Broadband Data Collection:

The New Regime

5/11/2021

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Introduction

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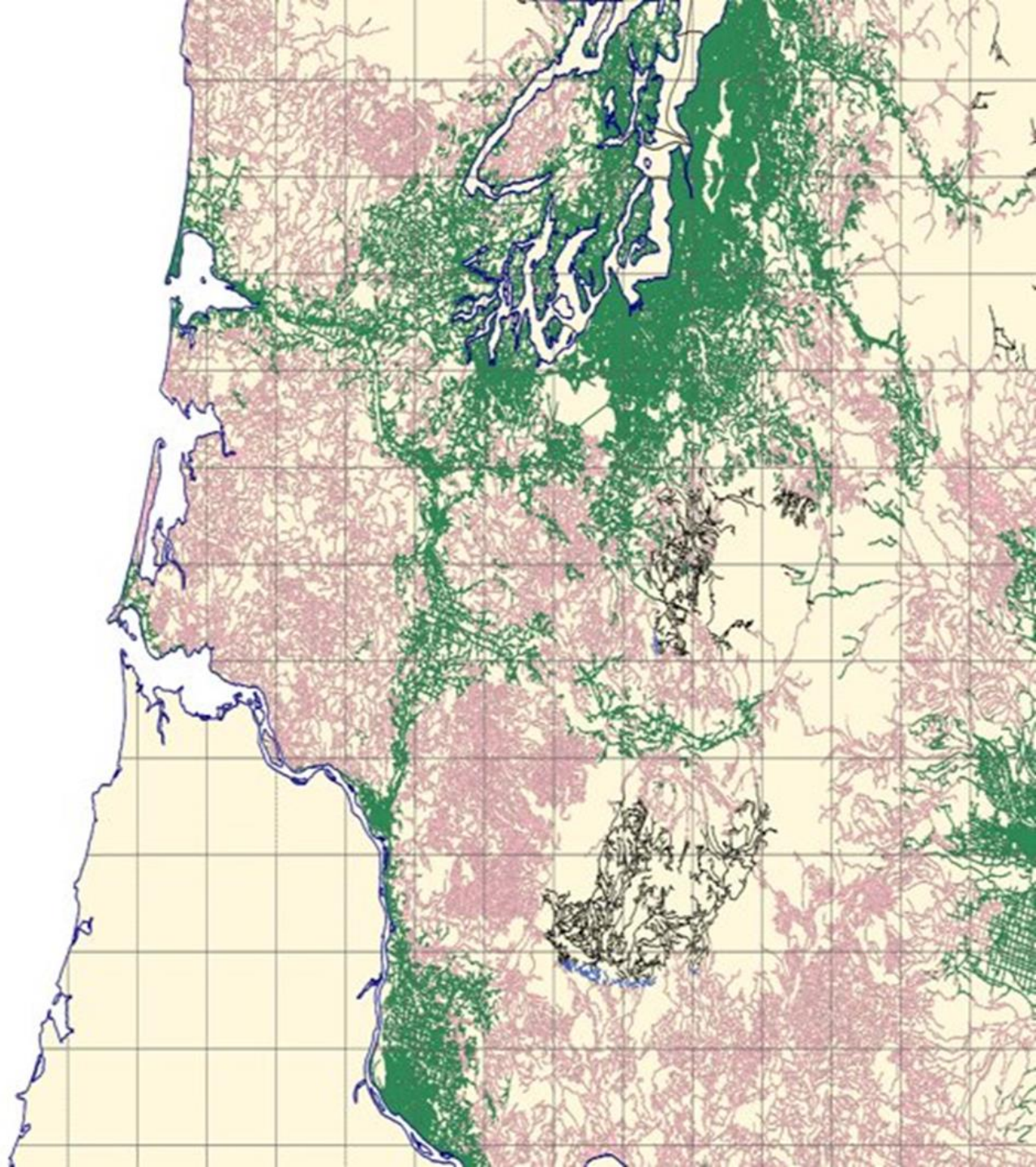
Broadband economics, models, data, and advisory

- Broadband Cost Models – FCC (CAM, CACM NBP)
- Broadband Mapping/GIS
- Broadband Data (Location, Demand, Service Cost, Assets)
- Valuation and Appraisal



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Agenda

1) History of Broadband Mapping (abridged)
2) BDC (Broadband Data Collection)
3) Q&A

How did we get here?
A Short History of Broadband Mapping

The Barksdale Principle:

"If we have data, let's look at data. If all we have are opinions, let's go with mine."

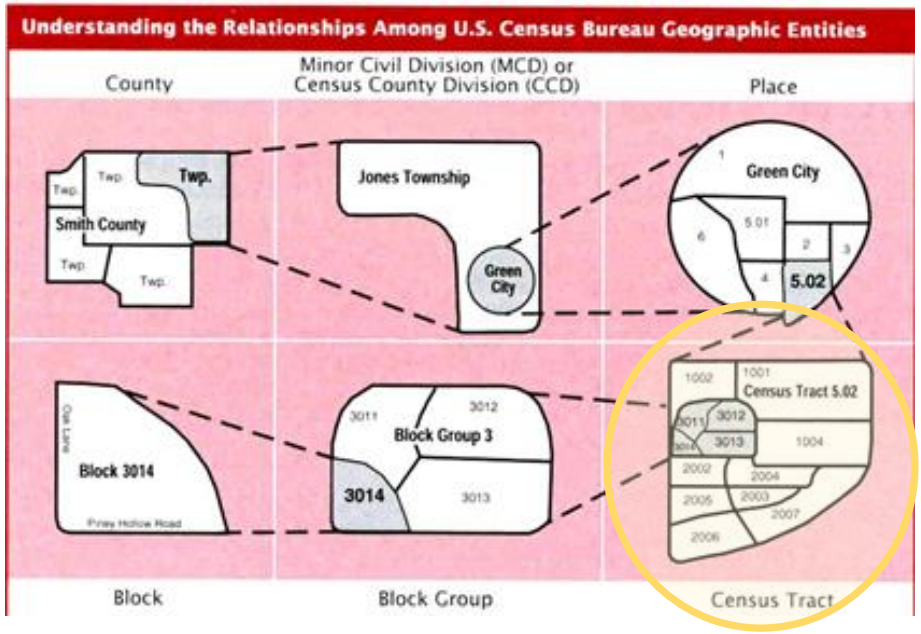
– Jim Barksdale

How did we get here?
A Short History of Broadband Mapping

The Act and Big Geographies: 1996-2009

- Along with putting structure around things like interconnection, preemption, and universal service, the Act called for the FCC to conduct broadband availability data gathering on a semi-annual basis.
- The birth of the FCC's Form 477 process. This was the mechanism the Commission would use to collect and report on internet availability.
- Census Tract Level
  - Census Tracts can contain as many as 8,000 people and span many square miles, while a Census Block can contain as little as zero population and be as small as 2/3rd of an acre.

Census Small-Area Geography

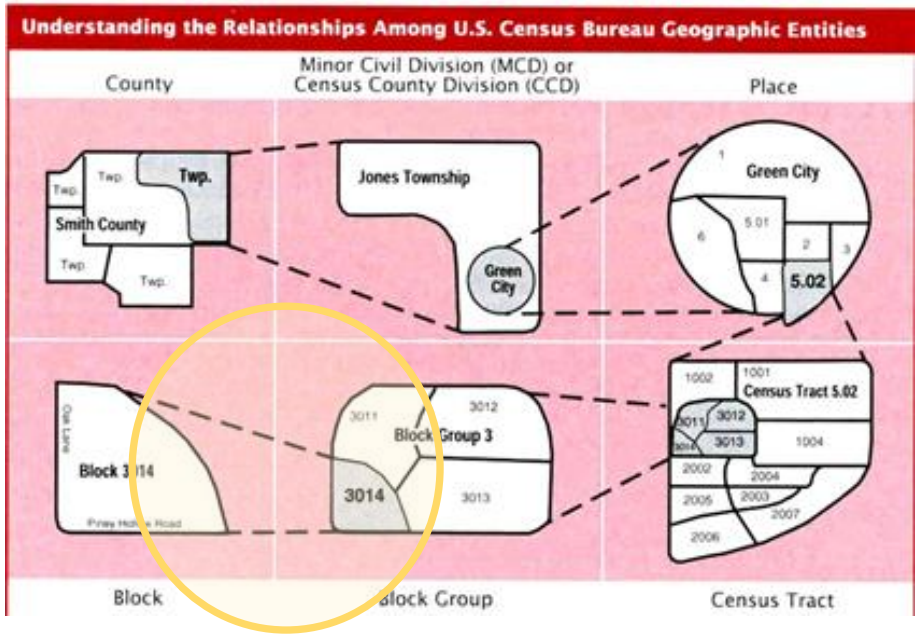


How did we get here?
A Short History of Broadband Mapping

Stimulus, the National Broadband Map, and CAF: 2009-2015

- ARRA: State Broadband Initiative/477 - The goal was to collect data, standardize it, and display it at the census block level.
  - National Broadband Map
  - State Broadband Mapping
- Connect America Fund
  - Used the NBM for fund targeting and management

Census Small-Area Geography



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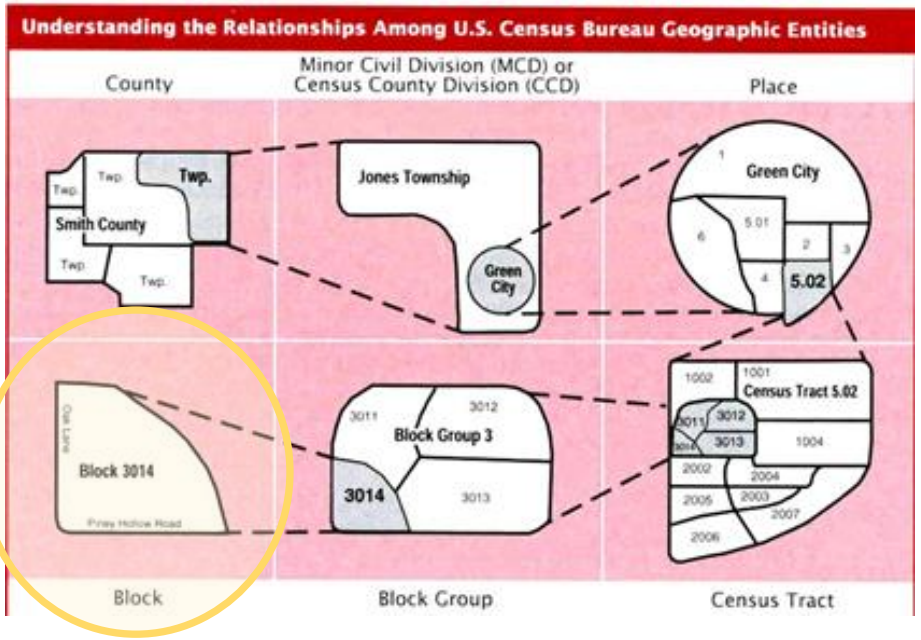
How did we get here?
A Short History of Broadband Mapping

CAF-II, RDOF, and Location-Based Mapping: 2015 – 2021

- Census Block-level data had contributed to the Connect America Fund moving to a reverse auction.
- Eligible census blocks were identified, and reserves were measured using this more granular approach to broadband mapping.
- One served, all served became a bigger problem with policy makers

Census Small-Area Geography



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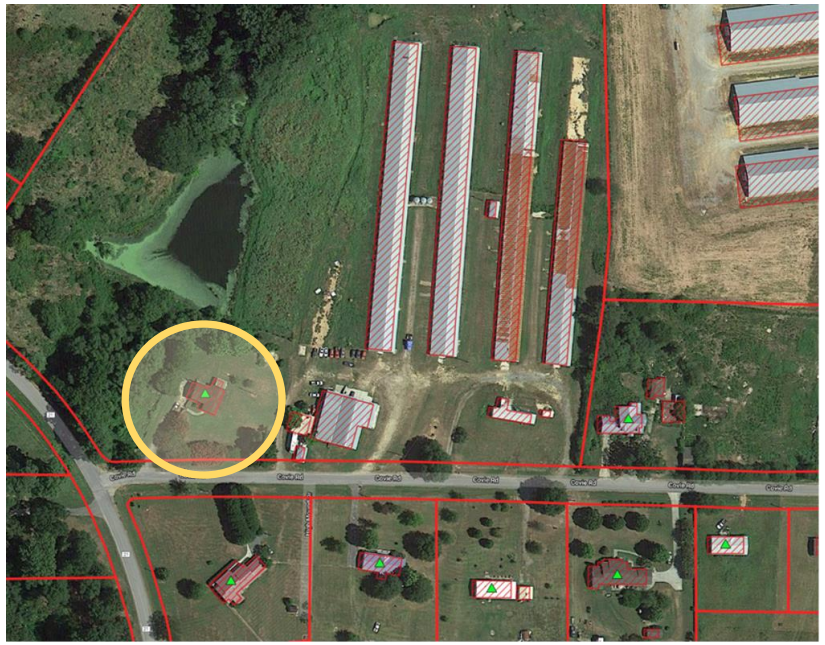
How did we get here?
A Short History of Broadband Mapping

Where Broadband Mapping is Going: 2022 –

- Broadband Mapping Initiative worked to find a path to better data.
- QA developed the Broadband Serviceable Location
- This development made its way to the halls of Congress.
- Broadband DATA Act
- DODC ------ BDC



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How did we get here?
A Short History of Broadband Mapping

- Stems from Hill pressure to the FCC and FCC pressure on providers to modernize 477
- Companion to Rural Digital Opportunity Fund - P/K/A Digital Opportunity Data Collection
- Implements the Broadband DATA Act
- Requires Service Provider Submission of Service Areas by Polygon/Shapefile
- Adopts the Broadband Serviceable Location Fabric
- Includes Challenge Process, Verification, Use of Crowdsourcing and Assistance for Small Providers

BDC/DODC Timeline

- Third Report and Order Out, but BDC/DODC is still a ways away. At least 6-month notice before data collection deadline, and many months before BDC location data engagement begins. Likely another 6-months+ before publication.
- State Broadband Maps and NBAM likely needed for upcoming programs
- In the meantime, there may be some burden on providers from various, disparate, data collection programs.

New Federal Requirements

In March 2020, Congress passed the Broadband DATA Act:

Which outlines the Commission's approach to improve broadband mapping that was established in the Digital Opportunity Data Collection proceeding, now called the Broadband Data Collection.

This Act asks the Commission to:

1. Require the semiannual collection and dissemination of granular data relating to the availability and quality of service of fixed and mobile broadband Internet access service for use in conjunction with creating broadband coverage maps.
2. Establish processes for the Commission to verify and protect the data collected.
3. Establish a process for collecting verified data for use in the coverage maps from State, local, and Tribal governmental entities, from other federal agencies, and, if the Commission deems it in the public interest, from third parties.
4. Establish the Fabric to serve as a foundation on which fixed broadband availability is overlaid.
5. Establish a user-friendly challenge process through which the public and State, local, and Tribal governmental entities can challenge the accuracy of the coverage maps, provider availability data, or information in the Fabric.
6. Develop a process through which entities or individuals may submit specific information about the deployment and availability of broadband Internet access service in the United States on an ongoing basis.

New Reporting Requirements for Providers

New Requirements Introduced in the BDC:

Providers of Fixed or Satellite broadband internet access service shall submit:

- Either a polygon shapefile, list of addresses, or list of locations
- Each provider of fixed wireless broadband internet access service shall submit propagation maps and model details that reflect the speeds and latency of its service or a list of addresses or locations, that document the areas:
  - (1) where the provider has actually built out its broadband network infrastructure, such that the provider is able to provide service, and
  - (2) where the provider is capable of performing a standard broadband installation.
- Indicate for each polygon shapefile or location they submit in the Digital Opportunity Data Collection, whether the reported service is available to residential customers and/or business customers.
- Submit methodology on how the organization generated its polygon shapefiles, propagation maps and model details, or list of addresses or locations.

New Federal Requirements

Specific Requirements for Wireline Providers: Fiber, Coax

Terrestrial fixed providers using certain wireline technologies may not report coverage that exceeds a defined maximum distance from an aggregation point, including the drop distance, or that exceeds 500 feet from a deployed line or distribution network infrastructure to the parcel boundary of a served location.

(A) Terrestrial fixed providers using Digital Subscriber Line technology shall not report coverage that exceeds 6,600 route feet from the digital subscriber line access multiplexer to the customer premises for speeds offered at or above 25 Mbps downstream, 3 Mbps upstream. Providers that offer Digital Subscriber Line service in areas at speeds less than 25 Mbps downstream, 3 Mbps upstream shall not be subject to a maximum buffer requirement for such areas.

(B) Terrestrial fixed providers using Fiber to the Premises technology shall not report coverage that exceeds 196,000 route feet from the optical line termination point to the optical network termination point.

(C) Terrestrial fixed providers using Hybrid Fiber Coaxial Cable technology shall not report coverage that exceeds 12,000 route feet from the aggregation point to the customer premises.

(D) Locations can be reported as served beyond the maximum distances to the extent that:

(I) A provider has a current subscriber at a location beyond the bounds of the applicable maximum distance;
(II) A provider previously had a broadband subscriber, using the same technology, at a location beyond the bounds of the maximum distance;
(III) A provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area; or
(IV) A provider receives a waiver to report coverage beyond the maximum distances.

New Federal Requirements

Specific Requirements for Fixed Wireless Providers

Fixed wireless providers that submit coverage maps shall submit propagation maps and propagation model details based on the following parameters:

(A) A cell edge probability of not less than 75% of receiving the maximum advertised download and upload speeds

(B) A cell loading factor of not less than 50%

(C) Receiver heights within a range of 4-7 meters.

Fixed wireless service providers that submit coverage maps shall provide the following information:

(i) The name of the radio network planning tool(s) used, along with information including:

- (A) The version number of the planning tool
- (B) The name of the planning tool's developer
- (C) The granularity of the model (e.g., 3-arc-second square points)
- (D) Affirmation that the coverage model has been validated and calibrated at least one time using on the ground testing and/or other real-world measurements completed by the provider or its vendor.

+

Plus…

Base station, terrain, clutter, and Information on the height and power values used for receivers/CPE antennas in their modeling (height must be within a range of four to seven meters).

More BDC Requirements for Providers

All BDC Filings Should Also Include:

- Providers need to include in each BDC filing a certification signed by a Certified Corporate Officer of the provider.
  - Indicating the officer has examined the information in the filing and confirms that all statements of fact contained in the submission are true and correct.

- Providers need to include in each filing a certification of the accuracy of its submissions by a Professional Engineer.
  - The engineering certification states the certified professional engineer or corporate engineering officer (can be same person) is employed by the provider and confirms the generation of the provider's BDC filing.

- The Commission finds that requiring that an engineer review and certify the accuracy of a providers' submissions is an appropriate measure to confirm that filers have in fact engaged in the analysis necessary to meet Congress's objective of developing more accurate data.

Addresses or Polygons

Providers have the option to submit service coverage in 1 of 3 formats:

BDC Requirement Summary

- Polygon shapefile
- List of Addresses/List of Locations

- Propagation Map if Fixed Wireless or Mobile
- Model Details

- Methodology for Polygon Shapefile, list of Addresses, or list of Locations

- Methodology of Propagation Map
- Methodology for Model Details

- Certification from a Corporate Officer
- Certification from a Professional Engineer

- This can be one person if said person is both a Corporate Office and Professional Engineer

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What is the Fabric and how will the Fabric to be used for translation?

What is the Broadband Serviceable Location Fabric?

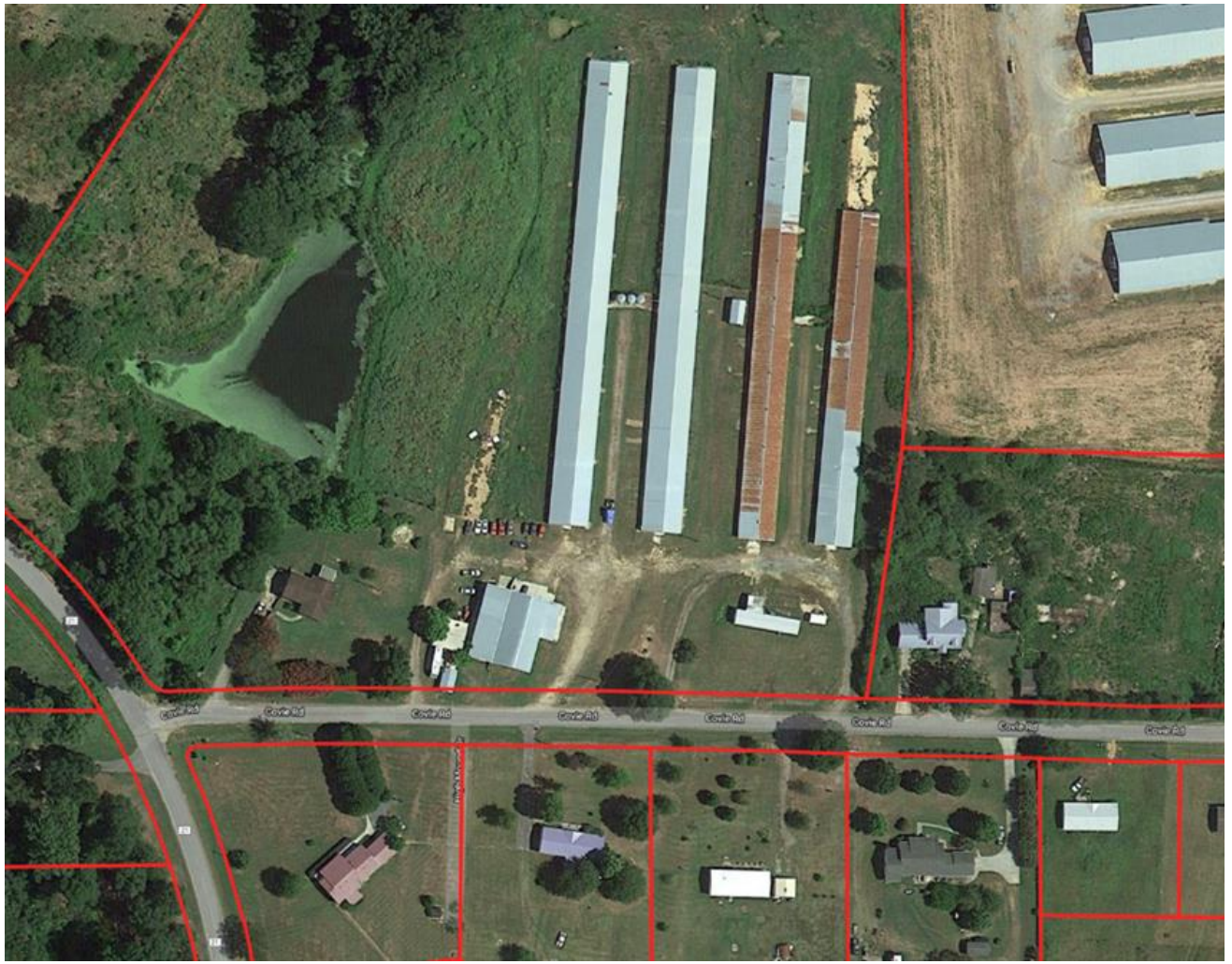
- The Fabric is a comprehensive data set of all individual structures capable of receiving broadband service in the U.S.
- The Fabric will reflect each location as a single point defined by a set of geographic coordinates that fall within the footprint of a building
- A “location” is defined as a business or residential location in the United States at which fixed broadband Internet access service is, or can be, installed.
- The Commission will overlay the Fabric data on top of the providers coverage data to further verify the locations providers submit in their filings are accurate.

The Fabric – How it works

- Goal: Identify the structure(s) needing service
- Challenges:
  - Secondary structures (chicken coops, barns, garages, etc.)
  - Addresses aren’t automatically geocoded

The Fabric – How it works

- Step 1:
  - Overlay parcel data
  - Use Tax Assessor and parcel attribute data to categorize parcels
    - Are there multiple locations?
    - Does the land use indicate there may be a serviceable structure?
    - Consider improvement value, information on secondary structures, etc.



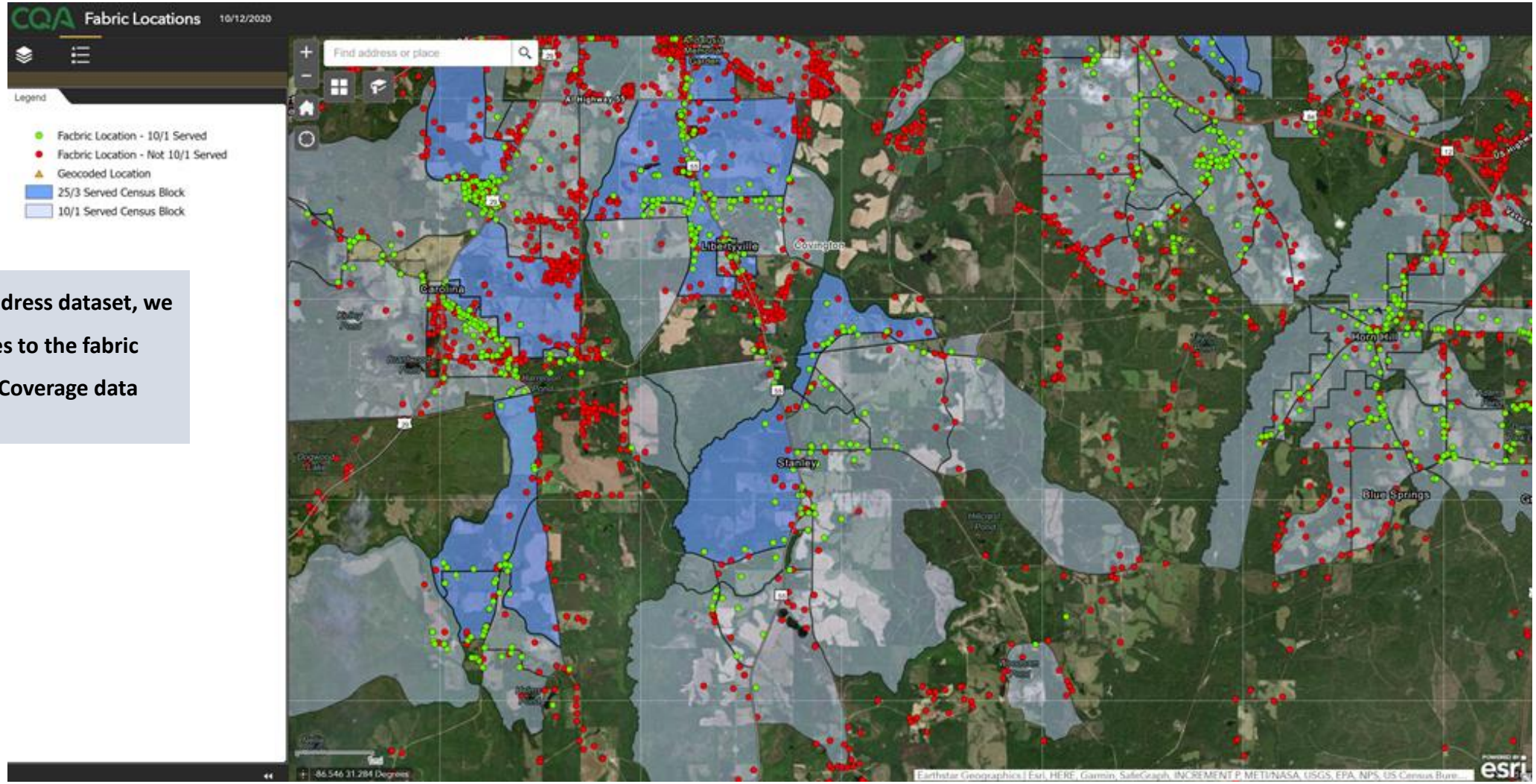
The Fabric – How it works

- Step 2:
  - Incorporate building footprint data
    - Footprints identify candidate locations for the Fabric
    - Footprints replace an interpolation of textual address data with real-world accuracy of where serviceable structures are

The Fabric – Output

- Step 3:
  - Location and Structure logic is applied to aggregate data
  - The Fabric identifies serviceable structure(s), circled, on each parcel
- Step 4:
  - Once the location is identified, the best address for the location is selected

Fabric Value in One Image



Using a Carrier's address dataset, we linked the addresses to the fabric and overlayed 477 Coverage data

Fabric as of Today

FCC working toward BDC and the use of the “Fabric”

RFI – RFP – Procurement – Development – BDC - Publish

States already moving toward Broadband DATA Act standard

CQA BSLF on Version 2 (all states)

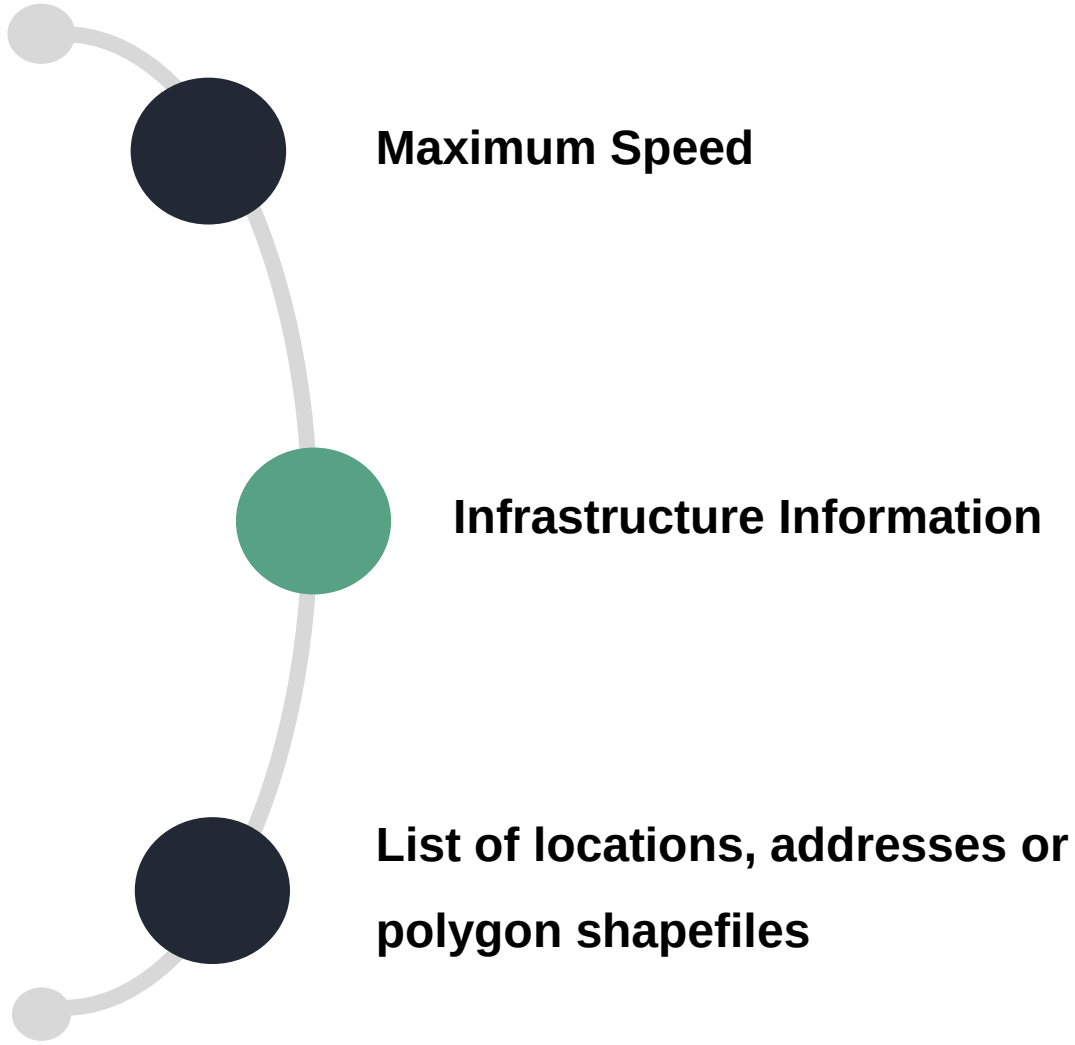
- ~97% accuracy
- More to do
- County outliers
- Tribal areas
- Visual Verification

Confidentiality of submitter details

What will the FCC keep confidential?

- The Commission also adopted the Broadband DATA Act's enforcement standard for submitting inaccurate or incomplete data and established standards for confidential treatment of information received in the Digital Opportunity Data Collection and the Fabric.

- The Commission recognizes that the geographic coordinates of base stations may be sensitive information that providers may wish to keep confidential for business or national security reasons. We therefore will treat such information as presumptively confidential pursuant to Section 0.457(d) of the Commission's rules.



Filing Deadlines & Form 477 not sunset yet

A

The OEA will issue a Public Notice announcing the initial BDC filing deadline at least 6 months prior to that deadline.

B

Form 477 filings will likely still be required for at least one filing period until BDC is implemented.

C

This is a new process. Note that changes may occur midstream.

New Challenge Process

- Consumers can challenge based upon the following preset categories:
  - no service offering at location, the provider failed to install a functioning service within ten business days of valid order for service, the provider denied the request for service, reported speed not offered
- 60 days to respond to a consumer/governmental/other entity challenge to coverage
- The service provider must demonstrate to Commission staff that by the "preponderance of the evidence," it in fact offers service at that location, however, the challenger is required to demonstrate initial facts indicating that a location is most likely unserved.
- Provider must reply by either:

  (1) accept the assertions raised by the challenger and submit a correction for the challenged location in the online portal within 30 days of its portal reply; or

  (2) deny the challenger's assertions and provide evidence the provider serves, or could and is willing to serve, the challenged location.

New Challenge Process (cont'd)

- Multi-Step Dispute Resolution Process
  - Provider disagrees with the challenger - provider has 60 days from the date of its reply to resolve the dispute with the challenger
  - No consensus in 60 days - provider must report the outcome of efforts to resolve the dispute to FCC
  - Then FCC will review the evidence and make the determination about whether there is service.
  - If FCC finds in favor of the challenger - provider must remove the specified location from its coverage polygon or customer list within 30 days of the decision.
  - If FCC finds in favor of the service provider - the location will no longer be subject to the "in dispute/pending resolution" designation on the coverage maps.

- A provider's failure to timely respond to a challenge will result in a finding for the challenger and mandatory corrections to the provider's data will be made.

- Providers must submit any such corrections within 30 days of the missed reply deadline, or the FCC will.

Verification

- Broadband DATA Act requires the Commission to verify the accuracy and reliability of the broadband coverage data that providers submit to the Commission.

- The Office of Economics and Analytics (OEA) and WTB may request and collect the data on a case-by-case basis only where staff have a credible basis for verifying the provider's coverage data.

- The Broadband DATA Act requires the Commission to develop a process through which it can collect verified data for use in the coverage maps from: (1) State, local, and Tribal governmental entities primarily responsible for mapping or tracking broadband Internet access service coverage in their areas; (2) third parties, if the Commission determines it is in the public interest to use their data in the development of the coverage maps or in the verification of data submitted by providers; and (3) other federal agencies.

Penalties/Enforcement

- The Commission adopted a ““willful and knowing or reckless” standard and will determine the nature of the violation on a case-by-case basis.

- Penalties will be assessed against providers that file materially inaccurate or incomplete information in the same manner that the Commission enforces other types of violations under the Communications Act.

    - “Materially inaccurate or incomplete” is defined as a submission that contains omissions or incomplete or inaccurate information that the Commission finds has a substantial impact on its collection and use of the data collected in compliance with the Broadband DATA Act.
    - No intent to deceive is necessary - adopts a qualitative approach that focuses on the nature of the inaccuracy or incompleteness, rather than a quantitative standard that would require a showing of multiple inaccurate or incomplete filings.
    - Base level forfeiture is $15,000

- Enforcement Bureau may consider whether a filing has multiple omissions or inaccurate data and may consider each of those to be a separate violation.

- The Commission set a 30 days correction window to be consistent with the crowdsourcing process and challenge process, and those corrections must include the required certifications.

Technical Assistance

- Broadband DATA Act requires the Commission to hold annual workshops for Tribal governments in each of the 12 Bureau of Indian Affairs regions and review the need for continued workshops on an annual basis.

- FCC is establishing a help desk for providers with fewer than 100,000 active broadband Internet access service connections so that they may request and receive assistance with GIS data processing to ensure that the provider is able to comply.

- Broadband DATA Act requires the Commission to provide technical assistance to consumers and State, local, and Tribal governmental entities with respect to the challenge process which includes detailed tutorials and webinars and the provision of Commission staff to provide assistance, as needed, throughout the entirety of the challenge process.

Questions?

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