National Telecommunications and Information Administration

[Docket No. 180427421–8421–01] RIN 0660–XC042

Improving the Quality and Accuracy of Broadband Availability Data

Comments of Washington State Office of the Chief Information Officer (Washington CIO)

7/16/2018

The state of Washington welcomes this opportunity to share recommendations and provide feedback on NTIA's Notice and Request for Comments (Notice) on potential data assets, techniques for accurate measurement, and approaches to broadband planning, particularly in rural areas. In the Notice, NTIA poses a number of questions concerning ways improve information concerning broadband availability in order to identify gaps in broadband availability that can be used to improve policymaking and inform public investments. The Washington CIO provides the following responses on behalf of state agencies that collectively work to improve broadband availability across Washington.

Identifying additional broadband availability data:

a. What additional data on broadband availability are available from federal, state, not-for-profit, academic, or private-sector sources to augment the FCC Form 477 data set?

Washington has used a variety of federal, state and local data sources to augment the information currently collected and made available through the FCC's Form 477 datasets. The state's Office of Privacy and Data Protection, a segment of the Washington CIO, uses a "pinboard" (https://padlet.com/will_saunders/qp1qk7uc0qxb) to identify new and notable datasets. Table 1 below summarizes the principal datasets.

Table 1

Dataset or Application	Source	Link	Notes
Consumer Complaints map	FCC	https://opendata.fcc.gov/Consumer/CGB-Map-of-All-Complaints-by-State/yku2-yagi	
FirstNet Nationwide Coverage map	FirstNet	https://www.firstnet.com/coverage	
HUBB state access	USAC	https://data.usac.org/publicreports/HUBBStateReport/Download/StateReport	
mLab Worldwide Speed test data	New America	https://viz.measurementlab.net/data	Visualizations not current

Broadband Progress Report data appendix	FCC	https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A2.xlsx	
USASpending.gov	OMB	https://www.usaspending.gov/Pages/AdvancedSearch.aspx	Shows investment by state
BTOP Map	NTIA	https://www2.ntia.doc.gov/BTOPmap/	
Digital Nation	NTIA	https://www.ntia.doc.gov/data/digital-nation-data-explorer#sel=internetUser&disp=map	
Coverage Map	Root Metrics	http://webcoveragemap.rootmetrics.com/en-US	Proprietary

b. What obstacles—such as concerns about the quality, scope, or format of the data, as well as contractual, confidentiality, or data privacy concerns—might prevent the collaborative use of such data?

Proprietary Data: Many datasets, especially those pertaining to infrastructure and network performance, are commercial and proprietary, and are not licensed for sustained use or derivative works. Examples include:

- Root Metrics
- FirstNet service

Geospatial complexities: Most broadband datasets are published at an aggregate level, not by actual locations. The most common aggregation units are census blocks and census tracts. Both tracts and blocks have changed shape appreciably over the past decade, which means that broadband data from 2014 has been mapped using census block polygons from 2010, while 2016 and 2017 broadband data must be mapped using revised block shapes. NTIA could make it easier for less well-resourced jurisdictions to use the existing mapping resources appropriately.

IP networking data, such as speed tests, commonly approximate the location of the client by inferring from the IP address of the equipment performing the test. This adds a degree of uncertainty to aggregation efforts in the analysis.

Privacy: Location privacy is a matter of increasing concern to the citizens of Washington who, for example, generally resist or oppose being tracked by government, or technologies that unreasonably reveal their travel routes, home information, or internet practices published casually.

New approaches:

Are there new approaches, tools, technologies, or methodologies that could be used to capture broadband availability data, particularly in rural areas?

Tribes and the organizations that serve them often maintain asset inventory databases that could be of significant value for broadband planning in rural areas. However, as nations tribes have heightened expectations of privacy regarding access and use of their data assets – especially by non-tribal entities, significant work remains to be done to facilitate the appropriate trust relationships that could lead to more collaborative use of tribal assets data.

Wildfires are a recurring challenge in most western states, including Washington. Planning for effective response mobilizations and maintaining critical public warning systems today requires planning for network connectivity and information sharing in affected areas. While data about wildfire operations is widely available and of good quality, wildland fire camps and operations should be more broadly supported and incorporated in network and infrastructure planning.

Collaborative research efforts by the nation's colleges and universities have been essential for continued situation awareness and planning efforts in Washington state. Though not a new approach (see, e.g. National Broadband Research Agenda, 2015, https://www.ntia.doc.gov/files/ntia/publications/nationalbroadbandresearchagenda-jan2017.pdf), the idea merits more support and attention. Collaborative research examples in Washington include:

> The Division of Governmental Studies and Services at Washington State University has provided consistent and essential coordination, research and knowledge management for grass-roots broadband action. Land-grant universities with rural service missions can play a substantial and expanded role in broadband data collaboration.
>
> Perdue University's Digital Divide index (https://www.pcrd.purdue.edu/signature-programs/digital-divide-index.php) offers a simple but effective model for validation and coordination between government and academia. The principal investigator and leader of the DDI project has collaborated informally with state agencies and local stakeholders to explore and explain anomalous indications in a way that has made the DDI dataset a more valuable planning tool for government.
>
> The iSchool at University of Washington has provided multiple insightful student teams for broadband data projects. Students bring fresh perspectives to old and seemingly intractable issues, and have demonstrated low-cost prototypes of sophisticated analysis tools built with low-cost technology. See, e.g. MSIM Capstone with NTIA and Washington State, https://fayechu.github.io/NTIA_Data_Visualization/04-javascript-web-portal-integration/index.html

In Washington, local technology planning teams (LTPT) have been the consistent hallmark of policy recommendations by state analysts for many years. LTPTs enable data gathering through trustful relationships that can overcome barriers, and they have proved to be resilient preservers of knowledge and capacity when funding at the state and federal level is challenged or unavailable.

Validating broadband availability data:

a. What methodologies, policies, standards, or technologies can be implemented to validate and compare various broadband availability data sources and identify and address conflicts between them?

Several jurisdictions in Washington have explored an approach to validating broadband availability data that they describe as "boots on the ground" – including in-person canvassing by local employees. This approach is premised upon address-level granularity of data. Current FCC data is not reported at address-level granularity, so FCC maps often report as "served" large areas where in fact only a limited number of households are actually served.

In the past, Washington performed validation of carrier-reported coverage data as part of the State Broadband initiative (SBI) program. The policies, methodologies and technologies used for that effort could be applied to present-day data sources.

Identifying gaps in broadband availability:

a. What data improvements can the government implement to better identify areas with insufficient broadband capacity?

Many of Washington's rural, hard-to-serve communities experience significant changes in population during peak seasons. Seasonal travel, recreation and migration data could be valuable to rural communities and state agencies as they assess opportunities to invest or adjust policy. Destination communities such as Ocean Shores, on Washington's Pacific Coast, and the San Juan Islands have significantly higher populations in summer than in winter, with corresponding increases in bandwidth requirements. National Parks and National Forest campgrounds experience significant swings in mobile broadband demand during summer, while ski resorts' broadband needs peak in winter. Though these communities may not appear to be "gap" areas under current, annual mapping cycles, latent and seasonal capacity challenges could be exposed through more diverse data collection efforts. Data regarding travel trends from private or public sources could help states target emergency communications, make the business case for library wifi, and identify priority areas for broadband infrastructure investment.

Areas prone to wildfires experience critical peaks in broadband demand during wildfire events, which also enhance the urgency of reliable communications for both firefighters and community residents. Wildfire camps and bases of operations are often established in remote areas with very limited broadband capacity that constrains local fire response efforts. Improved correlation of wildfire data and broadband data could reveal gaps in capacity in rural counties in Washington.

As wireless technologies increase in importance for delivery of high-reliability broadband service, planners will need to analyze interference, unutilized spectrum holdings, and exclusion zones. In Washington state licensed spectrum operators that have not been able to deploy services in their full license areas could be good partners for communities looking to expand broadband service. Conversely,

some areas in Washington are likely to be difficult candidates for wireless services due to longstanding FCC exclusion zones surrounding satellite earth stations. For TV white spaces spectrum, systems exist to map and report areas of likely interference with existing broadcasters, but these systems have rarely been integrated with broadband service maps to support recommendations on suitable technologies for specific regions. Gaps in broadband-ready spectrum capacity could be revealed by analysis of these other existing data sources.

b. What other inputs should NTIA seek to inform data-driven broadband policy- and decision-making?

In 2016, the Washington state legislature identified a need for reporting on new buildout and service upgrades by telecommunications providers (see Chapter 195, Laws of 2016, section 7). Though often well-known at the neighborhood level, where door-hangers and in-person outreach promote new service offerings, at the state or national level it is more difficult to extract evidence of buildout or upgrades from existing published data sources. Data regarding marketing efforts by providers could provide useful evidence of new network deployment and service upgrades, while also keeping government better attuned to residents' actual experiences in the market for broadband service. These data could likely be derived from analysis of social media, post office bulk mail trends, and internet advertising.