BINGHAM

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February 27, 2014

Via ECFS

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Room TW-A325
Washington, D.C. 20554

Re: Notice of *Ex Parte* Discussion in WC Docket No. 10-90, WC Docket No. 05-337, CC Docket No. 96-45, WT Docket No. 10-208, GN Docket No. 13-5, GN Docket No. 12-353.

The Need for Expanded Deployment of High-Speed Broadband in Rural Areas

Dear Ms. Dortch:

On February 25, 2013, Mark N. Lewellen, Spectrum Manager, Deere & Company, Nick Tindall, Director, Government Affairs, Association of Equipment Manufacturers (AEM), Ronald "RJ" Karney, Director Congressional Relations, American Farm Bureau Federation (AFBF), on behalf of a group that also includes the National Corn Growers Association, American Soybean Association, AGCO and Trimble Navigation Limited and the undersigned outside counsel met with Jonathan Chambers, Chief of the Office of Strategic Planning and Policy to discuss support through the Commission's universal service fund and similar mechanisms for expanded high-speed broadband services in rural areas where most farming occurs.

This group of major U.S. and global agricultural interests explained why accelerated deployment of high-speed broadband across rural areas is essential to the U.S. agricultural sector. Specifically, we discussed how high-speed broadband services have become critical for maximizing yield from the land, managing costs and application of seed, fertilizer, and water, complying with environmental regulations, and enabling advanced telematics. All of these uses are fundamental to the precision agriculture techniques prevalent in modern farming today.

Given the importance of supporting U.S. and global food production, we recommended that the Commission consider machine-to-machine broadband transmissions by mobile agricultural equipment in the field identified as "cropland" as well as fixed broadband operations on the farm in its proceedings relating to universal service support. Existing proposals do not adequately reflect the significant and growing use of broadband services by multiple farming devices in the field. Precision farming data gathered and reported in near-real time is used for advanced telematics and agronomic analysis that are integral to precision agriculture. Such data is also key to meeting requirements for federal crop

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insurance and certain customer requirements. We discussed these points and further details set forth in the attached presentation. We also discussed the Commission's rural broadband experiments initiative introduced in the Commission's January 31, 2014 order in GN Docket No. 13-5.

For the above reasons, we recommended that the Commission account for machine-to-machine broadband use in the above-captioned proceedings, consider funding for rural broadband as a top priority, and accelerate the agency's decision-making in this area.

Please direct any questions regarding this meeting to the undersigned.

Respectfully submitted,

/electronically signed/
Catherine Wang

CC: Jonathan Chambers

Enclosure

Infrastructure Gaps in the U.S.

February 25, 2014

Topics for Discussion

- Introduction
- Megatrends and precision agriculture
- Infrastructure gaps in the United States
- The road ahead

Who are we and why are we here?

"If we work the land, it needs mobile broadband"

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

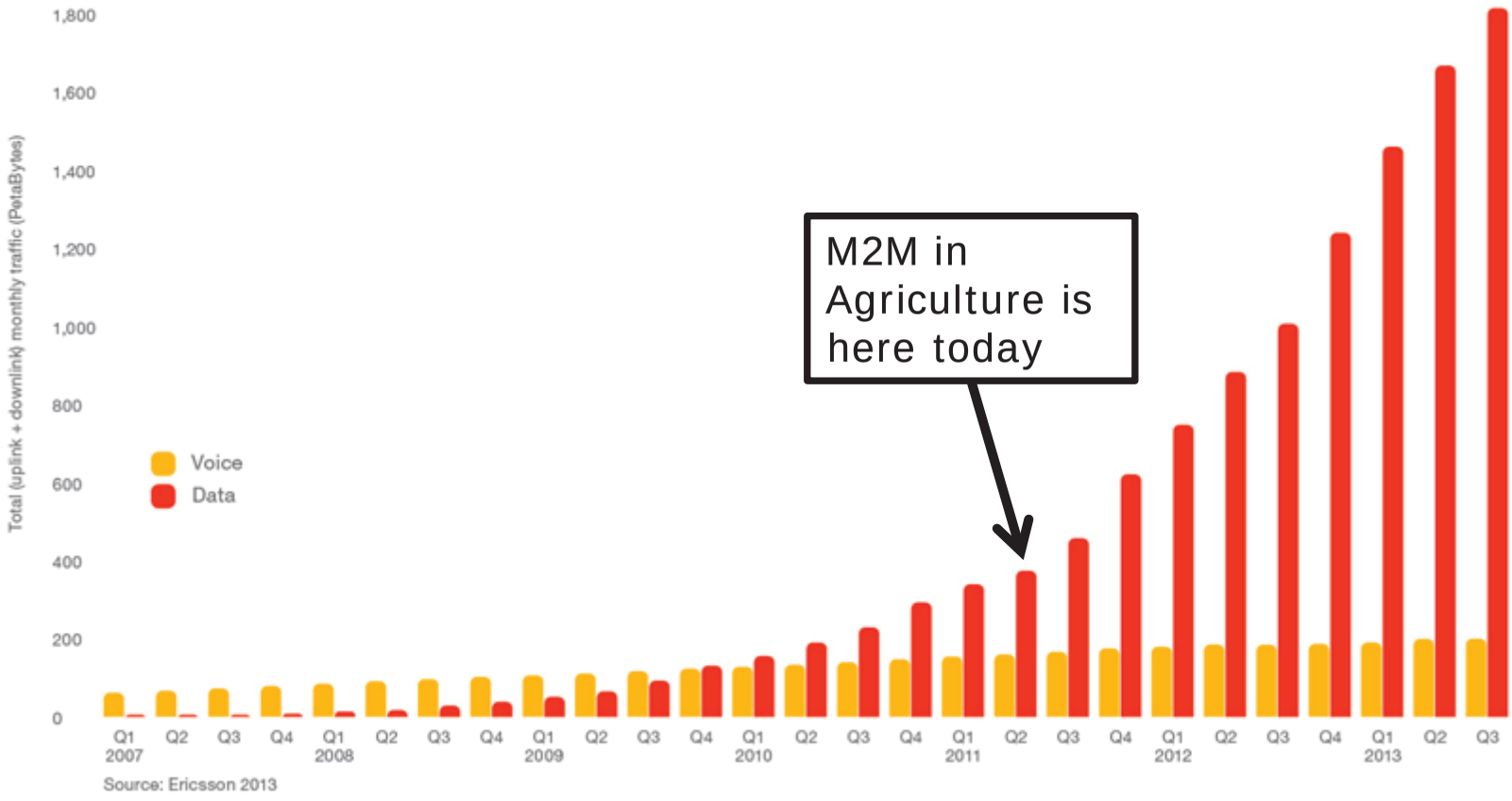
Why Precision Agriculture?

Yield & Cost Optimization

Smart Use of Resources

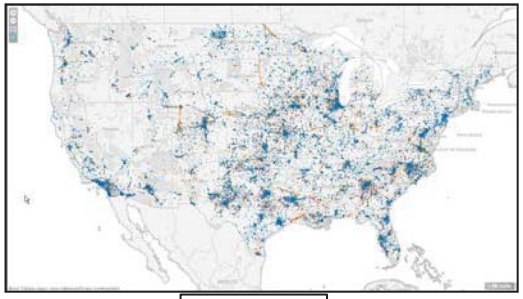
Challenge of Regulation

M2M in Agriculture
Will mirror consumer cell phone growth



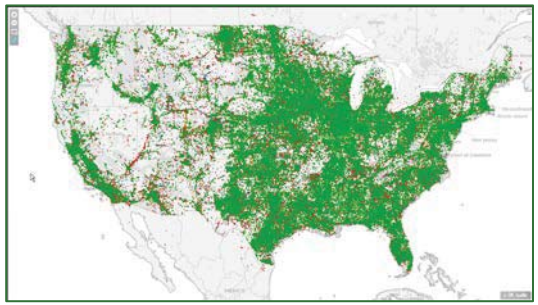
Infrastructure gaps

2006

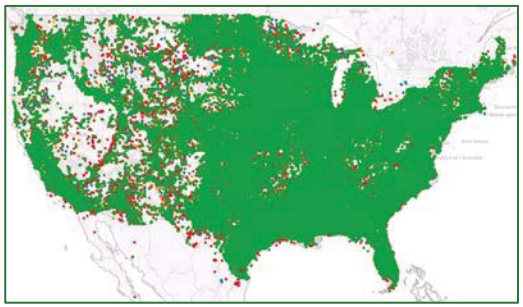


2010

2011



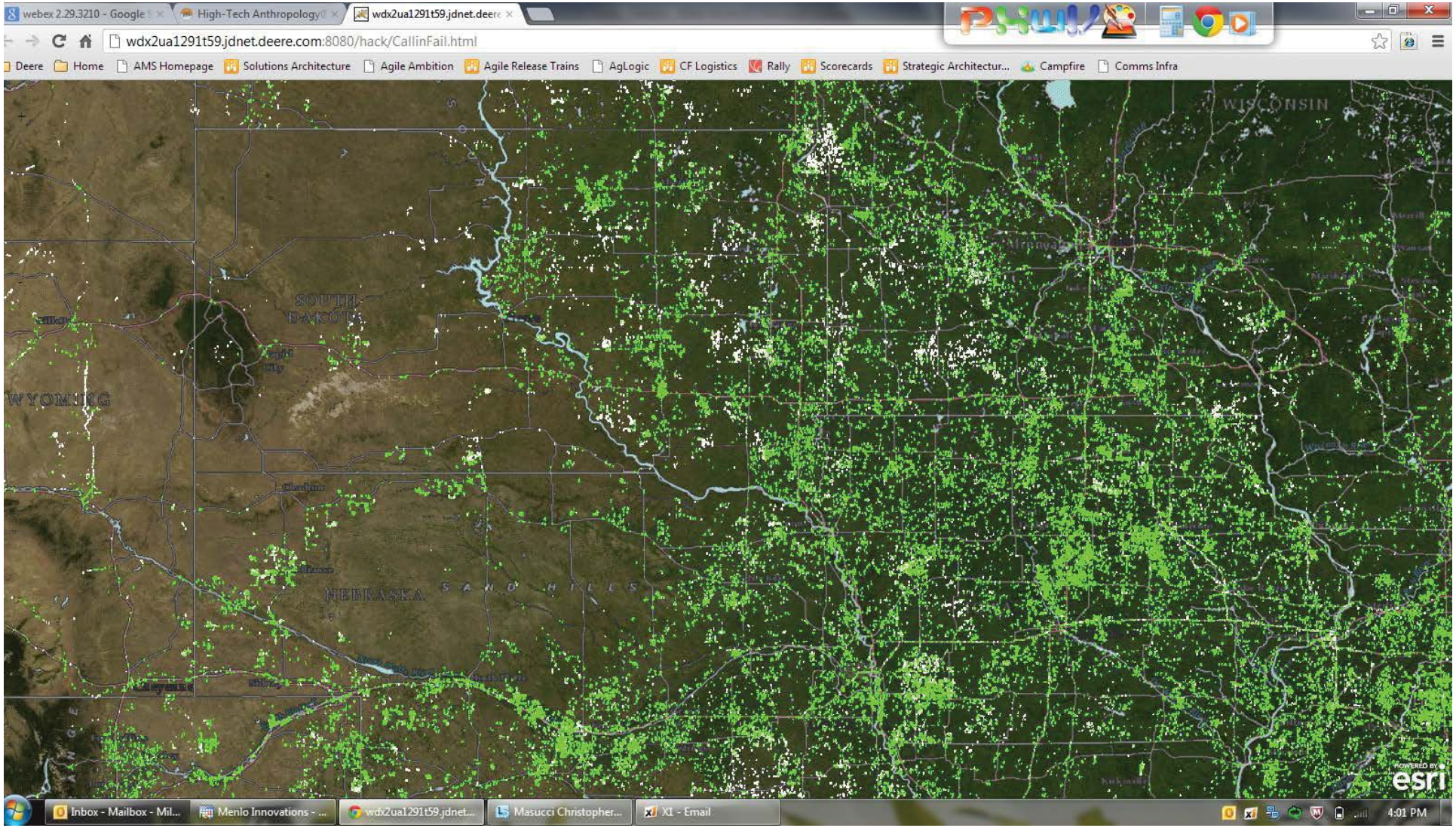
2012



2018
(projected)

Upper Midwest Call Log Map

(Green – Successful, White – Failed)



Internet Access on the Farm

- Sixty seven percent (67%) of U.S. farms had Internet service (DSL, wireless, cable, satellite) in 2013, compared with sixty two percent (62%) in 2011. (USDA, *Farm Computer Usage and Ownership, 2013)*

- Ninety four percent (94%) of AFBF's Young Farmers and Ranchers (AFBF, Informal Survey, 2013)
  - o 65% have High-Speed
  - o 22% have Satellite
  - o 2% percent have Dial-up

- Method to Access Internet (USDA, *Farm Computer Usage and Ownership, 2013)*
  - o DSL = 35% (2013)
  - o Wireless = 24% (2013)
  - o Satellite = 17% (2013)
  - o Cable = 13% (2013)
  - o Dialup = 5% (2013)

Broadband Opportunities for Agriculture

- Manage and operate successful small businesses, the same as small businesses in urban America
- Utilize machine to machine communication
- Follow commodity markets
- Communicate with customers
- Gain access to new markets around the world
- Regulatory compliance
- International competition
  - Developed networks – Europe –> increased efficiency
  - Developing networks – Brazil & Argentina

How Farmers Use Technology

"Technology is a pretty indispensable part of our operation and we're not unique in the farming world in that aspect. We're seeing the benefits of having information wherever we are."
Zach Hunnicutt, AFBF YF&R Chair
(USA Today, "Farmers growing comfortable with mobile devices" March 3, 2013)

New Machine-to-Machine Applications Coming Soon

Recent Rural Telecom article by Masha Zager

"Machine Speak: How the Era of Machine-to-Machine Communications Is Changing Telecom" (March/April 2013)

- Vehicle telematics
  - Agriculture
  - Construction
  - Mining
  - Transportation
- Livestock monitoring
- Personal emergency response
- Silo monitoring
- Machine shed surveillance
- Roaming restrictions
- Employee reminders
- Mobile/tablet computing/live processing of information

Agriculture is one of the most promising M2M applications such as this automated center-pivot irrigation system featuring remote monitoring and 'smart watering"

The Road Ahead

How best to build out broadband infrastructure in rural America?

Three possible avenues:

- Private Sector
  - Develop the business case
  - Working with key associations and partners
  - Adding M2M in rural areas

- Public/private “partnerships” by co-location on geographically-based cell towers
  - Public safety (FirstNet & states)
  - Transportation (cars & trains)
  - Utilities (oil & gas & electric)

- Public programs
  - USF CAF
  - USDA/RUS
  - State level USF in 26 states

Rural broadband deployment must include full range of infrastructure necessary to support innovative solutions in rural areas

Appendix

Attachments

Beginning in 2006, John Deere started equipping its construction fleet with telemetrically enabled systems. Beginning in 2011, we started equipping our large agricultural self-propelled vehicles with it as well. These telematic systems are enabled through JDLink™.

Each dot on the US maps represents a machine successfully calling and connecting thru a cell phone tower to MyJohnDeere.com. The 2018 map is with the current trend continuing of adding thousands of pieces of new equipment per month.

As these machine populations continue to grow and our solutions continue to rely on real time, high speed machine connections, our reliance on rural broadband (RBB) coverage will increase.

Examples of Telematically Enabled Machines — 2012

7R
Tractors

8R
Tractors

9R
Tractors

4940
Sprayer

S-Series
Combines

7050 Self-
Propelled Forage
Harvester

2006

Ontario
Washington
Montana
North Dakota
Minnesota
Maine
Oregon
Idaho
South Dakota
Wisconsin
Michigan
Vermont
Wyoming
New York
New Hampshire
Iowa
Nebraska
Connecticut
Massachusetts
Rhode Island
Pennsylvania
UNITED STATES OF AMERICA
Illinois
Indiana
Ohio
Nevada
Utah
Colorado
Maryland
Delaware
New Jersey
Kansas
Missouri
West Virginia
Kentucky
Virginia
District of Columbia
Oklahoma
Tennessee
California
North Carolina
Arkansas
Arizona
New Mexico
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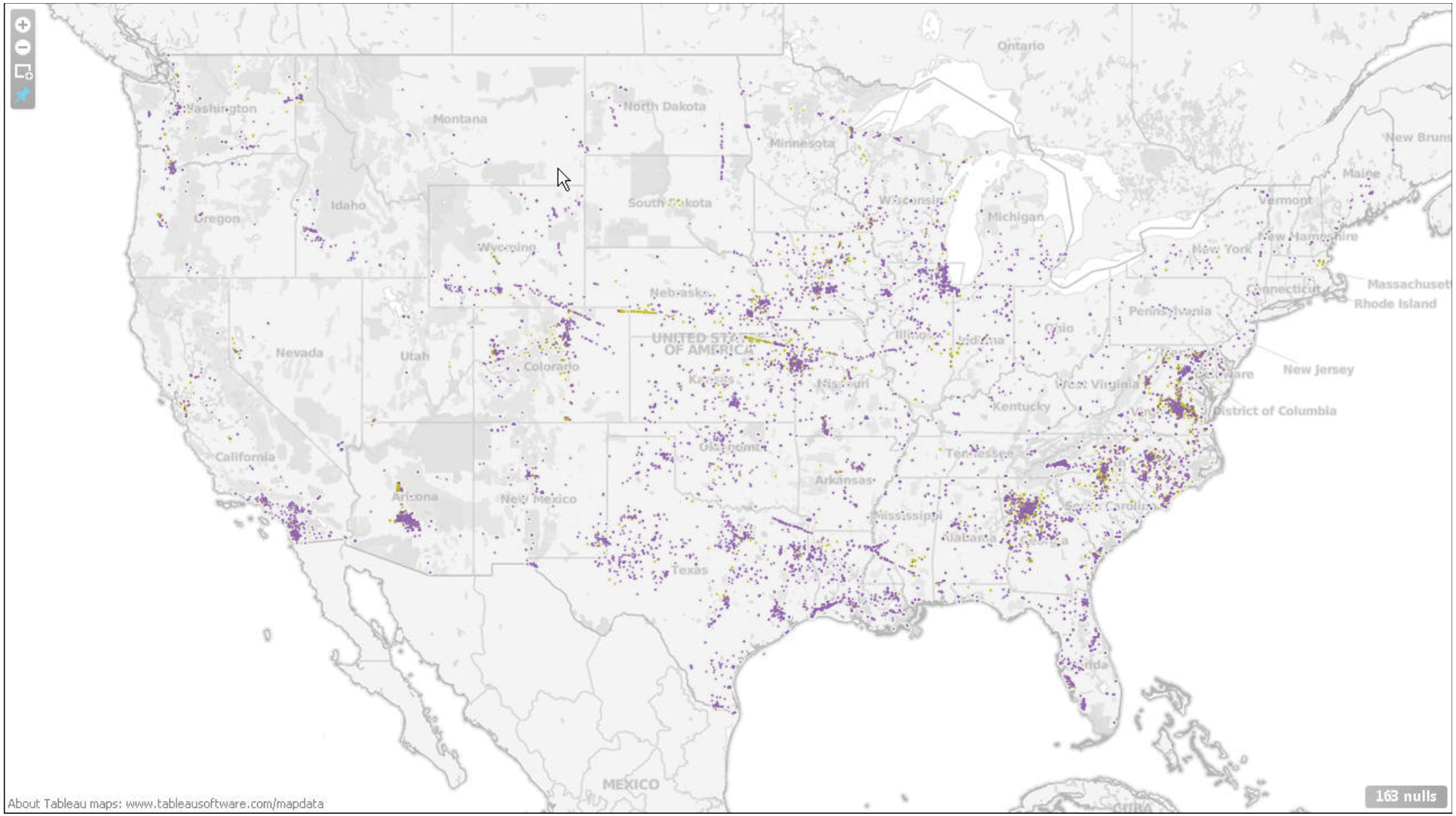
2008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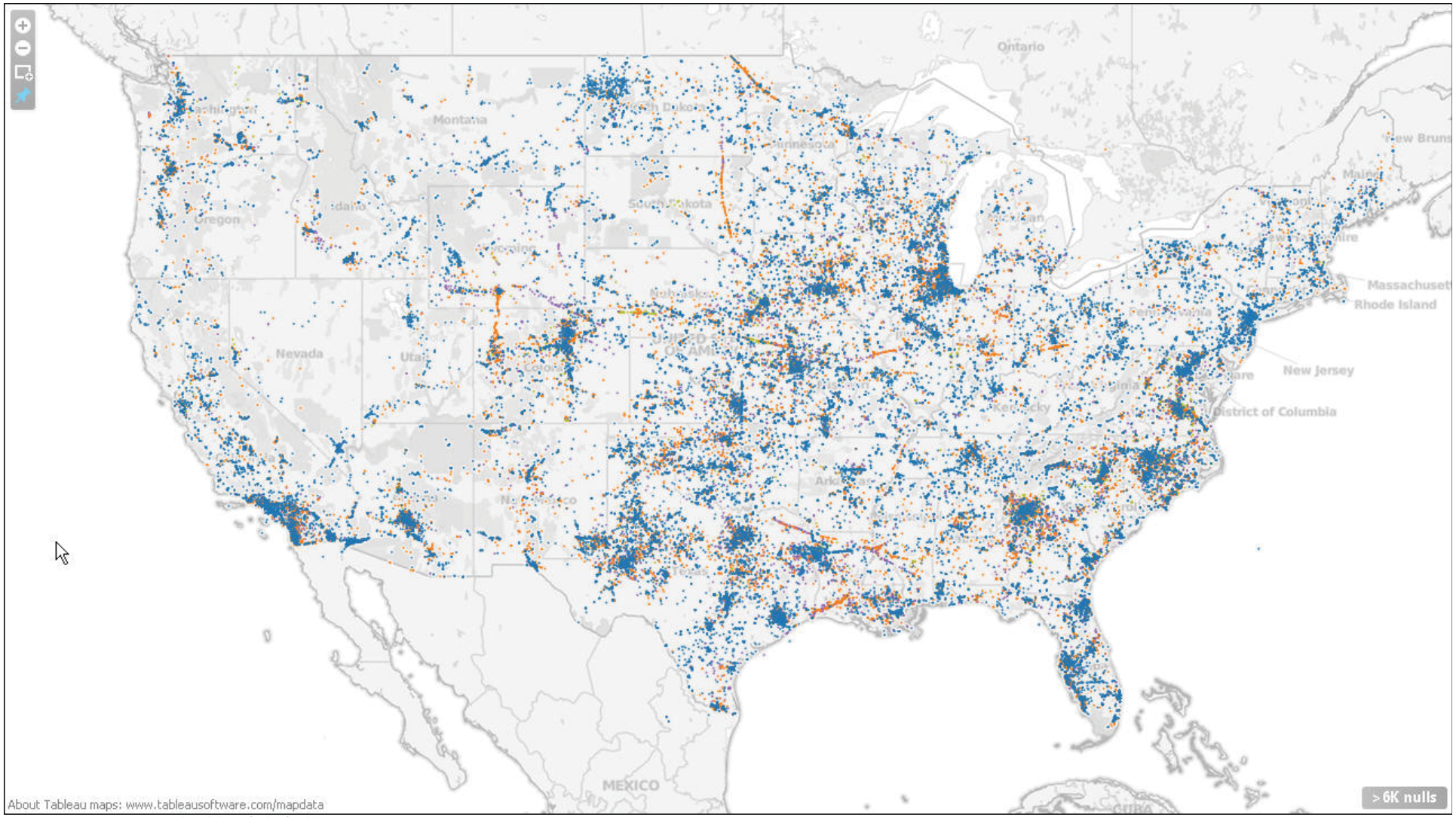
2010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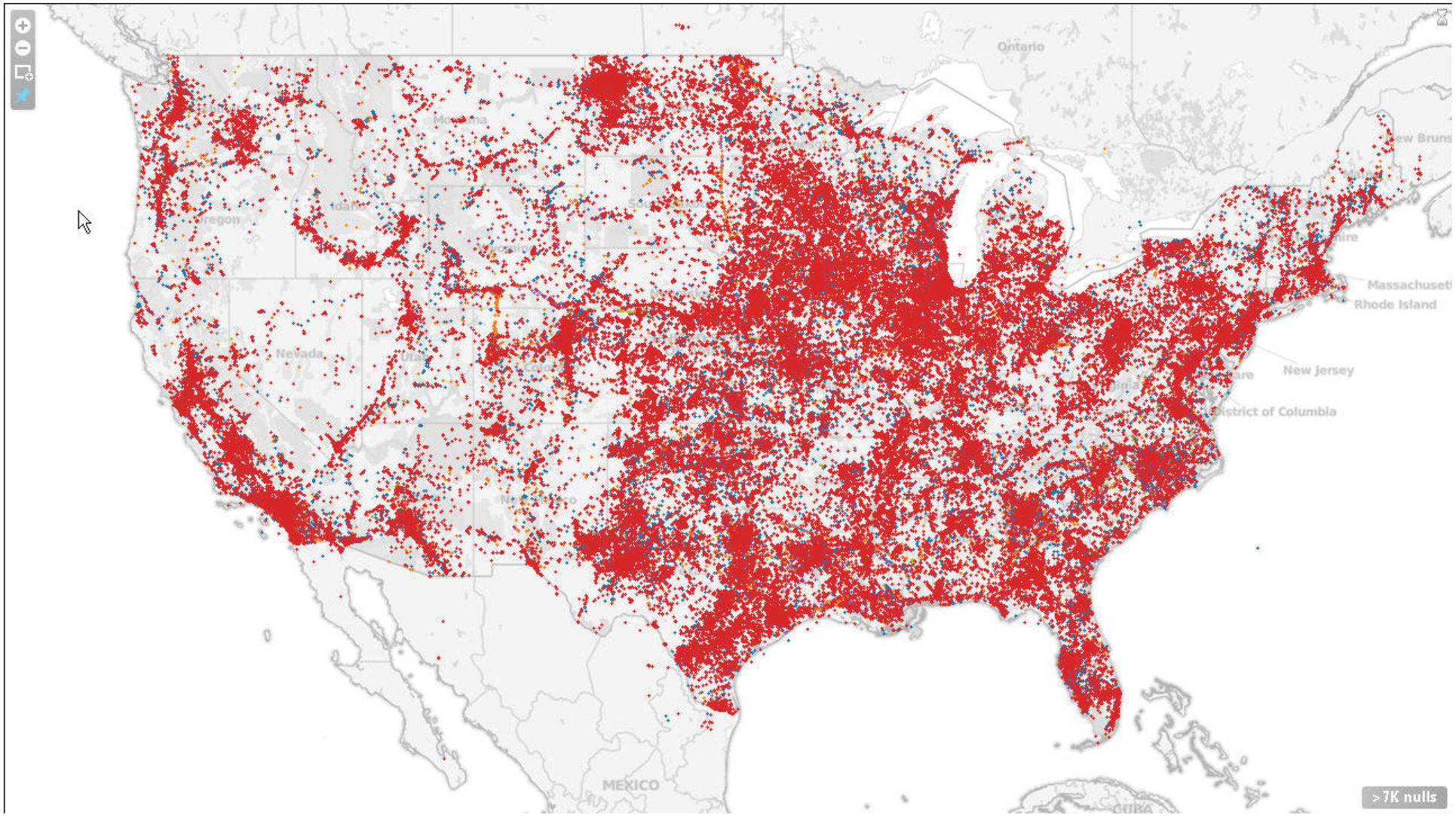
2011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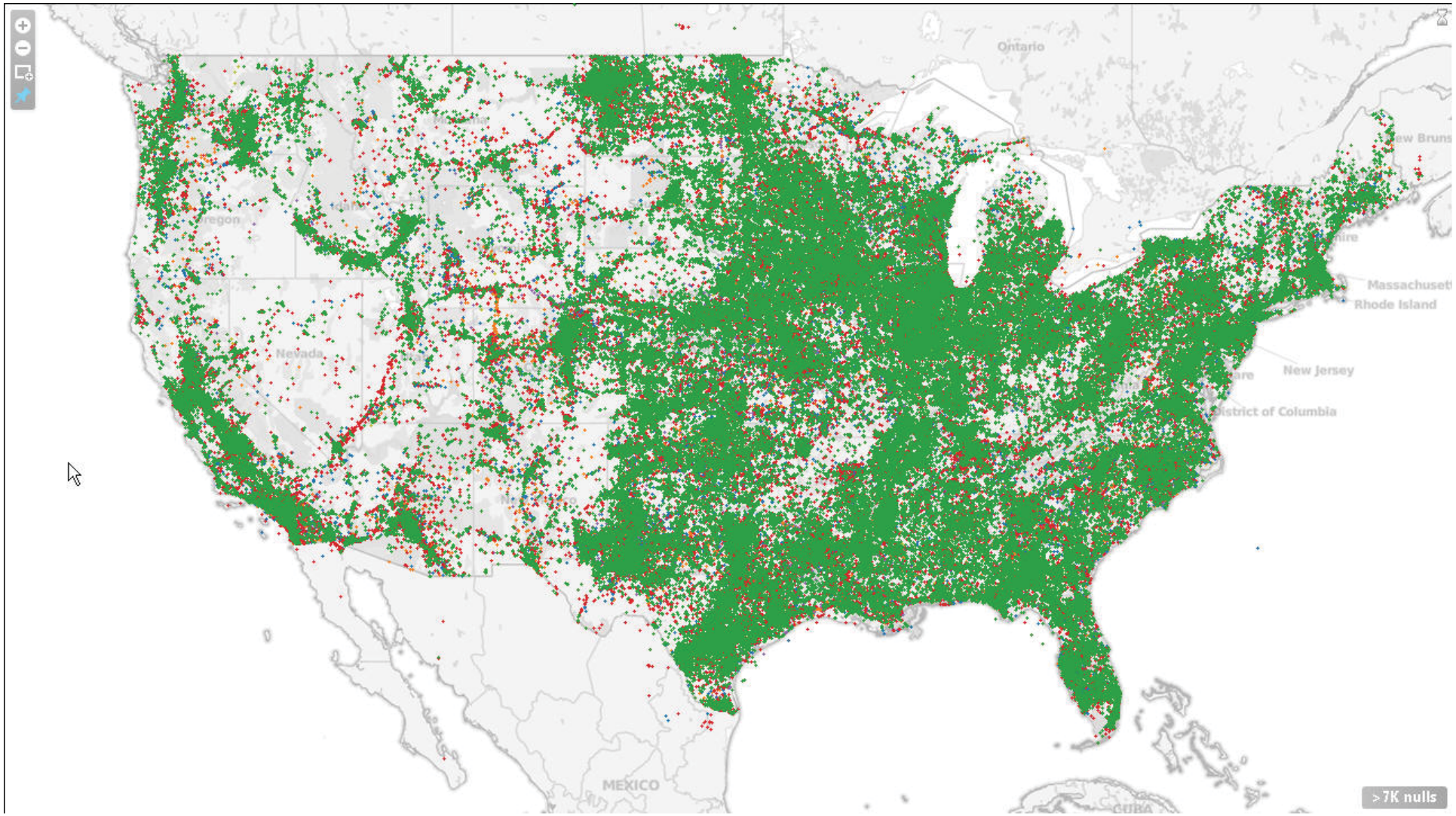
2012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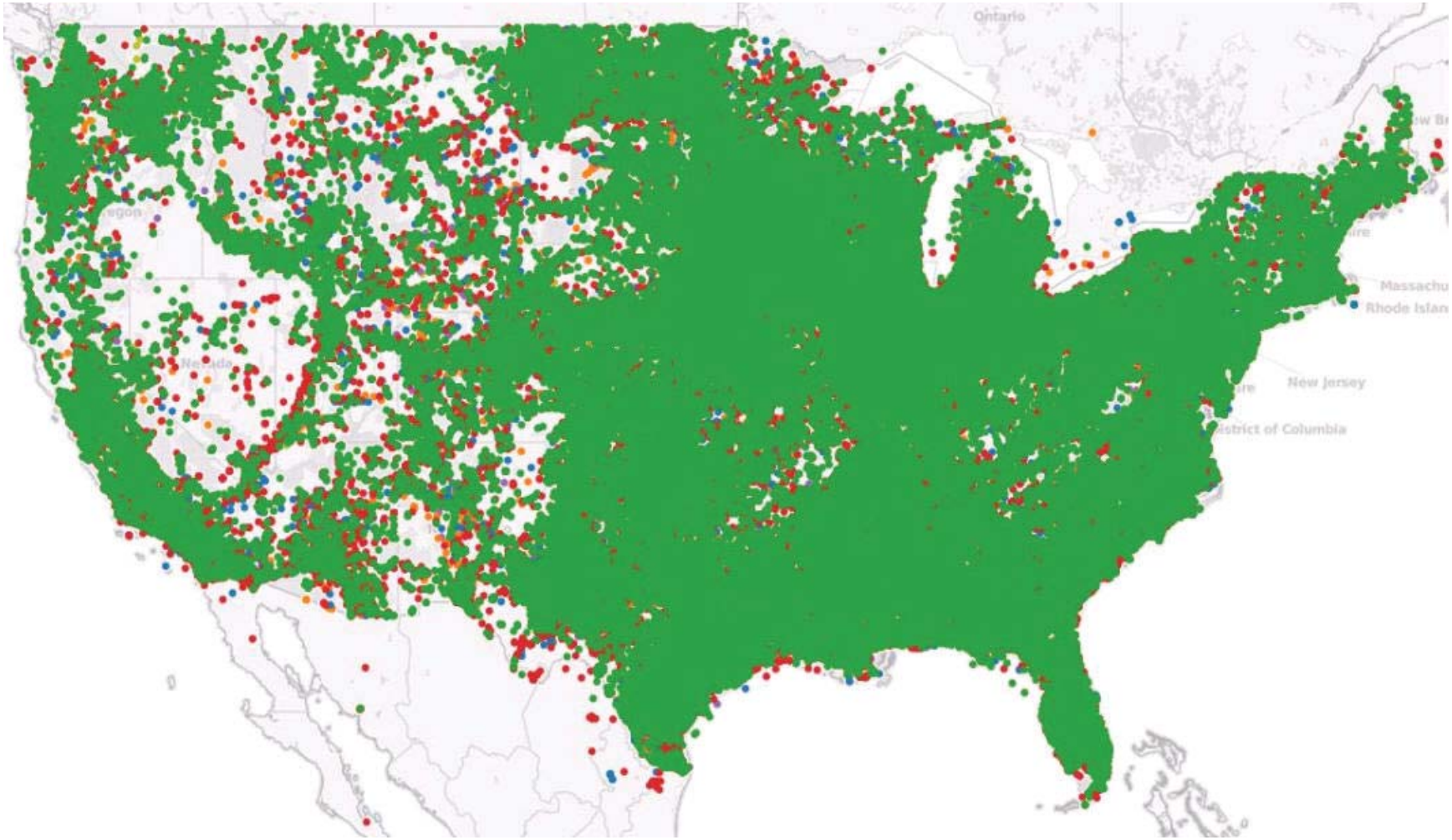
FUTURE - 2018



RBB WG FCC Feb 25th, 2014