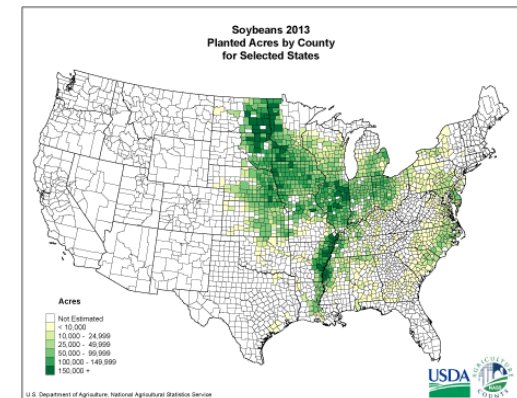


Cropland in Minnesota

- The US has 357 million acres of major agricultural cropland, or about 15%
- Total Agriculture (US) is \$370 Billion
- For the US, it is \$117 Billion per year for corn + soybeans
- 20 million acres of cropland in MN, or about 35% of the state
- Minnesota alone produces:
 - \$8 Billion per year in corn and
 - \$7 Billion per year in soybeans



Planted Acres by County 2013 (Corn)



Planted Acres by County 2013 (Soybean)

Iowa's Eight Point Plan

"Connect Every Acre"

ACCESS

1. Uniform Cell Siting Guidelines - Respect for municipalities' zoning authority, recognition of reasonable siting regulations and a predictable (timely) process is required because of the vital need for more cell towers
2. Co-location (Demand based) - Some public/private organizations need coverage based on geography (not population density) and public/private "partnership" co-location on cell towers should be encouraged.
3. Co-location (Supply based) - Encourage infrastructure sharing between cell carriers providing mobile broadband and the Wireless Internet Service Providers (WISP) who provide a complimentary fixed broadband service to households and businesses
4. Broadband Bundling Bonus (BBB) - Iowa can offer additional incentives for broadband projects that bundle or take advantage of more than one state program to bring broadband to our state



“Connect Every Acre” (con’t)

LOCATION

5. Cropland Development Zones (CDZ) - These zones are defined as the intersection (or overlap) between unserved Eligible Census Blocks (ECBs) and acres of major US cropland as defined by USDA and additional incentives are offered to bring broadband coverage to our farms and cropland on acres where none exists today (see below)
6. Dig Once - Notify providers of any utility trenching project to deploy fiber for backhaul if the right-of-way is already torn up for a gas/water/power project
7. Conduits along Highways - Require that broadband conduits be installed along and under highways as part of certain construction projects

EXPANSION

8. Directing resources at Rural Utility Service (RUS) programs - RUS has a sizeable portfolio of loans to borrowers that derive a significant portion of their revenues from USF, which means there must be a predictable level of support so carriers can plan, borrow and invest in infrastructure.

For more information see, Governor of Iowa Legislative Announcement:

<http://branstadreynolds.com/connecteveryacre>

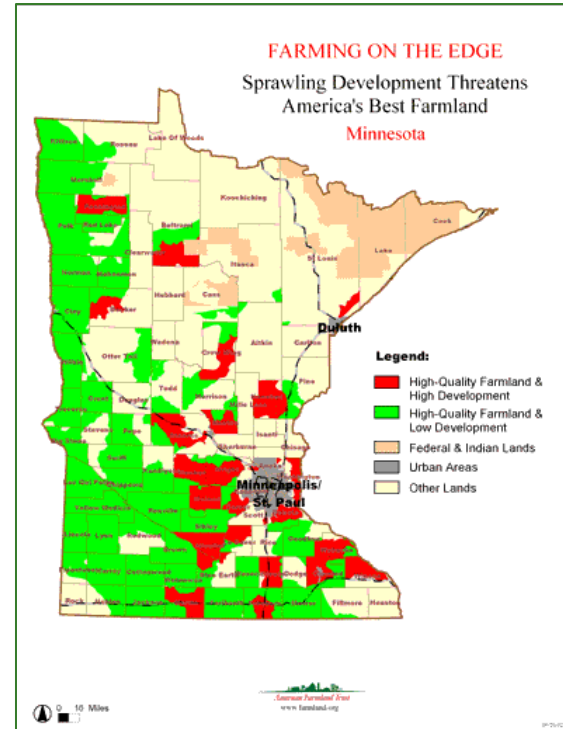
Cropland Development Zones

Because additional incentives are needed to bring mobile broadband and middle mile backhaul to our farms and cropland where no coverage exists today:

- Iowa Governor Branstad proposes the creation of new Cropland/Broadband Development Zones (CBDZ)
- These zones are defined as the intersection (or overlap) between unserved Eligible Census Blocks (ECBs) as defined by the FCC and acres of major US cropland in Iowa
- Each of the ninety-nine counties in Iowa could decide on their own to participate
- For the ones who do, they would designate the unserved cropland acres in their county and provide some of the initial funding

Connecting MN and Its Cropland

- For your producers to be more productive, your cropland needs mobile broadband
- More mobile broadband coverage requires more cell towers
- We are doing several things to address that challenge:
 - Need to cover modems not just people in the “Internet of Things”
 - Advocating for cropland at both State and Federal level



Mobile Broadband is What Minnesota Needs to Keep Growing



JOHN DEERE