PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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| **Communications Division** | RESOLUTION T- 17514 |
| **Broadband, Video and Market Branch** | **December 1, 2016** |

**R E S O L U T I O N**

**RESOLUTION T-17514: Approval of thirty-five (35) public housing infrastructure grants under the California Advanced Services Fund’s Broadband Public Housing Account totaling $1,475,481**

**I. SUMMARY**

This Resolution approves grant funding in the amount of $1,475,481 from the California Advanced Services Fund (CASF) Broadband Public Housing Account (BPHA) for 35 projects from nine applicants. These 35 projects will deploy broadband infrastructure capable of 6 mbps download and 1.5 mbps upload for 2,353 living units in these Publicly Supported Communities (PSCs). The deployment of affordable broadband in public housing will also provide enhanced access to government and e-health services, which improves public safety.

Table 1, below, lists the thirty-five public housing infrastructure grants approved:



**II. BACKGROUND**

On December 18, 2014, the Commission approved D.14-12-039 which implements the rules and guidelines for the BPHA including: eligibility and application requirements, types of activities and costs to be funded by CASF, criteria for expedited review approval of project applications by Communications Division (CD) staff, and quarterly deadlines for applications beginning January 15, 2015 through October 1, 2016. Key provisions of the decision relevant to this Resolution include:

* The Commission authorized the CD staff to review and approve applications through expedited review that meet all of the expedited review criteria.[[1]](#footnote-1) Applications not meeting the expedited review criteria may still be considered for a grant but it must go through the traditional Commission Resolution approval process.
* Grants can be awarded to finance up to 100 percent of the installation costs (inside wiring and equipment), but not maintenance or operation costs.
* Grantees must maintain and operate the network for five years after receiving Commission funding.
* The proposed network should be capable of offering residents Internet service speeds of at least 6 megabits per second (mbps) downstream and 1.5 mbps upstream with a minimum download speed of 1.5 mbps during average peak utilization periods.

On June 9, 2016, the Commission approved Resolution T-17515, authorizing CD staff to review and approve applications through expedited review for properties that are wired.[[2]](#footnote-2)

**III. APPLICANTS’ REQUEST**

On July 1, 2015, Community Housing Works (CHW), the Central Valley Coalition for Affordable Housing (CVCAH), the Housing Authority of the County of Kern (HACK), the Housing Authority of the County of Santa Barbara (HACSB), Surf Development Company (Surf) and Banneker Homes, Inc., (Banneker) submitted applications for CASF funding. On April 1, 2016, Napa Valley Community Housing (NVCH) and Peoples’ Self-Help Housing (PSHH) submitted applications for CASF funding. On July 1, 2016, EAH Housing (EAH) submitted an application for CASF funding.[[3]](#footnote-3) In total, this Resolution addresses projects from nine applicants.

*Applicants:* All nine applicants are eligible applicants as defined in D.14-12-039.[[4]](#footnote-4)

CHW has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1992. CHW has over 2,400 rental apartments in 34 communities statewide, has a less than 1% vacancy rate and a wait list of 36,000.

CVCAH has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1989. CVCAH has projects in 90 cities in California, two cities in Arizona and one city in Washington State, which provides more than 16,000 units to low income families.

HACK began operating as a public housing authority in 1940 and currently owns or manages 2,117 affordable housing units. It has provided affordable housing to over 150,000 persons and has wait lists of 10,616 for their voucher program and 13,903 for their low-income public housing.

HACSB began operating as a public housing authority in 1941. It serves 4,877 extremely low, very low and low-income households. HACSB assists 3,685 households through the federal Section 8 Housing Choice Voucher program and manages and maintains 1,192 affordable housing units.

Surf has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1988. Surf currently manages 622 low-income housing units on 13 properties on which there is a 1% vacancy rate and is participating through limited partnerships with the development of five other properties. Surf works closely with HACSB in the development of low-income housing in Santa Barbara County.

Banneker has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 2005. Banneker participates in a limited partnership with for-profit entities in the ownership of the Banneker Homes Apartments in San Francisco. Banneker Homes is a 108 unit property located in San Francisco, CA and serves families at or below 60% area median income.

NVCH has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1978. NVCH currently manages 616 housing units and has over 200 rental units in pre-development or construction stages. At this time there are combined 5,549 applications pending on waiting lists for housing within the NVCH properties, with a 98% occupancy rate (100% leased).

PSHH has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1971. PSHH operates 45 affordable housing complexes in San Luis Obispo, Santa Barbara and Ventura counties and has developed or renovated over 1,600 units for low-income populations (with a vacancy rate of less than 1% and a wait list of 6,400).

EAH has been approved by the IRS as a 501(c)(3) nonprofit organization for providing affordable housing since 1968. EAH manages over 9,000 rental apartments in over 110 communities, has a less than 1% vacancy rate and a wait list of over 20,000.

*Projects:* EAH requests funding for the installation, in two locations, of a low-cost, wireless mesh WiFi 2.4GHz 802.11n[[5]](#footnote-5) network architecture consisting of gateway routers and repeaters as wireless access points (using products from Open-Mesh Inc.[[6]](#footnote-6)). In this type of installation the network is managed offsite through a cloud based controller. Installation is relatively easy as wireless access points can be installed with little reconfiguration. The network product deployed includes access to a web-based portal through which the network can be configured, monitored, and maintained. According to EAH, this installation will be able to provide a minimum download speed of 1.5 mbps during peak use hours.

The wireless projects from CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH and PSHH utilize a wireless mesh 2.4GHz and 5 GHz WiFi 802.11ac network architecture consisting of gateway routers and repeaters as wireless access points (using products from Ruckus Wireless Inc.[[7]](#footnote-7)). This network architecture (which is a higher standard than what is being deployed in 802.11n network architecture) will have greater throughput capacity, will be subject to less noise and interference from the general environment and will provide a more stable connection.[[8]](#footnote-8) The network is managed through an onsite controller. According to CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH and PSHH, this installation will be able to provide a minimum download speed of 3 mbps during peak use hours.

PSHH (the Victoria Street Bungalows project only) requests funding for the installation of a low cost xDSL (wired) network. This installation utilizes existing copper (inside) wiring and includes equipment for broadband signal routing. According to PSHH, this installation will be able to provide a minimum download speed of 2.5 mbps during peak use hours.

**III. NOTICES AND CHALLENGES**

On July 15, 2015, CD posted a list of proposed projects inclusive to this resolution from CHW, CVCAH, HACK, HACSB, Surf and Banneker on the Commission’s CASF Public Housing account webpage[[9]](#footnote-9) and sent notices regarding the proposed projects to its email distribution list.[[10]](#footnote-10) There were no challenges to these 15 projects.

On April 11, 2016, CD posted a list of proposed projects inclusive to this resolution from NVCH and PSHH on the Commission’s CASF Public Housing account webpage and sent notices regarding the proposed projects to its email distribution list. Cox Communications challenged seven[[11]](#footnote-11) of the nine PSHH projects inclusive to this resolution. Based on T-17515 (issued on June 10, 2016) CD denied the challenges in a July 1, 2016, since the reasons stated in the challenges provided were not supported in D.14-12-039 or in P.U. Code 281(h). [[12]](#footnote-12) Resolution T-71515 also gave staff the authority to deny the challenge given the fact that the resolution modified the requirements and allowed approval of projects in buildings that are already “wired”.[[13]](#footnote-13)

On July 7, 2016, CD posted a list of proposed projects inclusive to this resolution from EAH on the Commission’s CASF Public Housing account webpage and sent notices regarding the proposed projects to its email distribution list. There were no challenges to these two projects.

**IV. PROJECT REVIEW**

1. Cost per Housing Unit

The proposed projects do not qualify for expedited review because the cost per housing unit exceeds the amount stated in the expedited review requirements (see Appendix A for a list of all projects and the cost per unit relative to the benchmarks stated in the expedited review requirements).[[14]](#footnote-14)

Of the total of all proposed CASF Public Housing Account infrastructure projects submitted by through the July, 2016, not rejected or withdrawn, 27% request funding above the per unit cost benchmarks established in D.14-12-039. Of this 27%, 81% request deployments using equipment from Ruckus Wireless, 14% request deployments using DSL and 5% request deployments using Open-Mesh wireless products. Ruckus Wireless deployments are more expensive, as only 19% of all proposed projects using Ruckus Wireless products are priced at or below the per unit benchmarks. Almost all of proposed projects using Open-Mesh products (96%) and the DSL projects (80%) are priced at or below the per unit benchmarks.[[15]](#footnote-15)

There are two wireless standards in these project proposals. Ruckus Wireless equipment uses only the 802.11ac standard, and Open-Mesh uses both the 802.11ac and 802.11n standard. Only 8% of the requested deployments using the Open-Mesh product use the 802.11ac standard and these deployments are still at or below the expedited review benchmarks, so they can be approved quickly. The Ruckus Wireless equipment is more costly, but has higher throughput capacity, directional signaling and is of better quality with a longer useful life.[[16]](#footnote-16)

The use of either the Open-Mesh 802.11n equipment or the Ruckus Wireless 802.11ac equipment represents two different approaches to the installation and operation of a wireless mesh network, both of which meet the requirements of the Public Housing Account infrastructure program. The Open-Mesh installations for the EAH projects use the 802.11n standard, which requires less expertise to install than the Ruckus Wireless installation, but still provides the required capacity of 6 mbps downstream and 1.5mbps upstream with the minimum download speed during peak hours (per program requirements). According to CD staff’s interview with relevant contractors, the Open-Mesh equipment is both cheaper and more likely to fail than the Ruckus Wireless equipment, but has the advantage of being easier to maintain the network and to replace the equipment.[[17]](#footnote-17) Because of their lower per unit costs, the Open-Mesh deployments are more likely to be approved through the expedited review process.[[18]](#footnote-18) The Ruckus Wireless installations for the CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH and PSHH projects, which use the 802.11ac standard, require more expertise to install (due to the requirement for onsite network configuration) but the equipment is more resilient, offers greater throughput and management capability and can carry more traffic.

The two EAH projects that utilize the lower cost Open-Mesh equipment have projected higher per unit costs. According to EAH, this is because the expected expense for the necessary electrical wiring for the WiFi deployment is higher for these locations than what is typical.

The Victoria Street Bungalows DSL project from PSHH has higher costs per unit since the proportionate saving in costs gained by a larger deployment is not realized for a smaller building since it only has 16 units. In this situation, the cost of the router brought up the overall per unit costs in a 16-unit building.

Based on staff research discussed above, CD finds the reasons for the extra cost per unit reasonable and recommends approval.

All of the proposed project networks are capable of offering residents internet service speeds of at least 6 Mbps downstream/1.5 Mbps upstream and can provide residents with minimum download speeds of 1.5 Mbps per unit during peak utilization periods. D.14-12-039 requires the applicant to acquire bandwidth for the networks to connect to the internet and to carry operational costs.[[19]](#footnote-19) Even though the installed networks might be capable to carry higher capacities and speeds, CD staff’s experience has been that applicants tend to purchase only the amount of bandwidth needed to meet program benchmarks.

**V. COMPLIANCE REQUIREMENTS**

CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH are required to comply with all the guidelines, requirements, and conditions associated with the grant of CASF funds as specified in D.14-12-039. Such compliance includes, but is not limited to the following:

1. **California Environmental Quality Act (CEQA)**

All CASF grants are subject to CEQA requirements unless the projects are statutorily or categorically exempt pursuant to the CEQA Guidelines.

All 35 projects require limited modifications of existing structures. The wireless projects are based on a mesh wireless network architecture consisting of ISP Modem(s), network switching and routing equipment and wireless access points. This requires installation/mounting of equipment in existing structures such as rooftops. The PSHH DSL project requires the installation of network switching and routing equipment in existing structures and use existing wiring. Such inside wiring may be replaced if found deficient.

Based on the above information, these projects meet the criteria of the CEQA categorical exemption for existing facilities (CEQA Guidelines § 15301) and CEQA Guidelines Section 15303 – New Construction or Conversion of Small Structures, involving construction, installation, and/or conversion of limited numbers of new and/or existing facilities/structures.

1. **Execution and Performance**

CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must each complete all performance under the award on or before 12 months from the date this Resolution is approved. If an applicant is unable to complete the proposed projects within the 12 month time frame requirement, they must notify the Director of CD as soon as they become aware of this possibility. If such notice is not provided, the Commission may reduce payment for failure to satisfy this requirement by timely notifying CD’s director.

In the event that CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH fails to complete the performance in accordance with the terms of the Commission’s approval, as set forth in this Resolution, the applicant must reimburse some or all of the CASF funds it has received.

1. **Project Audit**

The Commission has the right to conduct and enforce any necessary audit, verification, and discovery during project implementation/construction to ensure that CASF funds are spent in accordance with Commission approval.[[20]](#footnote-20)

The CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH’s invoices will each be subject to a financial audit by the Commission at any time within three years of completion of the project.

1. **Reporting**

CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must each submit quarterly progress reports on the status of the project irrespective of whether grantees request reimbursement or payment. Quarterly progress reports should be submitted on January 1, April 1, July 1 and October 1. In the quarterly report, CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must identify foreseeable risks that might prevent it from meeting future milestones. Before full payment of the project, CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must submit a project completion report. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH shall also include speed test results in its completion report. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must certify that each progress and completion report is true and correct under penalty of perjury

CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH are required to maintain the broadband network for five years after it has been installed. After installation, for a five year period, they must also submit quarterly reports showing the percentage of up time, the number of unique log-ons (either by individuals or by units) and the amount of data used.[[21]](#footnote-21)

1. **Payments**

Submission of invoices from and payments to CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH shall be made at completion intervals in accordance with Section X of Appendix B of D.14-12-039 and according to the guidelines and supporting documentation required in D.14-12-039. As referred to in Section X, payment to the recipients will be on a progress billing basis with the first 25 percent to be made upon the proponent’s submission to the Commission staff of a progress report showing that 25 percent of the total project has been completed. Subsequent payments shall be made on 25 percent increments showing completion at 50 percent, 75 percent, and 100 percent. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must submit a project completion report before full payment.

Payment to CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH will be made in accordance with, and within the time specified in California Government Code § 927 *et seq*. The Commission generally processes payments within 20-25 business days, including CD and Administrative Services review. The State Controller’s Office (SCO) requires an additional 14-21 days to issue payment from the day that requests are received by SCO from Administrative Services.

**VI. SAFETY CONSIDERATIONS**

The deployment of affordable broadband in public housing will improve access to government and e-health services, which improves safety.

**VII. COMMENTS**

In compliance with P.U. Code Section 311(g)(1), a Notice of Availability was e-mailed on MM D, 2016, informing all parties on the CASF Distribution List of the availability of the draft of this Resolution for public comments at the Commission’s website at <http://www.cpuc.ca.gov/> and is available for public comments. This letter also informed parties that the final conformed Resolution adopted by the Commission will be posted and available at this same website.

**VII. FINDINGS**

1. On July 1, 2015, CHW, CVCAH, HACK, HACSB, Surf and Banneker submitted applications for CASF funding. On April 1, 2016, NVCH and PSHH submitted applications for CASF funding. On July 1, 2016, EAH submitted an application for CASF funding. Cox Communications challenged seven of the nine PSHH projects inclusive to this resolution. CD denied the challenges since the reasons stated in the challenges provided were not supported in D.14-12-039 or in P.U. Code 281(h). No challenges were received for the remaining project proposals.
2. All 35 projects exceed the cost per unit benchmark established in the expedited review criteria and are therefore ineligible for expedited review. Based on interviews with contractors deploying funded projects, review of applicant-provided material and independent research on the technology deployed CD finds the reasons for the extra cost per unit reasonable and recommends approval.
3. Based on its review, CD determined that all 35 projects meet eligibility requirements. CD further determined that all 35 projects qualify for funding under D.14-12-039.
4. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH are required to comply with all guidelines, requirements, and conditions associated with the granting of CASF funds as specified in D.14-12-039.
5. The Commission has the right to conduct and enforce any necessary audit, verification, and discovery during project implementation/construction to ensure that CASF funds are spent in accordance with Commission approval.
6. The Commission has determined that these projects are categorically exempt from CEQA review, under section 15301 regarding exemption for existing facilities and section 15303 regarding minor modifications to existing structures.
7. Payment to CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH will be made in accordance with, and within the time specified in California Government Code § 927 *et seq*.
8. The deployment of affordable broadband in public housing will improve access to government and e-health services, which improves safety.
9. A notice letter was e-mailed on MM DD, 2016, informing all applicants filing for CASF funding, parties on the CASF distribution list of the availability of the draft of this Resolution for public comments at the Commission’s website http://www.cpuc.ca.gov/PUC/documents/. This letter also informed parties that the final confirmed Resolution adopted by the Commission will be posted and available at this same website.

**THERFORE, IT IS ORDERED that**:

* 1. The Commission shall award the requested grant amounts requested for the projects listed in Table 1:
* $125,250 to Community Housing Works for two projects;
* $85,050 to the Central Valley Coalition for Affordable Housing for one project;
* $168,908 to the Housing Authority of the County of Kern for four projects;
* $89,003 to the Housing Authority of the County of Santa Barbara for three projects;
* $129,650 to Surf Development Company for four projects;
* $45,900 to The Banneker Homes for one project;
* $351,405 to Napa Valley Community Housing for nine projects;
* $363,805 to Peoples’ Self-Help Housing for nine projects; and
* $116,510 to EAH Housing for two projects.

The total grant award is $1,475,481. All awards are based on the descriptions of the projects as described herein and are predicated on commitments to install and operate broadband infrastructure as expressed in its application and compliance with the requirements in as specified in D.14-12-039.

* 1. Grant payments of up to a total of $1,475,481 for these public housing projects shall be paid out of the CASF Public Housing Account in accordance with the guidelines adopted in D.14-12-039, including compliance with CEQA.
  2. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must each submit quarterly progress reports on the status of the project irrespective of whether grantees request reimbursement or payment.
  3. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH are required to maintain the broadband network for five years after it has been installed.
  4. Payments to CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH shall each be in accordance with Section X of Appendix B of D.14-12-039 and in accordance with the process defined in the “Payments” section of this Resolution.
  5. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH must each complete all performance under the award on or before 12 months from the date this Resolution is approved. If an applicant is unable to complete the proposed projects within the 12 month time frame requirement, they must notify the Director of CD as soon as they become aware of this possibility. If such notice is not provided, the Commission may reduce payment for failure to satisfy this requirement by timely notifying CD’s director.
  6. CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH are each required to comply with all guidelines, requirements and conditions associated with the CASF funds award as specified in D.14-12-039, and in accordance with the terms of the Commission’s approval as set forth in this Resolution.
  7. In the event that CHW, CVCAH, HACK, HACSB, Surf, Banneker, NVCH, PSHH and EAH fail to complete the project in accordance with the terms outlined in D.14-12-039 and this Resolution, those applicants must reimburse some or all CASF funds it has received.

This Resolution is effective today.

I hereby certify that this Resolution was adopted by the Public Utilities Commission at its regular meeting on December 1, 2016. The following Commissioners approved it:

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TIMOTHY J. SULLIVAN

Executive Director

APPENDIX

**APPENDIX A**

**Resolution T-17514**

**Expedited Review per Unit Cost Criteria**

The expedited review per unit costs rules (below) were established in D.14-12-039:[[22]](#footnote-22)

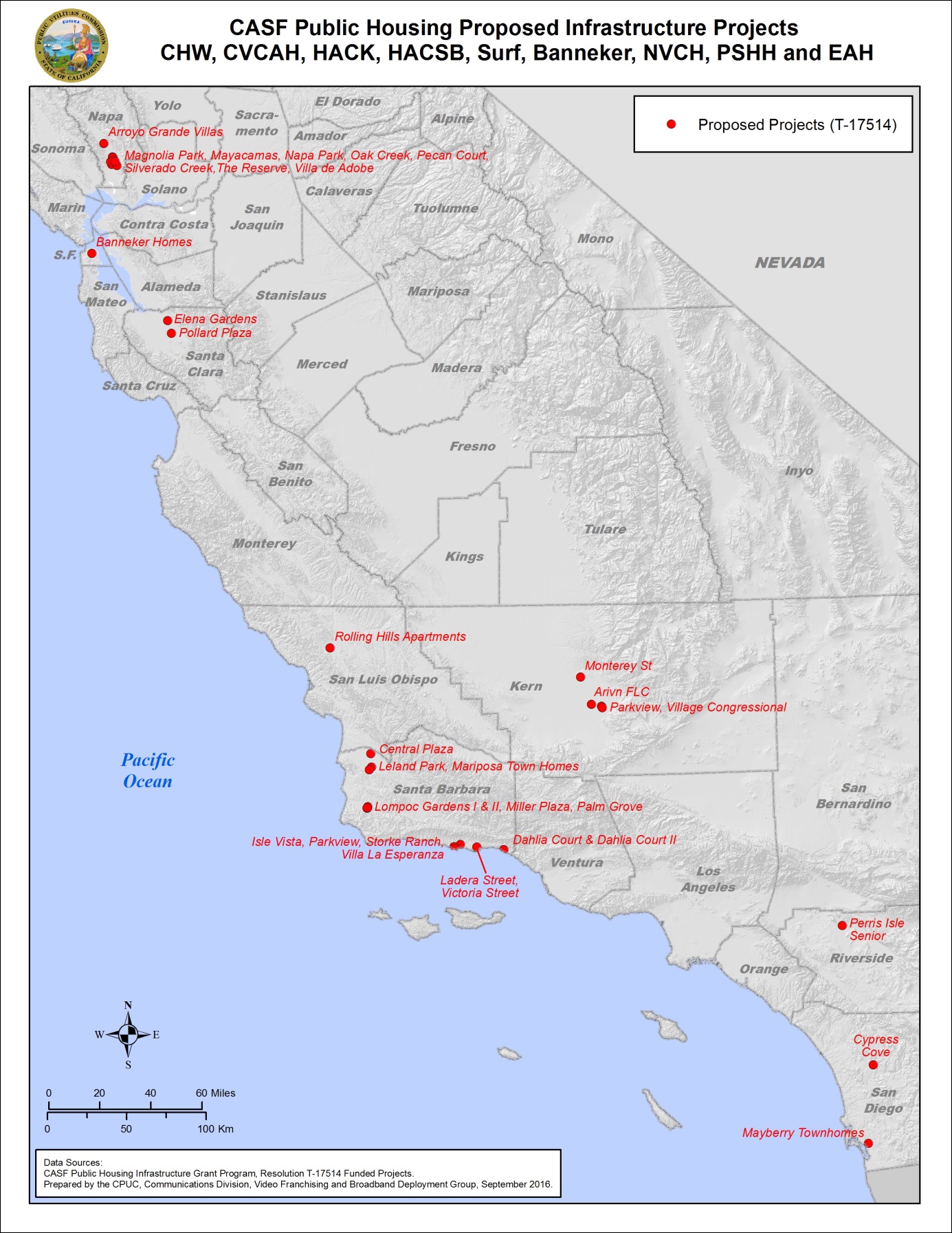
* For projects connecting 50 PSC units and less, proposed project costs less $600 per unit or less.
* For projects connecting 51-100 PSC units, proposed project costs $450 per unit or less.
* For projects connecting 101 and more units, proposed project costs $300 per unit or less.



**APPENDIX B**

**Resolution T-17514**

**Public Housing Projects Locations**



1. D.14-12-039, Appendix B, p. B13. [↑](#footnote-ref-1)
2. There is a pending application for rehearing of Resolution T-17515, filed by Charter Communications, which challenges the Commission’s award of CASF funding to publicly supported communities that are already wired and served. The issuance of today’s Resolution neither prejudges nor disposes of this pending rehearing application. A subsequent Commission order will issue that will address and disposes of the issues raised in this pending application for rehearing. [↑](#footnote-ref-2)
3. See Table 1, p. 2. [↑](#footnote-ref-3)
4. D.14-12-039, Appendix B. [↑](#footnote-ref-4)
5. Wireless LAN standard; for a technical definition of the 802.11 standards please refer to <http://www.webopedia.com/TERM/8/802_11.html>. [↑](#footnote-ref-5)
6. <http://www.open-mesh.com/>. [↑](#footnote-ref-6)
7. <https://www.ruckuswireless.com/>. [↑](#footnote-ref-7)
8. <http://pocketnow.com/2014/01/23/5ghz-wifi> retrieved 9/22/16. [↑](#footnote-ref-8)
9. <http://www.cpuc.ca.gov/General.aspx?id=908>. [↑](#footnote-ref-9)
10. Pursuant to D.14-12-039, CD posts all applications on its website to give ISP two weeks from the date of posting to challenge applications. (Appendix B, p. B12). [↑](#footnote-ref-10)
11. PSHH projects challenged by Cox Communications: Dahlia Court, Dahlia Court II, Isle Vista Apartments, Ladera Street Apartments, Storke Ranch Apartments, Victoria Street Bungalows and Villa La Esperanza. [↑](#footnote-ref-11)
12. See CD Staff Denial Letter, dated July 1, 2016; see also Resolution T-17515 (<http://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&DocID=163155772>). CD denied the challenges since the reasons stated in the challenges provided were not supported in D.14-12-039 or in P.U. Code 281(h). [↑](#footnote-ref-12)
13. Resolution T-17515 modifies D.14-12-039, Appendix B, delegating to CD staff the authority to approve applications through expedited review for properties that are wired. According to D.14-12-039, ‘a unit is “wired” for broadband Internet if it is possible to subscribe to a commercially available broadband Internet service, such as via Digital Subscriber Line (DSL), cable modem or another protocol, utilizing the existing “wired” facilities. A unit having such wiring is considered as having broadband service “available.” An “unwired property” has at least one unit that is not “wired.”’ [↑](#footnote-ref-13)
14. D.14-12-039, Appendix B, p. B13. [↑](#footnote-ref-14)
15. Out of the total number of projects not rejected or withdrawn through the July, 2016, application window, 34% are deployed using the Open-Mesh products, 26% are deployed using the Ruckus Wireless products, 18% are deployed using DSL, with the remaining 22% of projects using other deployment methodologies and products. [↑](#footnote-ref-15)
16. Conclusions are based on interviews with contractors deploying funded projects (John Lim of InnovativeIT and David Cannard of Connected Community Solutions). Additional research done through review of product specification sheets and applicant-provided material validated these conclusions. [↑](#footnote-ref-16)
17. Per interviews with contractors (as noted above). The contractor who installs the Open-Mesh equipment provides a 5-year warranty on installed equipment. [↑](#footnote-ref-17)
18. Of the 199 BHPA infrastructure projects approved by expedited review as of October 13, 2016, approximately 45% are installations using Open-Mesh equipment, 24% are installed as DSL and only 6% are installed using Ruckus equipment (with the remaining 26% using other methodologies and/or equipment vendors). [↑](#footnote-ref-18)
19. D.14-12-039, Appendix B, p. B7. [↑](#footnote-ref-19)
20. P.U. Code §§ 274 and 281; see also D.14-12-039, Appendix B. [↑](#footnote-ref-20)
21. D.14-12-039, Appendix B, p. B15. [↑](#footnote-ref-21)
22. D.14-12-039, Appendix B, p. B13. [↑](#footnote-ref-22)