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Subcommittee on Communications and Technology

Defining and Mapping Broadband Coverage in America

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Summary of Key Points

- As the single largest grantee under the SBI program, Connected Nation (CN) managed broadband mapping and planning projects across 12 states and 1 territory (spanning 42% of the U.S. landmass).
- Accurate and granular broadband mapping is one of the most critical tools in developing sound broadband policy to close the digital divide.
- While our mapping efforts have been highly successful, the SBI program as a whole faced a number of challenges, and the current Form 477 data collection process is deficient in at least five significant ways.
- We believe any future broadband mapping effort must prioritize the accuracy and granularity of broadband maps at the street address or parcel level of detail, but must also prioritize the protection of providers' proprietary and confidential information than may be used to derive more granular coverage footprints.
- A viable and effective path forward would be for Congress to establish a single, independent, third party clearinghouse for broadband data collection and mapping. This clearinghouse would have responsibility for carrying out four (4) primary tasks:
    1) **Broadband data collection and analysis**, working with the provider community through a rigorous non-disclosure agreement framework;
    2) **GIS mapping of broadband availability and speeds**, produced from infrastructure and subscriber data submitted by the providers;
    3) **Field validation and audits** of the maps once they are produced; and
    4) **Processing feedback submitted by consumers** to ensure continual refinement of the maps.

Introduction

Chairman Blackburn, Ranking Member Doyle, and members of the Subcommittee, thank you for inviting me to share Connected Nation's insights in this important proceeding this morning. My name is Brent Legg and I serve as Vice President of Government Affairs for Connected Nation, a national non-profit organization with a 16-year history of measurably improving lives and strengthening communities through increased access to, and adoption of, broadband and related technologies.

Headquartered in Bowling Green, Kentucky, Connected Nation's work has impacted more than 30 states, and we served as the nation's single largest grantee under NTIA's State Broadband Initiative (SBI) grant program. Under SBI, we managed broadband mapping and planning projects across 12 states and 1 territory, representing 42% of the U.S. landmass, and our mapping and data validation techniques have been widely recognized as "best practices" by NTIA, the FCC, and others. Connected Nation also has a long history working at the grassroots level in more than 600 communities through initiatives like our Connected[sm] Community Engagement Program, in which we help local leaders build comprehensive technology action plans for their communities.[1]

Our work on the ground in these communities has helped us develop an intimate understanding of the impact that broadband has on rural and urban areas alike, and there can be no doubt that accurate and granular broadband mapping is one of the most critical tools in developing sound broadband policy to close the digital divide.

Reliable broadband mapping is a matter of critical importance to residents, businesses, and community anchor institutions in areas where robust broadband is lacking, as any good map should give voice to those who find themselves on the other side of the

[1] http://www.connectednation.org/get-connected

digital divide by prioritizing the closing of those gaps. Connected Nation believes strongly in the importance of accurate and granular broadband data collection and mapping for three reasons:

1) To inform better decision-making on where public resources should be invested to support broadband buildout,
2) To avoid potential overbuild situations where service may already be available at a comparable speed and cost, and
3) To ensure accountability for the ratepayer and taxpayer dollars once public investments have been made.

Today, we look forward to discussing the successes and lessons learned from the SBI Program, as well as the current Form 477 data collection process administered by the FCC. Our intent is not to be critical, but rather to foster an understanding of how we believe the process could be improved for the future, and that is where I'll focus the majority of my remarks today.

Lessons Learned from the SBI Mapping Program and the Form 477 Process

The SBI Program, which was created by the Broadband Data Improvement Act of 2008, gave states the opportunity to, among other things, establish a broadband mapping program and submit broadband data to NTIA twice a year from 2010 through 2014. This data was used to create the nation's first comprehensive national broadband map in 2011, which unfortunately has not been updated since the program ended in 2014.[2] Connected Nation was selected by 12 states and 1 territory to collect, process, analyze, and map

[2] https://www.broadbandmap.gov/

broadband data, while also collecting feedback from the public on where revisions should be made.[3]

Throughout the SBI Program, Connected Nation averaged provider participation rates of 95% across our states, despite the fact that this program was largely voluntary. This was primarily due to the emphasis we placed on provider relationship-building, as well as our willingness to accept information in whatever format it was available and to assist providers who needed help. By 2014, we had established data-sharing relationships with more than 1,200 unique broadband service providers of all sizes, with non-disclosure agreements in place with many of them to ensure protection of their proprietary and confidential information.

While our mapping efforts were highly successful, the SBI program as a whole faced a number of challenges. Since every state had its own mapping agency or third-party partner, this meant that multiple methodologies were employed in collecting provider information, analyzing the data, and mapping the results. This also meant that providers, many of whom operate in more than one state, had to juggle not only multiple points of contact and data requests, but they had to report their information in varying ways to satisfy those requests.

Additionally, known best practices, such as those we developed to represent mobile and fixed wireless coverage propagation, were not required to be adopted across all states. For example, fixed wireless coverage in some states continued to be represented as full circles or drastic polygons that did not reflect the true coverage on the ground. Unfortunately, some of these inaccuracies persist even today in the Form 477 data being submitted to the FCC.

[3]Alaska, Florida, Illinois, Iowa, Kansas, Michigan, Minnesota, Nevada, Ohio, Puerto Rico, South Carolina, Tennessee, and Texas

As the SBI program transitioned to the Form 477 filing process in October 2014, we began mapping and refining this data for state partners that have chosen to continue their mapping programs. Unfortunately, a number of challenges remain:

1) Form 477 requires providers to report census blocks where they provide service. Unfortunately, if even one household in a given block is served, the entire block is considered as having service, resulting in a significant overstatement of availability. This is particularly problematic in rural areas where census blocks can be very large—some being larger than the entire state of Connecticut. Yet these are the areas where broadband availability is most lacking and needs to be most accurately defined;
2) Since some providers rely on third-party vendors to compile Form 477 data and the filings are primarily in .csv (comma-separated values) format, providers that do not have GIS (geographic information system) capabilities have no way of visualizing their service territories to ensure accuracy, resulting in overstated or understated reporting;
3) Some known providers from the SBI years are simply missing from the Form 477 dataset, meaning that they are likely not filing as required;
4) Wireless coverage during the SBI years (when properly mapped) was developed from propagation modeling based on tower locations and signal penetration. Under Form 477, however, wireless coverage is reported by census block as any other type of service, indicating areas as served where there may actually be no service for miles.
5) Missing data and inaccurate filings also may have the effect of understating service capabilities, putting the providers themselves at risk for overbuild, since

Form 477 data is now used to direct federal subsidies toward areas lacking robust broadband.

A Path Forward

Taking into consideration these lessons learned, Connected Nation would like to offer a few observations and recommendations regarding future of broadband mapping. First, any future mapping effort must prioritize the accuracy and granularity of the maps themselves to ensure that the nation's broadband landscape is fully understood at the street address or parcel level of detail. Census block data is not sufficiently granular as we look to solve the broadband gap in rural and other insular areas of the United States.

Second, that level of granularity requires the protection of providers' proprietary and confidential information. Such protection is needed to safeguard critical infrastructure from vandalism, sabotage, or worse, and to preserve the confidentiality of competitively-sensitive infrastructure and subscriber information, which should remain closely held.

Third, any future mapping effort must be premised on a uniform reporting mechanism to eliminate inconsistencies in state-by-state reporting. That uniformity in reporting will provide decision-makers the high level of confidence needed to target federal funding to broadband deployment projects.

As Congress considers funding and other incentives to promote broadband deployment, we believe it should also consider establishing a single, independent, third party clearinghouse for broadband data collection and mapping that is accountable to Congress, the FCC, the public, and the provider community, and it should cover all 50 states, the 5 inhabited U.S. territories, and the District of Columbia. This clearinghouse would have responsibility for carrying out four (4) primary tasks:

1) **Broadband data collection and analysis**, working with the provider community through a rigorous non-disclosure agreement framework;
2) **GIS mapping of broadband availability and speeds**, produced from infrastructure and subscriber data submitted by the providers;
3) **Field validation and audits** of the maps once they are produced; and
4) **Processing feedback submitted by consumers** to ensure continual refinement of the maps.

To be clear, Connected Nation believes that broadband service providers have a reasonable expectation that their proprietary and competitively sensitive infrastructure and subscriber data should be protected from disclosure. The good news is that the public disclosure of such information isn't necessary to serve the public interest. Instead, that information could be protected and analyzed by a single non-government clearinghouse entity *to derive broadband coverage and speed capabilities without revealing the more sensitive characteristics of any given network*. Connected Nation has proven throughout its history that a neutral, third-party aggregator of infrastructure data can both hold that information tightly and produce accurate and granular coverage maps from it—maps that are much more accurate than the current Form 477 process yields.

Another important function that a clearinghouse entity should play is on-the-ground field validation of coverage in geographic areas that warrant additional scrutiny, as well as areas where federal dollars are being invested to build out new infrastructure. This should involve the deployment of network engineers to visit communities, visually inspect infrastructure assets, conduct drive-testing of wireless networks, and make coverage adjustments to the maps accordingly. The public should also play an important role in providing feedback on the map, and their feedback should be used to both engage providers

in refining coverage depictions, as well as helping to determine where field audits should take place.

We hope that Congress will consider a clearinghouse as a path forward to serve the public interest by informing federal decision-making on infrastructure investments, ensuring accountability for those dollars as they are spent, and protecting sensitive provider data all at the same time. We look forward to answering any questions that you may have. Thank you.