

State of California

Public Utilities Commission
San Francisco

M E M O R A N D U M

Date : July 6, 2018

**To : The Commission
(Meeting of July 12, 2018)**

**From : Helen M. Mickiewicz,
Assistant General Counsel, Legal Division**

**Michael Morris,
Program and Project Supervisor, Communications Division (CD)**

**Robert Osborn,
Senior Analyst, Communications Division (CD)**

**Subject: Department of Commerce, National Telecommunications and
Information Administration (NTIA) Docket No. 180427421–8421–01
Improving the Quality and Accuracy of Broadband Availability Data**

RECOMMENDATION: The CPUC should file comments in response to the NTIA’s request for comment on improving the quality and Accuracy of Broadband Availability Data.¹ Specifically, the NTIA is asking for input on (1) identifying additional broadband availability data, (2) new approaches, tools, technologies, or methodologies that could be used to capture broadband availability data, particularly in rural areas, (3) methods for validating broadband availability data, and (4) identifying gaps in broadband availability. Staff seeks authority to comment on these issues consistent with the recommendations set forth below. In September 2017, the CPUC submitted comments in response to the *Further Notice of Proposed Rulemaking (FNPRM)* the FCC issued seeking input on

¹ See *Federal Register* 24748 / Vol. 83, No. 104, released May 30, 2018, Department of Commerce National Telecommunications and Information Administration [Docket No. 180427421–8421–01]

RIN 0660–XC042, *Improving the Quality and Accuracy of Broadband Availability Data*. See <https://www.gpo.gov/fdsys/pkg/FR-2018-05-30/pdf/2018-11483.pdf>

modernizing its FCC Form 477 data collection program.² The staff's recommendations here largely track what the CPUC previously submitted to the FCC in that docket.

BACKGROUND: In collaboration with the FCC, NTIA launched the State Broadband Initiative (SBI) in 2009. Through this program, NTIA worked with every state, territory, and the District of Columbia to collect fixed and mobile broadband availability data for over 11 million Census blocks every six months for five years. In California, the CPUC received a 5-year \$8M grant from the NTIA to collect, process, verify, and map broadband data for the state. To make these data accessible to a broad audience, NTIA launched the National Broadband Map in 2011, and pursuant to the CPUC's SBI grant, the CPUC began publishing its interactive on-line broadband availability map. The SBI program ended in 2015, and the task of collecting broadband availability data was shifted from the NTIA to the FCC. The FCC began collecting such data directly from providers on Form 477.

As one of a handful of states which continued collecting and mapping broadband data following the termination of the SBI program, the CPUC still collects broadband availability data from California providers and publishes its interactive online map. This activity is necessary to timely and more accurately inform the CPUC's CASF program, ultimately determining grant-eligible areas and providing tools for potential applicants to identify project areas and develop grant applications.

Nationally, the FCC collects its Form 477 Broadband Deployment data semi-annually, while the CPUC collects broadband data on an annual basis. Both the FCC and the CPUC collect data on wireline broadband services at the Census block level, which is the smallest unit of geography defined by the Census Bureau. While the Census block system provides a very high level of geographic granularity overall—the United States is divided into over 11 million blocks—it is possible that broadband availability may vary within a single block, particularly in rural areas, where census blocks are larger than those in urban areas. California has over 700,000 census blocks covering 163,696 square miles.

The CPUC's method of collecting mobile broadband data differs substantially from the FCC's. The FCC relies on data mobile broadband providers submit indicating the Census blocks in which service is provided and the minimum advertised speeds for their services. In contrast, the CPUC determines mobile broadband coverage and characteristics solely through its CalSPEED program of an annual drive test, which collects mobile performance data for the four largest CMRS providers at more than 1900 locations selected to provide a representative mix of urban and rural areas, as well as all tribal

² *In the Matter of Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Released August 24, 2017.

lands. The same locations are visited each year. We then use geo-statistical tools to create a visualization of expected service quality at the locations between our test points. Rather than simply displaying the throughput speeds measured, we also measure and take other indicia of service quality into account such as latency, packet loss and jitter.

For service availability data at the Census block, a provider offering service reports that block as “deployed” in its submissions, even though it may not offer broadband services in most of the block. This can lead to overstatements in the level of broadband availability, especially in rural areas where Census blocks are large. Recognizing the potential for overstatements of broadband availability, the CPUC additionally utilizes techniques to validate existence of services (deployment) within the Census blocks. While these techniques improve accuracy of the data, they do not reflect that all households within a Census block have broadband available or that broadband is fully deployed.

Recognizing the deficiencies of the current broadband data collection process, Congress directed NTIA to update the national broadband availability map in coordination with the FCC and use partnerships previously developed with the states. Because of our prior status as an SBI grantee, and because we have continued our broadband data collection and mapping program, California’s responses to the NTIA’s Request For Comments will carry substantial weight, and allow California to have meaningful input on further development of ways to improve map accuracy on the national level.

Comments are due July 16, 2018.

DISCUSSION AND RECOMMENDATIONS: Staff recommends that the CPUC file comments in response to this *FNPRM* on the following issues.

1. 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?

The CPUC collects broadband deployment and subscription data on an annual basis and maps that data online to assist grant applicants for the California Advanced Services Fund. We are currently processing December 2017 data from over 120 providers, which represents over 99.9% of the reported broadband subscriptions in California. The CPUC’s data collection improves upon the FCC 477 data in several significant ways:

- We compare each submission with the GIS data model posted on the CPUC website, and check if mandatory fields are filled in properly, and if each field contains the appropriate range of values for the technology type.

- Wireline broadband subscription data comes to us in one of several formats: census block, census tract, or customer address.
- Fixed wireless deployment data comes to us in tower format with associated radio planning parameters.
- For mobile deployment, we rely on our annual statewide mobile field test data to create a coverage footprint, and use each provider's submitted coverage to define the outer boundary of the coverage footprint.

We also collect broadband data on community anchor institutions and publish a layer containing that data on our online interactive map.

Staff recommends that the CPUC submit comments to NTIA identifying these ways in which the CPUC has improved on the FCC's Form 477 data collection and propose that the FCC should adopt these refinements.

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?

Staff recommends that the CPUC urge that the FCC should publicly release data that is not deemed confidential. In the *FNPRM*, the FCC proposes that minimum advertised or expected speed data for mobile broadband services should not be treated as confidential, noting that this information is already available from other sources. The *FNPRM* also proposes releasing propagation models, which the FCC considers not commercially sensitive, suggesting release of this data would not cause competitive harm. The FCC notes that making this data available would provide consumers, states and experts the opportunity review the data for accuracy.

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

The CPUC supports field testing of mobile broadband speeds for much higher accuracy. The FCC acknowledges that “the mobile broadband service availability data that providers submit generally do not reflect their local retail presence,” and that “filers claim their service is available beyond where they may have a local retail presence.”³

Since 2012, the CPUC has been studying broadband measurement techniques, particularly with regard to mobile broadband service. As part of this effort, we have:

³ In the Matter of Modernizing the FCC Form 477 Data Program, WC Docket No. 11-10, Further Notice of Proposed Rulemaking.

1) created and implemented CalSPEED, an application to develop measurement techniques; 2) published a mobile crowd-sourcing application; and 3) performed semi-annual field testing of mobile broadband service quality in urban, rural and tribal areas throughout the State. Among these, the semi-annual field testing has proven to be the most effective measure of actual mobile broadband service speeds.

Since 2012, we have collected mobile test results at the same 1,986 locations throughout the State, and use those results to create a statistical model. In addition, we have developed an on-line tool, calspeed.org, to collect fixed broadband service speed, quality and reliability information. The FCC does not collect this type of information from providers, yet it is crucial to understanding the actual state of mobile broadband service. Instead of relying on the advertised speed service providers report for any particular area, the CPUC's field test results have become the standard for determining the actual service speed in California.

As the FCC notes, because different service providers use a host of methods to determine speed, providers are likely to report more, rather than less, coverage.⁴ A field test requirement would be the best way to make accurate assessments of availability and comparisons between networks. Staff recommends that the CPUC strongly encourages the FCC not only to retain the mobile broadband availability reporting requirement, but also to augment it with speed testing, similar to the manner in which the CPUC measures mobile broadband service.

Finally, the CPUC is developing its own fixed broadband testing device that can be installed in residential or business locations to measure the speed and quality of a broadband connection. Staff will make results from these tests available to the public and recommends informing the FCC of these results.

3. 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?

Validation techniques are necessary to improve the accuracy of reported census block level data. Staff recommends that the CPUC provide the sources and methods it uses to validate broadband deployment, as explained in *California Broadband Data Processing and Validation Data as of December 31, 2016*: broadband subscription data at the census block, census tract, and address level, TeleAtlas wire center data, interpolated mobile field test results, crowd-source CalSPEED speed tests for both mobile and fixed, public

⁴ FNPRM at para. 22.

feedback, and EDX Signal radio modeling software. Staff recommends the FCC use data sources and tools such as these to validate broadband deployment data. The FCC should also consider the use of adoption data as a possible means to evaluate whether deployment is sufficiently thorough within a reported census block area.

4. Identifying gaps in broadband availability:

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

Staff recommends that the CPUC support requiring collection of broadband deployment (availability) data at a more granular geographic level, thus increasing the usefulness of Form 477 data. Collection of broadband deployment and subscription data at the address level would be far more informative, but it would still need to be geo-coded. As such, staff recommends the FCC adopt the reporting method used by the Universal Service Administration Corporation (USAC), which requires⁵ reporting of geo-coded (latitude and longitude) addresses where broadband is deployed. As the FCC notes in the *FNPRM*, service providers have produced location-level deployment data in other proceedings, which was “extremely useful.”⁶ Absent such provision of geo-coded deployment data, additional validation techniques are needed to correct for the overstatement of broadband availability at the census block level. Such additional validation techniques might include evaluation and consideration of adoption levels within census blocks. In such a case, connection/subscription data should be provided at the census block level rather than census tract.

In the *FNPRM*, the FCC also asks whether to require mobile subscription data reporting aggregated to the census tract level and whether the billing address or the place of use should be used to determine the geography of the subscriber.⁷ Staff recommends supporting a requirement that mobile broadband and voice subscription data be collected at a more granular level, consistent with the recommendation regarding deployment data.⁸ Staff proposes using the billing address as the subscriber’s location rather than the place of use, which is not always known for mobile services.

Finally, staff recommends supporting more detailed reporting requirements for satellite services. The *FNPRM* acknowledges a growing market for satellite mobile broadband

⁵ See “Geolocation Methods: A guide to successfully collecting broadband deployment data,” https://www.usac.org/_res/documents/hc/pdf/tools/HUBBGeolocationMethods.pdf.

⁶ *FNPRM* at para. 37.

⁷ *Id.* at para. 26-29.

⁸ CPUC Decision (D.)16-12-025 ordered mobile voice subscription data to be reported at the census tract level.

and asks whether it would be appropriate to make additional modifications to Form 477 to include this service.² Satellite technology is used primarily to deliver broadband services in remote areas, where a number of Californians reside. Satellite delivery may be the only option for broadband Internet service for those residents. Advances in satellite broadband services indicate this market segment will continue to grow.

Assigned Staff:

Legal Division: Helen Mickiewicz, Assistant General Counsel, Legal Division; 415.703.1319.

Communications Division: Michael Morris, mmo@cpuc.ca.gov, 415.703.2112; Robert Osborn, rol@cpuc.ca.gov, 916.327.7788

² FNPRM. at para. 16.