



High Impact Areas for Broadband Availability

STAFF WHITE PAPER

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EXECUTIVE SUMMARY

California Public Utilities Commission's Communications Division (CD) staff offer this white paper as part of its efforts to increase broadband deployment. In this white paper, CD staff identifies thirteen areas containing 34,228 households we believe represent the best "bang for the buck" for deploying broadband Internet infrastructure to more California households.

In identifying these high impact areas, we specifically searched for areas with sufficient potential subscribers to maintain a network, relatively high household density, the presence of unserved households, the lack of significant competition and the lack of challenging terrain that would drive up deployment costs. CD staff first analyzed household density, creating 46 "areas of interest" comprising groups of census blocks with a household density of higher than 150 households per square mile. CD staff refined this list by removing areas lacking unserved households, areas partially served by fixed wireless, areas where 60 percent or more of households already have Internet service at speeds of 10/1 and areas with challenging terrain.

As part of this effort, CD staff now requests public comment on this preliminary white paper. In particular, we seek comments on the methodology used, whether existing Internet service providers already serve the identified areas, if current providers will commit to serve the identified or if we inadvertently overlooked a particular community. This preliminary paper will be finalized based on input received by March 17, 2017, 21-days following a public workshop on February 28, 2017.

Following final identification of the "high-impact areas," staff could draft a Commission resolution that provides applications to serve such areas "priority review" above other pending projects or out of area projects received. CD staff intends to host further public workshops focused on improving CASF program efficiency and efficacy and alternatives to reach the goal of providing 98 percent of California households with access to Internet service at served speeds. The subject of how the CASF infrastructure program may be revised will be addressed in a second workshop subsequent to the February 28th workshop.

BACKGROUND

California Public Utilities Commission (“CPUC” or “Commission”) Communications Division (CD) staff offer this white paper as part of its efforts to increase broadband deployment, pursuant to the objectives contained in Public Utilities Code sections 709 and 281.

In Public Utilities Code (Pub. Util. Code) section 709, the California Legislature declares that California’s telecommunications policies include:

- Continuing our universal service commitment by assuring the continued affordability and widespread availability of high-quality telecommunications services to all Californians; and
- Encouraging the development and deployment of new technologies and the equitable provision of services in a way that efficiently meets consumer need and encourages the ubiquitous availability of a wide choice of state-of-the-art services.¹

Under Pub. Util. Code section 281 (b) (1), the goal of the California Advanced Services Fund (CASF) program is to approve by December 31, 2015, funding for infrastructure projects that will provide broadband access to no less than 98 percent of California households.

Estimates of Remaining Unserved & Underserved

As of December 2015, the latest available data, California has not met the 98 percent goal. Table 1, below, displays the number and percentage of California households having access to broadband by technology, excluding satellite.² The data indicates that 12,323,230 households, or 95.2 percent of all California households, are located in census blocks served by wireline broadband at speeds of 6 Mbps upstream and 1.5 Mbps downstream (6/1.5 Mbps) or greater. Additionally, 325,955 households, approximately 2.5 percent of all households, are underserved and 292,764, or roughly 2.3 percent of all households, remain unserved. This translates to 618,719 households with underserved speeds, unserved speeds, or no service at all (other than satellite).

¹ See Pub. Util. Code § 709 (a) and (c)

² The CASF program explicitly excludes satellite service availability unless service is provided through a CASF grant. Satellite broadband service is limited to residences with direct line-of-sight and is characterized by high latency. Because of this, the FCC does not include satellite broadband in their Annual Broadband Progress Reports to Congress. As of June 30, 2015, the FCC reported only 1.7 million residential satellite broadband subscriptions at or above speeds of 3 Mbps down and 0.768 Mbps up. See “Internet Access Services: Status as of June 30, 2015,” page 21, Figure 18, published by the FCC’s Industry Analysis and Technology Division Wireline Competition Bureau, August 2016.

Table 1. California Households Served by Broadband by Technology³

Broadband Availability by Technology	Total Households	Served Households <i>Availability of at least 6 Mbps down and 1.5 Mbps up</i>		Underserved Households <i>Availability at less than 6 Mbps down or 1.5 Mbps up</i>		Unserved Households <i>Availability at less than 768 Kbps down or 200 Kbps up</i>	
		Count	Percentage	Count	Percentage	Count	Percentage
Wireline	12,941,949	12,323,230	95.2%	325,955	2.5%	292,764	2.3%
Fixed Wireless	12,941,949	3,958,990	30.6%	168,173	1.3%	8,814,785	68.1%
Mobile	12,941,949	1,006,042	7.8%	11,499,033	88.9%	436,873	3.4%
Combined	12,941,949	12,636,342	97.6%	287,997	2.2%	17,609	0.1%

Thus, with respect to wireline availability, the State remains approximately within 359,000 households, or 2.8 percent, of meeting its 98 percent served goal. In contrast, considering all three technologies combined, there remain just 0.4 percentage points from reaching the 98 percent goal, with just 57,768 households needing to be served to meet the state goal.

We caution against use of the combined technology numbers shown above to determine if the State goal has been met. First, while availability of all three technologies is already considered when evaluating CASF applications, CD staff experience has shown that **the existence of fixed-wireless providers does not guarantee availability to all households within a census block.** The majority of fixed-wireless service areas do not provide 100 percent availability at served speeds due to factors such as terrain and trees. **Accurate consideration of mobile and fixed-wireless service availability requires case by case review.** For example, staff has upheld project challenges by fixed-wireless providers resulting in removal of project areas and outright project denial. **Additionally, CD staff has removed areas from project applications where mobile testing has shown adequate mobile broadband availability.** Further, the Federal Communications Commission (FCC) excludes mobile from its CAF II broadband availability analysis.

Second, CASF regional consortia grantees and community members have expressed a preference for wireline service. Third, there remains a debate about which technology best delivers reliable broadband service. Data presently is insufficient to assess reliability across the three technologies. We have a robust data set for mobile service from our CalSPEED testing program and plan to gather wireline and fixed-wireless reliability data in a coordinated fashion this year.⁴

Rural Deployment Lags

Although California has not yet met the goal of providing 98 percent of households with access to broadband, California’s urban areas already meet that goal. Over 87 percent of the California population lives in 5% of the California area and are largely served by wireline broadband. In

³ CPUC published validated service provider data as of December 31, 2015. Data is reported to the Commission at the census block level, meaning if one household in a census block is served, the entire census block is served. CD staff validation efforts have resulted in over 10 thousand census blocks being changed from “served” to “unserved.”

⁴ The Commission directed staff to engage a third party survey of consumer broadband speed experience measured by the CalSPEED fixed location test. Decision (D.) 16-12-025, Ordering Paragraph 4

contrast, thirteen percent of the population is unevenly distributed in the remaining 95 percent area of which fixed-wireless is an important but niche solution. Additionally, mobile broadband is highly variable and is the least available of the three technologies at served speeds, based on our estimates. The need for broadband facilities investment remains of greatest interest to rural constituents, where household broadband availability over wireline facilities is only about 47 percent, compared to 98 percent of urban areas.⁵

Not included in the numbers contained in Table 1, above, are eleven additional CASF infrastructure grants awarded by the CPUC in 2016 that will eventually connect an additional 18,249 households in rural areas. These and the approximately remaining 42,000 households associated CASF projects currently underway will appear in the “served” availability map after their project is completed and households are connected. Confirmation of these CASF builds and any other service provider builds in bringing California to the 98 percent goal may lag 12 months.

The Commission’s recent approval of service provider license transfers to Frontier and Charter included build-out requirements that will assist in broadband deployment in rural areas,⁶ but may not completely meet the 98 percent goal. At this time the Commission does not have a list of all census blocks Frontier and Charter will serve as they have some discretion to target their build-out commitments. Additionally, some of the commitments may improve service in areas already deemed “served” on the CASF eligibility map, and thus would not increase the statewide count of “served households.”

Further, FCC support will also lead to increased broadband deployment in rural communities. In Summer 2015, the three largest wireline telephone corporations in the State accepted CAF Phase II support.⁷ Here also, the overall effect on the CAF II commitments is unclear for the reasons above and additionally because CAF II commitments extend to “eligible locations”, and do not include all

⁵ See CASF Annual Report, Page 3, Table 1, published April 1, 2016.

⁶ As part of two Commission decisions, both Frontier and Charter have network expansion and upgrade requirements. For Frontier see Commission Decision 15-12-005 at p. 57-58; for Charter see D. 16-05-007, Ordering Paragraph 2 e-h. As a condition of the Commission approving its acquisition of Verizon California in December 2015, Frontier agreed to the following buildout requirements:

- Providing 25/2-3 to an additional 400,000 households by December 31, 2022;
- Providing 10/1 an additional 100,000 unserved households beyond its CAF II commitments by December 31, 2020; and
- Deploying 6/1.5 to an additional 250,000 households.

As a condition of the Commission approving its merger with Time Warner in May 2016, Charter agreed that, subject to completing the deployment of 70,000 new households in analog-only cable service areas in Kern, Kings, Modoc, Monterey, San Bernardino and Tulare counties, within three years of the closing it would deliver broadband speeds of at least 100 Mbps to all homes passed within its service area and by December 31, 2019 it would offer Internet service with speeds of at least 300 Mbps download to all households with current broadband availability in its California network.

⁷ The FCC’s Connect America Fund, Phase II (CAF II) program holds potential to improve broadband deployment in California. During Phase II, the FCC will provide ongoing support for rural broadband networks capable of delivering speeds of at least 10/1 to homes and businesses nationwide. Carriers receiving CAF support must build out broadband to 40% of funded locations by the end 2017, 60% by end of 2018, and 100% by the end of 2020. AT&T will receive over \$60 million annually through 2020 to provide access to over 141,000 locations. Including Verizon’s commitments with Frontier’s (Frontier subsequently purchased Verizon California’s wireline network), Frontier will receive \$45 million annually through 2020 to provide access to over 90,000 locations. When the FCC determined eligibility, none of these locations had access to Internet service at speeds of 4/1.

households and the Program's minimum performance standard for upload speed is 500 Kbps below the CASF upload speed standard of 1.5 Mbps.

CASF Program High Priority Areas and Program Experience

In March of 2014, CASF regional consortia, with general guidance from CD staff, identified priority areas for broadband projects in each of their regions.⁸ These consortia, as well as four unrepresented counties, identified 182 priority areas in 47 counties based on several considerations including social and economic impact, feasibility, anchor institutions, income levels, opportunities for resource management and number of households without broadband access at served speeds. In hopes that such "priority identification" would assist service providers and spur CASF participation, the Commission subsequently recognized and approved the priority areas by resolution.⁹

In April 2014, the newly published program eligibility maps indicated that 98.3 percent of California households already had mobile broadband, making many of the identified "high-priority" areas program ineligible for CASF infrastructure grants.¹⁰ Subsequent feedback from CASF consortia and affected communities challenged the assumption that mobile provided adequate services and such available mobile services did not meet the intent of the program.

In response, CASF staff implemented increasingly stringent standards which required mobile availability to be reliable about 84 and 98 percent of the time during the test, respectively.¹¹ Following use of the more stringent mobile availability test and public feedback regarding the lack of availability, most of the areas formerly ineligible for a CASF grant were thereafter eligible.

Today, the latest CASF program eligibility maps¹² show mobile availability at served speeds greatly reduced relative to maps published in annual reports prior to 2015. While mobile service is nearly ubiquitously available at underserved speeds, no CASF applications to provide mobile service have been received. Some fixed wireless CASF projects have been approved, but the majority of projects received and approved have been wireline, and most wireline applications have included build-out of fiber facilities. In some cases the fiber extends as last-mile facilities connecting directly to the household, and in other cases serves as middle-mile facilities providing future last-mile wireline or fixed-wireless connections.

Whenever a CASF project is brought for CPUC consideration, the staff resolution makes note of the areas designated as "high priority." However, the "high-priority" designation has not in itself

⁸ March 3-4, 2014, CD staff hosted its 2nd annual Regional Consortia Learning Summit. The focus of the summit was to discuss and identify priority areas throughout the State in need of broadband infrastructure deployment in order to create a list of priority areas for which CASF project proposals will be sought.

⁹ Commission Resolution T-17443, dated June 26, 2014, p. 10. The priority areas are depicted online; <http://arcg.is/2kLX1NB>

¹⁰ CASF Annual Report, published April 1, 2014, page 26.

¹¹ See 2014 and 2015 CASF Annual Reports. CPUC Staff calculated the throughput level represented by two standard deviations below the CalSPEED tested mean, indicating that a consumer will receive service at least that fast 98% of the time. Assuming a normal distribution of data, adopting a speed standard at either one or two standard deviations below the mean provides that available speeds meet or exceed the speed standard 84% (mean minus one standard deviation) or 98% (mean minus two standard deviations) of the time. Because test data is not normally distributed, the probability of availability will vary. Field test reports utilizing this methodology are available, See; <http://www.cpuc.ca.gov/General.aspx?id=1778>

¹² <http://www.cpuc.ca.gov/General.aspx?id=1197>

affected which projects are approved, nor is it clear to staff that the identification of “high-priority” areas has directly led to more grant applications.

CD staff offers a new approach in this preliminary white paper to ensure a uniform methodology for identification of areas, and to provide greater focus, in light of limited remaining CASF infrastructure grant program funds and remaining unserved and underserved households. (For program fund balance, see Appendix A: CASF Status as of December 31, 2016). Our intent is to identify the communities representing the biggest “bang for the buck,” what we call “high impact areas.” We believe the identified “high impact areas” represent sustainable network builds or expansions due to sufficient potential subscribership, , relatively high household density, the lack of significant competition from other Internet service providers and the lack of challenging terrain that would drive up deployment costs. We also balanced the need for network sustainability with the requisite presence of unserved households¹³ to ensure any potential CASF applications meet the statutory requirement. This identification could lead to “fast track” status of such projects that was not afforded to the prior “high-priority” designated projects. Details on our methods, along with the list of high impact areas, are below.

HIGH IMPACT AREA METHODOLOGY

In preparing this preliminary white paper, CD staff employed a variety of quantitative and qualitative methods and tools to identify high impact areas, including data analysis using Excel and geospatial analysis using ArcGIS. Sources include 2010 Census data and the broadband mapping data which the Commission collects on an annual basis, with the latest submission reflecting data as of December 31, 2015.¹⁴

Using this information, CD staff mapped the unserved and underserved areas of the state,¹⁵ adding household density (the number of households per square mile) as a layer.¹⁶ CD staff used the same density tiers the Central Coast CASF Broadband Consortium used when it developed its regional priorities.¹⁷ Map 1 displays these overlaid areas. CD staff used the map to identify groups of dense blocks (areas in the tow shades of red), finding the 46 “areas of interest” depicted in Map 2 (note that high impact areas began as areas of interest).

¹³ Pub. Util. Code § 281 (b) (1) requires that the Commission prioritize CASF infrastructure projects that provide last-mile broadband Internet access to households that are unserved by an existing facilities-based broadband provider.

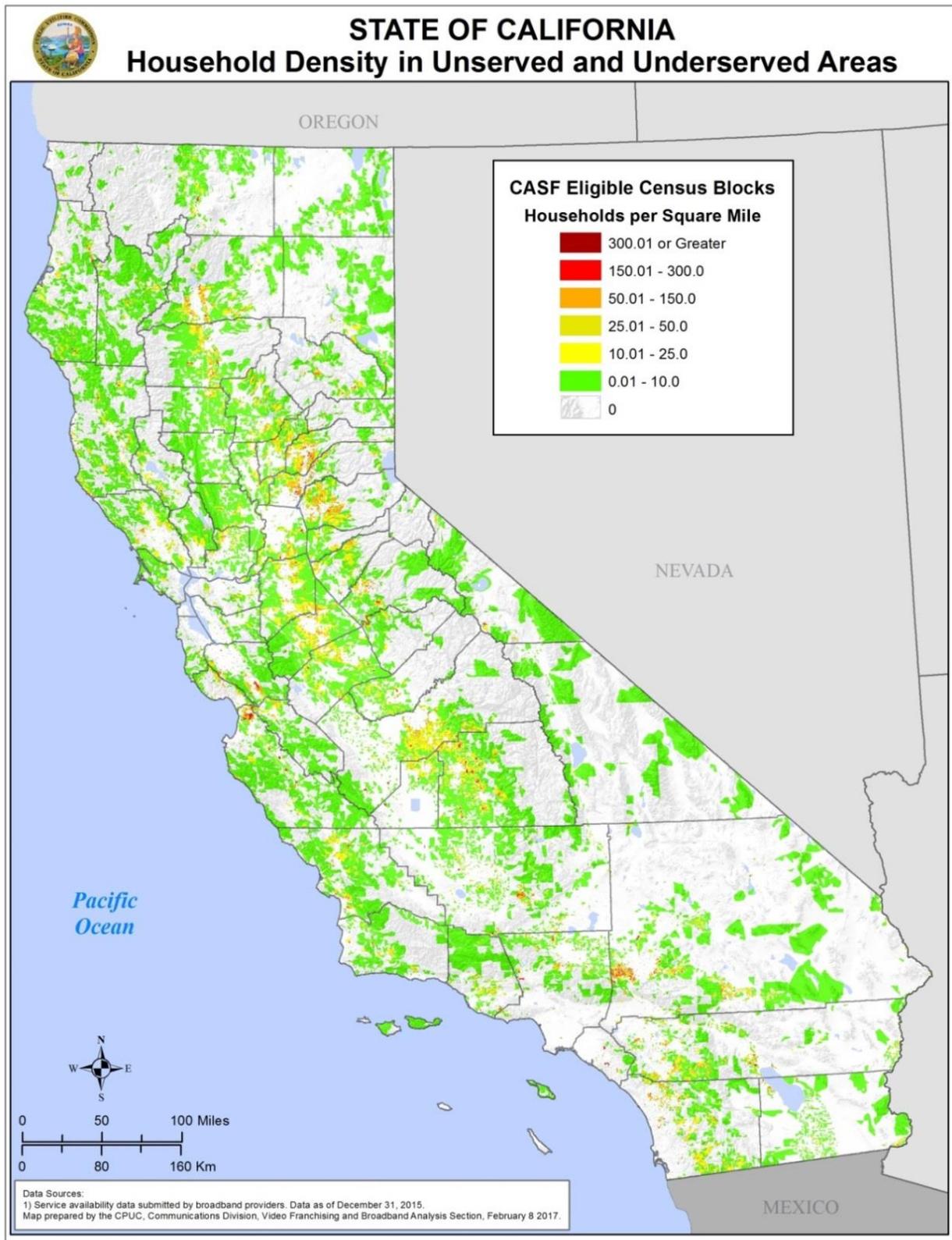
¹⁴ Broadband data provided pursuant to annual data request: <http://www.cpuc.ca.gov/General.aspx?id=2540>

¹⁵ This study uses the same speed thresholds used by the CASF Program, though in this case CD staff began with wireline service and checked for fixed wireless service later on. An area is underserved if broadband is only available at speeds less than 6Mbps downstream/1.5 Mbps upstream and more than 768 kbps down/ 200 kbps up. An unserved area has access to less than 768 kbps down/ 200 kbps up.

¹⁶ Note census blocks without households were not considered.

¹⁷ For more information, please see the Central Coast Broadband Consortium’s website at: <http://map.centralcoastbroadbandconsortium.org/>

Map 1. Household Density in Unserved and Underserved Areas



From the 46 identified areas of interest, CD staff removed areas containing any the following:

- areas lacking unserved households;
- areas partially served by fixed wireless;
- areas where 60 percent or more of households have Internet service at speeds of 10/1; and
- areas with challenging terrain.

As noted in Table 1 below, thirteen areas of interest remained, which we refer to as “high impact areas.”

Table 2. High Impact Area Analysis Results

	Community	High Impact Area?	Reason
1	Allendale/Vacaville/Winters	No	Served by Fixed Wireless and 0 unserved HHs
2	Alta Sierra	No	Complex Terrain
3	Anderson City	No	Served by Fixed Wireless
4	Apple Valley	Yes	/
5	Apple Valley North	Yes	/
6	Arroyo Grande/Nipomo	Yes	/
7	Avalon	No	No Unserved Households and Complex Terrain
8	Bear Valley Springs	No	Weighted Average MAD and MAU near 10/1; Complex Terrain
9	Bella Vista/Millville/Mountain Gate/Palo Cedro	No	Served by Fixed Wireless
10	Bolinas	Yes	/
11	Coalinga	No	More than 60% of Households served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
12	Cobb	Yes	/
13	Cutler/Orosi	No	Weighted Average MAD and MAU near 10/1
14	Desert Shores	Yes	/
15	Frazier Park	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
16	Garberville Benbow Redway	No	Served by Fixed Wireless and Complex Terrain
17	Greenfield	No	More than 60% of Households served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
18	Gustine	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
19	Harold/Galt/Wilton	No	Served by Fixed Wireless
20	Hasley Canyon	No	Complex Terrain

	Community	High Impact Area?	Reason
21	Huron	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
22	King City	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
23	Laguna Woods	Yes	/
24	Lake Shasta	No	Served by Fixed Wireless
25	Lancaster Northwest	Yes	/
26	Los Molinos	No	Served by Fixed Wireless
27	Lucerne Valley	Yes	/
28	Mammoth Lakes	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
29	North Auburn Newcastle	No	Served by Fixed Wireless
30	North Shore	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
31	Oasis	Yes	/
32	Palermo/Oroville East	No	Served by Fixed Wireless
33	Phelan	Yes	/
34	Planada	No	0 Unserved Households; More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1
35	Prunedale/Aromas/Salinas	Yes	/
36	Potrero Canyon	No	Complex Terrain
37	Quincy	No	Served by Fixed Wireless
38	Rancho Santa Fe Fairbanks Ranch	Yes	/
39	Rancho Tehama Reserve	No	Served by Fixed Wireless
40	Redding West Shasta/Keswick	No	Served by Fixed Wireless
41	Renegade	No	Weighted Average MAD/MAU near or above 10/1
42	San Martin	No	Served by Fixed Wireless
43	Shelter Cove	No	Served by Fixed Wireless
44	Spring Valley	No	Complex Terrain; partially served by Fixed Wireless
45	Thermal	No	More than 60% of HH served by at least 10/1
46	West Point	No	More than 60% of HH served by at least 10/1; Weighted Average MAD/MAU near or above 10/1

The thirteen identified high impact areas are also depicted in Map 2 and described in further detail in the next section. Although the current Commission practice is to await the receipt of CASF applications, we submit these high impact areas for public comment as part of a transparent effort to encourage CASF Infrastructure grant applications or Internet service providers’ interest in serving these communities without public funding. Our promotion of these particular communities should not be interpreted as a proposal to limit CASF funds solely to these communities.

Table 3. Population and Households in High Impact Areas

	High Impact Area	Population	Households
1	Apple Valley	2,527	922
2	Apple Valley North	1,767	622
3	Arroyo Grande Nipomo	2,348	871
4	Bolinas	1,381	579
5	Cobb	1,756	778
6	Desert Shores	1,104	344
7	Laguna Woods	18,139	12,108
8	Lancaster Northwest	1,834	608
9	Lucerne Valley	4,335	1,619
10	Oasis	3,977	810
11	Phelan	22,081	7,145
12	Prunedale/Aromas/Salinas	23,169	7,650
13	Ranch Santa Fe Fairbanks Ranch	494	172
	Totals	84,912	34,228

Finally, we wish to disclose or reiterate the following caveats to our analysis:

- **Wireline speeds per census block reported by carriers are subject to some error and/or omission.** Additionally, using availability at the census block level results in the presumption that if a provider offers service to one household in a census block, it offers service to all households within the block. It is common that not all households in census blocks are offered service by that provider, especially in rural areas.¹⁸

¹⁸ In order to make data more accurate on the California Broadband Map, which also informs policy makers regarding decisions related to CASF grant awards, CD has engaged in outreach to generate public feedback via the CPUC website,

- The Broadband Mapping Program data reflect December 31, 2015, meaning it does not include deployment activity in 2016.
- Our database included highest available speeds within each census block, not average speeds. Therefore the speed identified for each census block is not representative of the whole block.
- We found that 14 percent of blocks not served at 6/1.5 were served at anywhere from 10 Mbps to 20 Mbps downstream and 1 Mbps upstream. In a few of the areas identified, the highest available speed may be available only in a small portion of the census blocks
- The existence of one CAF II eligible location within a census block leads the entire block being marked as CAF II eligible. CAF's minimum performance standard is 10/1, which is considered "underserved" by CASF standards.
- Although in general we avoided census blocks where providers would receive CAF Phase II support, those blocks were sometimes included in our areas of interest in order to maintain as much contiguity as possible.
- Identifying areas of interest by household density was a visual exercise, meaning that potential high impact areas may have been inadvertently overlooked.

printed questionnaires and developed the CalSPEED crowd-sourced testing tools. Public feedback has allowed the CPUC to determine availability at a more granular lever. This has resulted in an ability to identify individual blocks within census tracts previously identified as served by the provider as being unserved by that provider. Note this public feedback results in instances where revised data now shows a census block being 100% unserved by that provider when there are indeed some households that are served by it.

Map 2. High Impact Areas



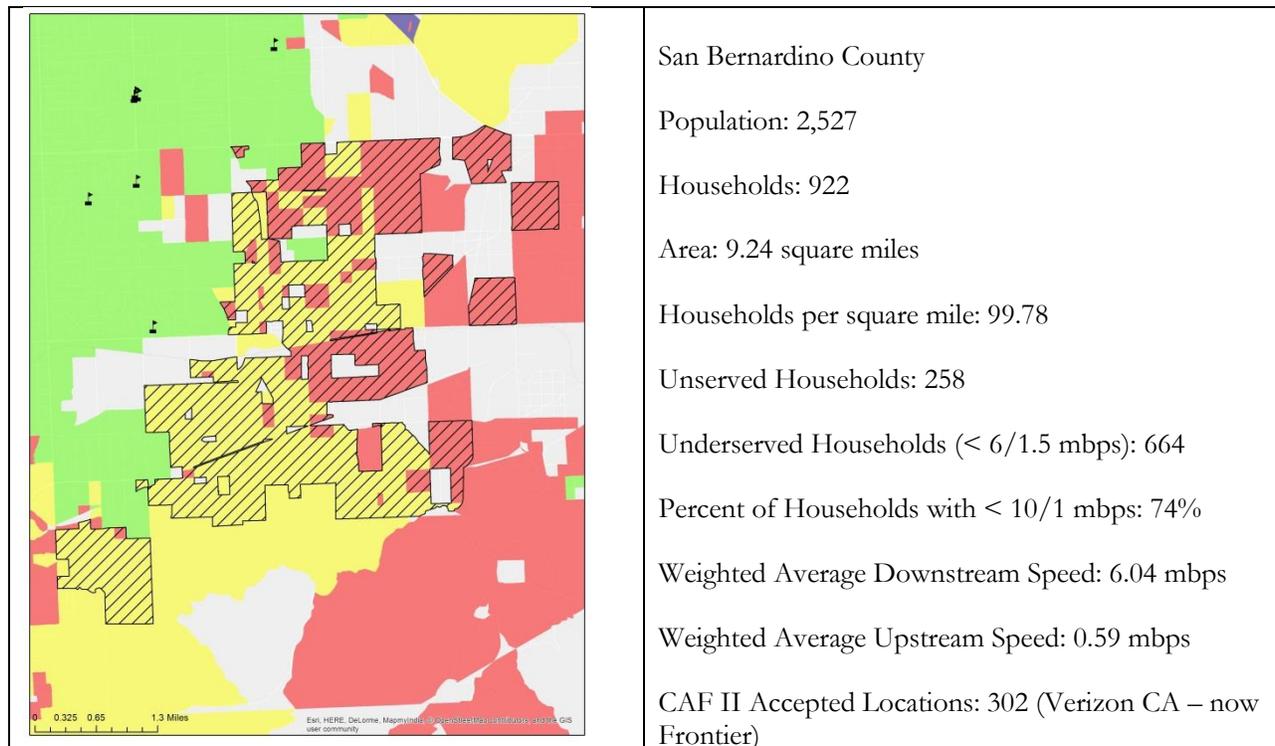
HIGH IMPACT AREAS

The following, in no particular order, are the thirteen high impact areas. Please use the legend in Table 2 for assistance.

Table 4. Legend for Figures 1-13.

<p> High Impact Areas</p> <p>Wireline Service</p> <p> Served</p> <p> Underserved</p> <p> Unserved</p>	<p>Community Anchor Institutions 2016</p> <p>Category</p> <ul style="list-style-type: none">  Fire Stations  Libraries  Medical/healthcare  Other community support - government  Other community support - nongovernmental  Police Stations  Private Schools – K through 12, enrollment >= 30  Public Schools – K through 12  University, college, other post-secondary
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1. Apple Valley



2. Apple Valley North



San Bernardino County

Population: 1,767

Households: 622

Area: 6.89 square miles

Households per square mile: 90.22

Unserved Households: 359

Underserved Households (< 6/1.5 mbps): 263

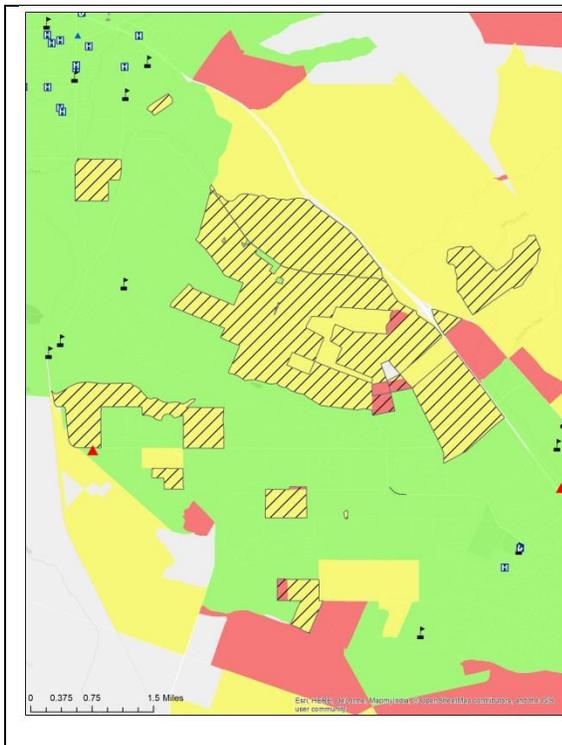
Percent of Households with < 10/1 mbps: 87%

Weighted Average Downstream Speed: 3.13 mbps

Weighted Average Upstream Speed: 0.34 mbps

CAF II Accepted Locations: 329 (Verizon CA – now Frontier)

3. Arroyo Grande/Nipomo



San Luis Obispo County

Population: 2,348

Households: 871

Area: 7.56 square miles

Households per square mile: 115.26

Unserved Households: 21

Underserved Households (< 6/1.5 mbps): 850

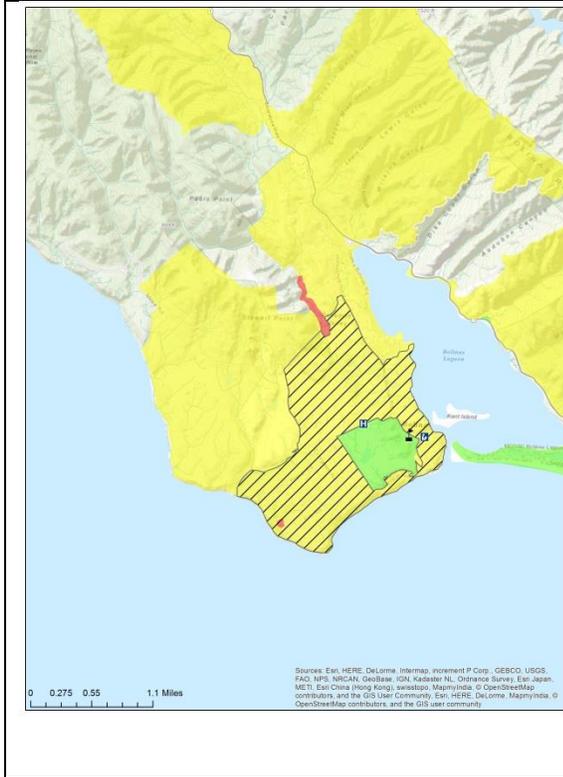
Percent of Households with < 10/1 mbps: 82%

Weighted Average Downstream Speed: 4.36 mbps

Weighted Average Upstream Speed: 0.65 mbps

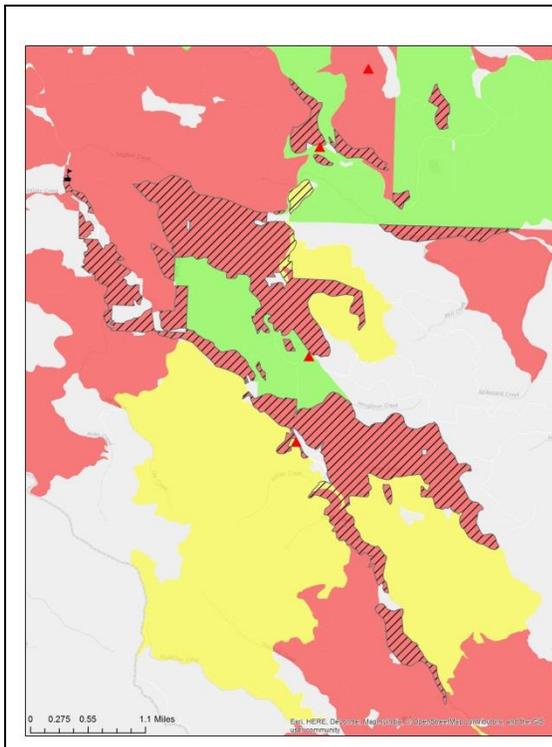
CAF II Accepted Locations: 1 (Verizon CA – now Frontier)

4. Bolinas



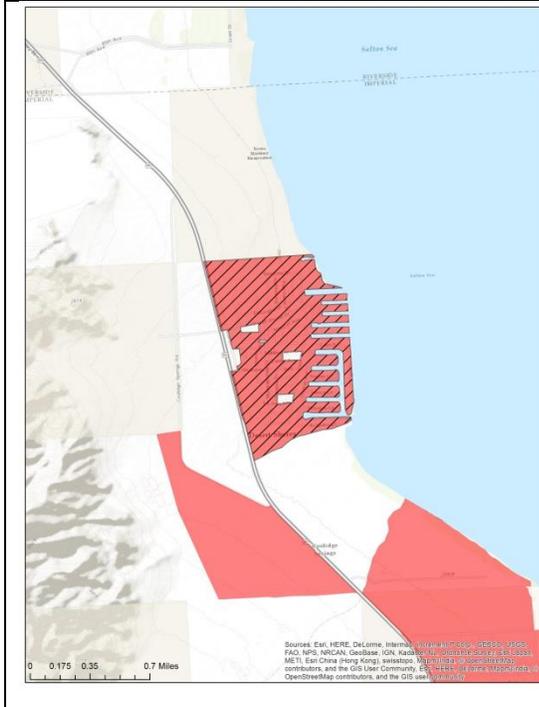
Marin County
 Population: 1,381
 Households: 579
 Area: 1.89square miles
 Households per square mile: 306.19
 Unserved Households: 4
 Underserved Households (< 6/1.5 mbps): 575
 Percent of Households with < 10/1 mbps: 100%
 Weighted Average Downstream Speed: 1.97 mbps
 Weighted Average Upstream Speed: 0.67 mbps
 CAF II Accepted Locations: 4 (AT&T CA)
 2014 Commission-adopted high priority area

5. Cobb



Lake County
 Population: 1,756
 Households: 778
 Area: 3.65 square miles
 Households per square mile: 213.01
 Unserved Households: 763
 Underserved Households (< 6/1.5 mbps): 15
 Percent of Households with < 10/1 mbps: 99%
 Weighted Average Downstream Speed: 0.12 mbps
 Weighted Average Upstream Speed: 0.014 mbps
 CAF II Accepted Locations: 0

6. Desert Shores



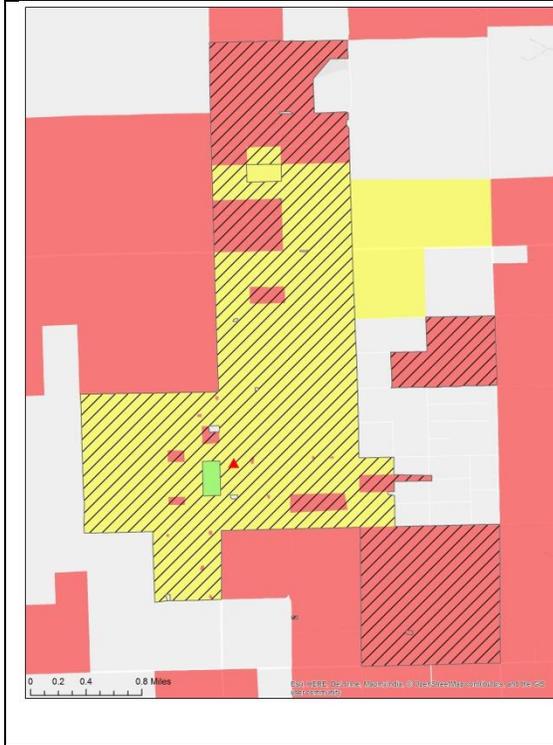
Imperial County
 Population: 1,104
 Households: 344
 Area: 0.67 square miles
 Households per square mile: 523.91
 Unserved Households: 344
 Underserved Households (< 6/1.5 mbps): 0
 Percent of Households with < 10/1 mbps: 100%
 Weighted Average Downstream Speed: 0.0 mbps
 Weighted Average Upstream Speed: 0.0 mbps
 CAF II Accepted Locations: 0

7. Laguna Woods



Orange County
 Population: 18,139
 Households: 12,108
 Area: 2.83 square miles
 Households per square mile: 4,276.08
 Unserved Households: 3,565
 Underserved Households (< 6/1.5 mbps): 8,543
 Percent of Households with < 10/1 mbps: 100%
 Weighted Average Downstream Speed: 2.44 mbps
 Weighted Average Upstream Speed: 0.68 mbps
 CAF II Accepted Locations: 1 (AT&T CA)

8. Lancaster Northwest



Los Angeles County

Population: 1,834

Households: 608

Area: 6.05 square miles

Households per square mile: 100.46

Unserved Households: 110

Underserved Households (< 6/1.5 mbps): 498

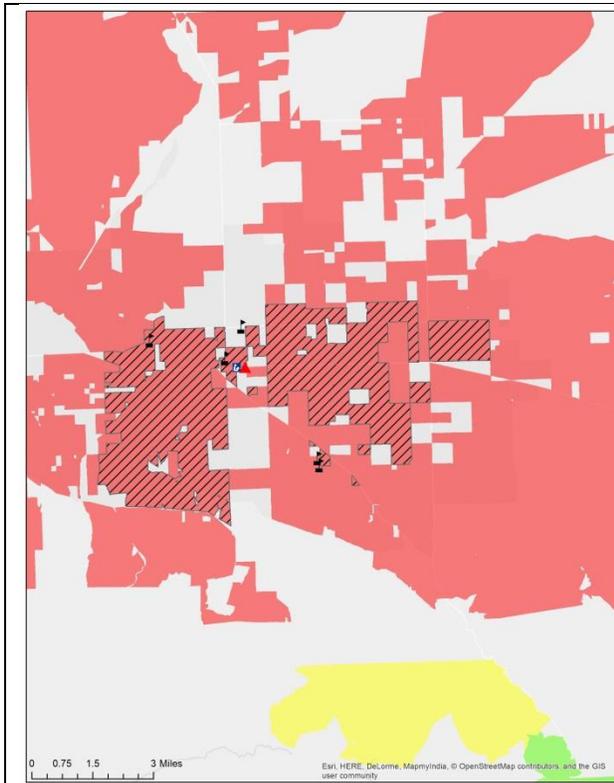
Percent of Households with < 10/1 mbps: 42%

Weighted Average Downstream Speed: 9.78 mbps

Weighted Average Upstream Speed: 0.76 mbps

CAF II Accepted Locations: 169 (Verizon CA – now Frontier)

9. Lucerne Valley



San Bernardino County

Population: 4,335

Households: 1,619

Area: 22.98 square miles

Households per square mile: 70.46

Unserved Households: 1,619

Underserved Households (< 6/1.5 mbps): 0

Percent of Households with < 10/1 mbps: 100%

Weighted Average Downstream Speed: 0.0 mbps

Weighted Average Upstream Speed: 0.0 mbps

CAF II Accepted Locations: 707 (Verizon CA – now Frontier)

10. Oasis



Riverside County

Population: 3,977

Households: 810

Area: 0.22 square miles

Households per square mile: 3,706.35

Unserved Households: 614

Underserved Households (< 6/1.5 mbps): 196

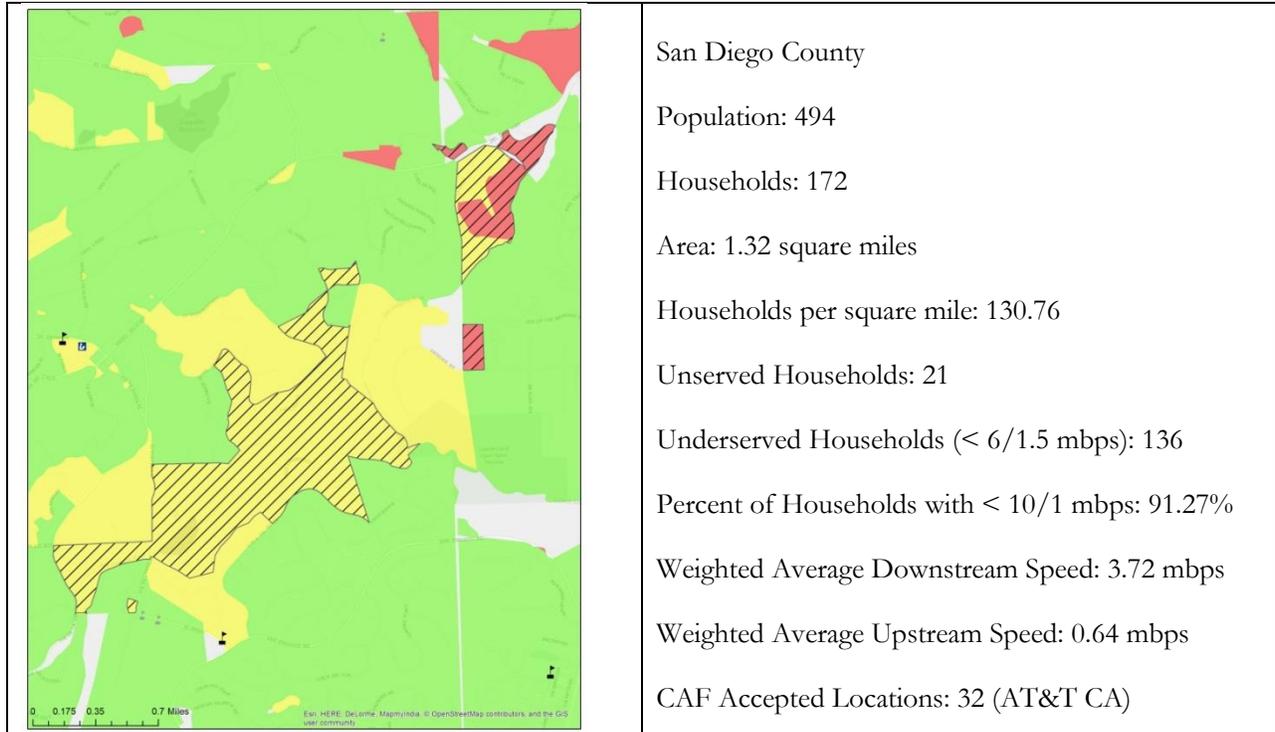
Percent of Households with < 10/1 mbps: 100%

Weighted Average Downstream Speed: 0.90 mbps

Weighted Average Upstream Speed: 0.18 mbps

CAF II Accepted Locations: 4 (Verizon CA – now Frontier)

13. Rancho Santa Fe Fairbanks Ranch



NEXT STEPS

Having identified these high impact areas, CD staff now requests public comment on this white paper. In particular, we seek comments on the themes identified below.

- Our methodology. Are there other factors we should consider? Please keep in mind our “bang for the buck” focus. Suggested changes to our methodology that do not keep with that theme will not be considered germane to our analysis.
- Existing service. Are Internet service providers already serving the identified areas? As noted in the white paper, the latest available data reflects December 31, 2015.
- Commitments to serve certain communities. If an Internet service provider is willing to serve these communities, and provides firm deadlines for this commitment, and agrees to allow for verification of its service, CD staff will remove that community from the high impact areas list.
- Other communities that may be high impact areas. If you believe CD staff may have unintentionally omitted a high impact area, please provide us with the following information for our analysis:
 - the name of the community/area;
 - its county;
 - an assertion that the community/area is unserved or underserved by the current CASF definition;
 - total number of households;
 - household density; and

- total number of unserved households.
- Process moving forward. Once CD staff finalizes this whitepaper, after reviewing feedback provided in written public comments and during the workshop, what should be our next steps? For example, should the Commission adopt the “high impact” areas as part of a resolution? Should the Commission give these high impact areas “fast track status” since these areas have already been vetted by staff?

CD staff invites public feedback on this draft white paper by submitting written comments to Ms. Clover Selden at You-Young.Selden@cpcuc.ca.gov by no later than 5pm on March 15, 2017. Additionally, CD staff will host a workshop on February 28, 2017 from 1:30pm-3:30pm in the Courtyard Room at the Commission’s headquarters in San Francisco (505 Van Ness) to discuss the “high-impact area” methodology. Your feedback or comments regarding this “high-impact areas” white paper need not be served on the email distribution list. This is not a proceeding. Rather it is an informal staff effort that may or may not lead to formal Commission action. Any such action, should it occur would be preceded by public notice and an opportunity for formal public comment.

As mentioned in the introduction, this white paper is the first part of CD’s efforts to improve CASF program efficiency and efficacy. CD staff next intends to engage stakeholders regarding various alternatives to reach the 98 percent goal. The subject of how the CASF infrastructure program may be revised will be addressed in a second workshop subsequent to the February 28th workshop.



APPENDIX A: CASF STATUS AS OF DECEMBER 31, 2016

California Advanced Services Fund (CASF)

CASF Program CY 2016 Highlights

In 2016, the CPUC continued to make progress toward closing the digital divide in California. The CPUC funded 11 additional infrastructure projects to provide broadband access to 18,249 unserved and underserved households combined. The 12 regional Consortia approved in 2016 continue to advance initiatives aimed at increasing broadband deployment, access and adoption in 40 out of 58 counties in California. Additionally, there were 189 public housing infrastructure grants approved affecting 11,752 units, and 43 adoption projects to provide digital literacy training to public housing locations with 9,653 residents in 2016. The Commission adopted 24 CASF resolutions in 2016.

CASF Awards and Status by Account since Program Inception:

1. The **Broadband Infrastructure Grant Account:** Authorized \$270 million to fund capital costs of broadband infrastructure projects in unserved and underserved areas.
 - 58 projects approved; with total awards of \$152,951,278
 - 6 additional project applications pending/under review possibly encumbering \$70,565,115¹
 - Fund Balance if 6 pending applications were to be awarded: \$34,257,543
 - Activity in CY 2016: 11 projects approved, awarding \$33,977,844
 - Update; As of January 30, 2017, an additional project has been received. Of the remaining 7 projects, two are on the February 9 Commission agenda for consideration.
2. The **Broadband Infrastructure Revolving Loan Account:** Authorized \$5 million to provide supplemental financing for projects that are also applying for funds from the Infrastructure Grant Account.
 - 3 projects approved; with total awards of \$600,295
 - 1 project application pending/under review requesting \$243,311
 - Activity in CY 2016: no projects awarded
 - Fund Balance if the pending application were to be awarded: \$3,464,018
3. The **Rural and Urban Regional Broadband Consortia Grant Account:** Authorized \$15 million to fund the cost of broadband deployment activities other than the capital cost of facilities, as specified by the Commission.
 - Total awards of \$12,099,852² including grants to 17 consortia groups for prior round and 12 consortia groups for the new round.
 - 5 project applications were remaining including a late filed consortia application, submitted after deadline. pending review, requesting \$1,442,808
 - Fund Balance if the pending application were to be awarded: \$795,942³
 - Activity in CY 2016: 12 consortia applications approved, awarding \$3,226,376
 - Update; as of January 30, 2017 four consortia program applications were approved on January 19, 2017.

¹ Two project applications are near staff recommendation, to be considered on Commission February 9, 2017 agenda, totaling \$42,900,549. And four remaining project applications to be considered, totaling \$27,664,566. Assumes only one of the two competing Phelan area projects would be awarded a grant.

² This amount does not include consortia Summit costs of which the Commission reimbursed consortia a total of \$62,460 for the prior round.

³ Balance excludes future consortia Summit costs.



4. The **Broadband Public Housing Account:** Authorized \$25 million to provide grants and loans dedicated to broadband access and adoption in publicly supported housing communities.
 - 337 projects approved (275 infrastructure + 62 adoption) totaling \$9,547,393
 - 256 project applications pending review (155 infrastructure + 101 adoption) requesting approximately \$10,163,765. (Note: given that applications were received prior to the SB 745 effective date, CPUC staff intends to consider such applications based on prior rules in effect)
 - Fund Balance if pending projects were to be awarded: \$5,045,348
 - Activity in CY 2016: 232 projects approved, awarding \$6,864,084
 - Update; as of January 30, 2017 the OIR to implement recent public housing legislation, SB 745, is scheduled for the February 9, Commission agenda.

Notes

- “Fund Balance” does not include State Operations expenses post-December 31, 2016.
- All awards are preliminary and will be validated for April 1, 2017 CASF Annual Report.

Homes Passed (Updated 2/15/2017)

As of EOY 2016, the CASF program has awarded “last-mile” grants that will build facilities to 57,846 homes. Out of those awards, the completed projects have built facilities to 15,887 homes. The CASF Infrastructure program is progressing slowly toward the statutory goal, partly due to its current “wait for an applicant” design, and because many approved projects have yet to be built pending environmental permitting reviews. Additionally, CASF has approved 5 middle mile projects that have the potential to reach 248,000 households should last-mile connections be built.

Anticipated Actions for 2017 (Updated 2/15/2017)

Commission staff is developing a “high-impact analysis” identifying areas that contain unserved, or under-and-unserved areas. The “staff white paper/ report” identifies over 34,000 households, about 9% of the remaining 360,000 households that must be served in order to meet our 98% broadband availability statutory mandate. Workshops will be held on February 28th to address the “high-impact analysis” and workshops in March will be held regarding program strategies.

The CASF team is also supporting the SCO audit of the program, due to be published by April 1, 2017. We expect some discrepancies between the published CASF Annual Report and CalSTARS, mainly due to differences in time when activities occur and are reported by us in the CASF Annual Report, versus the date of financial CalSTARS recording.

The CASF team is also supporting the eFast design (applicant web portal) project. It is progressing well with IT.

On a separate note, the mobile testing CalSPEED program is being scaled back to an annual test rather than bi-annual, thereby releasing funds in-order to do a wireline testing program, as directed in the recent Competition OIR Decision 16-12-026, (which states in O.P. 4; “The Communications Division staff shall budget and seek state funding for a third party survey of consumer broadband speed experience measured by the CalSPEED fixed location test.”) Staff will report to the Commission its findings and recommendations.