

**BEFORE THE
NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION
WASHINGTON, D.C. 20554**

In the Matter of:

Improving the Quality and Accuracy of
Broadband Availability Data.

Docket No. 180427421-8421-01

**COMMENTS
OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION**

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I. INTRODUCTION

The California Public Utilities Commission (California or CPUC) submits these comments in response to the National Telecommunications and Information Administration's (NTIA) request for comment on improving the quality and Accuracy of Broadband Availability Data.¹ In September 2017, the CPUC submitted comments in response to the *Further Notice of Proposed Rulemaking (FNPRM)* issued by the Federal Communications Commission (FCC), in which the FCC sought input on modernizing its Form 477 data collection program.² California's recommendations here refer to the *FNPRM*, and largely track what the CPUC previously submitted to the FCC in that docket.

II. BACKGROUND

In 2009, the CPUC received a 5-year \$8M grant from the NTIA to collect, process, verify, and map broadband data for the State of California. To make these data accessible to a broad audience, the CPUC began publishing its interactive on-line broadband availability map. The NTIA's program ended in 2015, and the task of collecting broadband availability data was shifted from the NTIA to the FCC.

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 for

¹ Department of Commerce National Telecommunications and Information Administration,] *Improving the Quality and Accuracy of Broadband Availability Data*, Docket No. 180427421-8421-01, released May 30, 2018. See <https://www.gpo.gov/fdsys/pkg/FR-2018-05-30/pdf/2018-11483.pdf>

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

purposes of the California Advanced Services Fund (CASF). 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— California has over 700,000 census blocks covering 163,696 square miles —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.

The CPUC's method of collecting mobile broadband data differs substantially from the FCC's. The FCC relies on data that 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 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 lands. The same locations are visited each year. The CPUC then uses geo-statistical tools to create a visualization of expected service quality at the locations between specified test points.

Rather than simply displaying the throughput speeds measured, the CPUC also measures and takes other indicia of service quality into account such as latency, packet loss and jitter. For service availability data at the Census block level, a provider offering service will report 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.

California offers the following recommendations for revising the Form 477 data program in order to improve the value of the data provided. Silence on other issues raised in the NTIA’s request for comment should not be construed as agreement or disagreement.

III. DISCUSSION

A. Identifying additional broadband availability data:

- 1. 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 its California Advanced Services Fund (CASF). California is currently processing December 2017 data from over

120 providers, which represents more than 99.9% of the reported broadband subscriptions in the state. 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.

The CPUC also collects broadband data on community anchor institutions, and publishes a layer containing that data on our online interactive map. The CPUC has improved on the FCC's Form 477 data collection in a number of ways, as outlined in these comments, and recommends that the FCC adopt these refinements.

2. 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?

The CPUC urges the FCC to release publicly data that is not deemed confidential. In the *FNPRM*, the FCC proposed 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 proposed 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.

3. 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:

- 1) Created and implemented CalSPEED, an application to develop measurement techniques;
- 2) Published a mobile crowd-sourcing application; and
- 3) Performed semiannual 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, the CPUC has collected mobile test results at the same 1,986 locations throughout California, and employed those results to create a statistical model using interpolation to represent predicted speeds between test locations and publish it as a layer

³ *FNPRM*, ¶ 22.

on our interactive map. 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 this very data 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.

CalSPEED differs from other speed tests because it tests to two servers, one on the west coast and the other on the east coast and averages results from the two tests. Moreover, CalSPEED performs additional tests to measure broadband quality. The CalSPEED app provides a scorecard on video streaming, two-way video conferencing, voice over LTE, latency, and jitter. CalSPEED source code⁴, as well as the test results⁵, are open source and available to the public.

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, coverage⁶. A field test requirement would be the best way to make accurate assessments of availability and comparisons between networks. 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.

⁴ To download the CalSPEED source code, go to our GitHub site at <https://github.com/CalSPEED>.

⁵ <http://www.cpuc.ca.gov/General.aspx?id=1778>.

⁶ *FNPRM*, ¶ 22.

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. Unlike the FCC's SamKnows device⁷, the CPUC's device measures in-home WiFi quality in order to increase our understanding of the effect WiFi hardware may have on internet speeds measured over Ethernet. The CPUC will make results from these tests available to the public, and also will inform both the NTIA and the FCC of these results.

B. Validating broadband availability data:

- 1. 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. The CPUC offers its methodology used to validate broadband deployment, *California Broadband Data Processing and Validation Data as of December 31, 2016*.⁸ The CPUC validates broadband deployment data with 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 feedback, and EDX Signal radio modeling software. The

⁷ See the FCC's Measuring Broadband America program at <https://www.fcc.gov/general/measuring-broadband-america>.

⁸

<ftp://ftp.cpuc.ca.gov/telco/BB%20Mapping/California%20Broadband%20Validation%20Methods%20-%20Version%20FINAL.pdf>

FCC should also consider using adoption data as a possible means to evaluate whether deployment is sufficiently thorough within a reported census block area.

C. Identifying gaps in broadband availability:

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

The CPUC supports 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. Accordingly, the CPUC recommends the FCC adopt the reporting method used by the Universal Service Administration Corporation (USAC), which requires² 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.”¹⁰ 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.

² See “Geolocation Methods: A guide to successfully collecting broadband deployment data,” https://www.usac.org/_res/documents/hc/pdf/tools/HUBBGeolocationMethods.pdf.

¹⁰ *FNPRM*, ¶ 37.

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.¹¹ The CPUC supports a requirement that mobile broadband and voice subscription data be collected at a more granular level, consistent with the recommendation regarding deployment data.¹² We propose using the billing address as the subscriber's location rather than the place of use, which is not always known for mobile services.

Finally, the CPUC supports more detailed reporting requirements for satellite services. The *FNPRM* acknowledges a growing market for satellite mobile broadband and asks whether it would be appropriate to make additional modifications to Form 477 to include this service.¹³ 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.

IV. CONCLUSION

The CPUC appreciates the opportunity to submit comments on these issues and reiterates the importance that gathering accurate broadband data has played in achieving our policy goals, as well as fulfilling our regulatory responsibilities. By relying on the best possible data, California can more effectively ensure the provision of quality voice

¹¹ *Id.* ¶¶ 26-29.

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

¹³ *FNPRM*, ¶ 16.

and broadband services, maintain universal voice service, and promote the universal deployment and adoption of broadband services in this rapidly changing industry in California.

Respectfully submitted,

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