ATTACHMENT B

Initial Proposal Volume II

BROADBAND EQUITY, ACCESS, AND DEPLOYMENT (BEAD) PROGRAM

DRAFT | November 2023

This document is a draft of Volume II of the BEAD Initial Proposal. It is being released for public comment in advance of its submission by the California Public Utilities Commission to the National Telecommunications and Information Administration.

All are welcome to submit comments regarding the draft document. Parties should file and serve comments according to instructions in the Administrative Law Judge's Ruling. Non-parties may submit letters via email to BEAD@cpuc.ca.gov by December 7, 2023.

California Public Utilities Commission

This report was prepared by the CPUC using federal funds from the National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of NTIA or the U.S. Department of Commerce.

Contents

1. INTRODUCTION 1

2. OBJECTIVES (REQUIREMENT 1) 4

3. LOCAL, TRIBAL, AND REGIONAL BROADBAND PLANNING PROCESSES (REQUIREMENT 2) 6

4. LOCAL COORDINATION (REQUIREMENT 4) 8

4.1. Public deliberative rulemaking 8
4.2. Tribal consultation 9
4.3. Full geographic coverage 9
4.4. Meaningful engagement and outreach to diverse stakeholder groups 9
4.5. Multiple awareness and participation mechanisms 10
4.6. Clear procedures to ensure transparency 11
4.7. Outreach and engagement of unserved and underserved communities 12

5. DEPLOYMENT SUBGRANTEE SELECTION (REQUIREMENT 8) 13

5.1 Deployment subgrantee selection process 16
5.1.1 Principles 16
5.1.2 Technical assistance, communications protocols, and administrative support 18
5.1.3 Overview of planned Subgrantee Selection Process 20
5.1.4 Phases 23
5.2 BEAD Grant Process overall timeline 25
5.3 Scoring methodology 26
5.3.1 Qualification and certification submissions 26
5.3.2 Scoring criteria 30
5.3.3 Scoring rubric 32
5.4 Prioritization of unserved BSLs, underserved BSLs, and eligible CAIs 33
5.5 Prioritization of non-deployment projects 35
5.6 Environmental and historic preservation and Build America, Buy America Act compliance 35
5.7 Project Area definition 35
5.8 Approach to subsequent funding rounds if no proposals are received 40
5.9 Projects on Tribal lands 40
5.10 Identifying the Extremely High Cost Per Location Threshold (EHCPLT) 41
5.11 Utilizing the EHCPLT 42
5.12 Requiring prospective subgrantees to certify their qualifications 44
5.12.1 Financial capability 44
5.12.2 Managerial capability 48
5.12.3 Technical capabilities 50
5.12.4 Compliance with applicable laws 53

5.12.5 Operational capability 54
5.12.6 Ownership information 55
5.12.7 Information on other public funding 56

6. NON-DEPLOYMENT SUBGRANTEE SELECTION (REQUIREMENT 9) 57

7. THE CPUC'S IMPLEMENTATION ACTIVITIES (REQUIREMENT 10) 59

8. LABOR STANDARDS AND PROTECTION (REQUIREMENT 11) 60

8.1 Specific information that prospective subgrantees will be required to provide in their applications and how the Eligible Entity will weigh that information in its competitive subgrantee selection processes 60
8.2 Binding legal commitments in subgrants related to labor standards and protection 62

9. WORKFORCE READINESS (REQUIREMENT 12) 64

9.1 Supporting the development of an available, diverse, and highly skilled workforce 64
9.1.1 Establishing a baseline for the broadband construction sector in California 65
9.1.2 Estimating the impact of BEAD on broadband construction jobs 70
9.1.3 Continuing to support workforce development in California 103
9.2 Coordination with unions and other workforce stakeholders 105
9.3 Ensuring strong labor standards 108
9.4 Ensuring recruitment of diverse firms 111
9.5 Subgrantee selection process related to workforce considerations 117
9.6 Economic development impacts and opportunities from BEAD deployments 119
9.6.1 Short-term economic impact from initial construction outlay 119
9.6.2 Long-term objectives for enhancing economic growth and job creation 122
9.6.3 Economic development opportunities in California as a result of BEAD deployments 125

10. MINORITY BUSINESS ENTERPRISES (MBE) / WOMEN'S BUSINESS ENTERPRISES (WBE) / LABOR SURPLUS AREA FIRMS INCLUSION (REQUIREMENT 13) 128

10.1 Process, strategy, and data tracking methods to ensure that minority businesses, women-owned business enterprises, and labor surplus area firms are recruited, used, and retained when possible 130
10.1.1 Place qualified small and minority businesses and women's business enterprises on solicitations lists 130
10.1.2 Assure that small and minority businesses and women's business enterprises are solicited whenever they are potential sources 130
10.1.3 Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises 131
10.1.4 Establish delivery schedules, where the requirements permit, which encourage participation by small and minority businesses and women's business enterprises 131

10.1.5 Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce 131
10.1.6 Require each subgrantee to take these affirmative steps as they relate to its subcontractors 132
10.2 Certification 133
11 COST AND BARRIER REDUCTION (REQUIREMENT 14) 134
11.1 Promote the use of existing infrastructure 134
11.1.1 Streamline access to State conduits and poles 134
11.1.2 Encourage local communities to leverage their poles and conduits 136
11.1.3 Coordinate with the Middle-Mile Broadband Initiative (MMBI) 137
11.2 Promote dig-once policies by providing best practice guide for localities 138
11.3 Streamline permitting processes 139
11.3.1 Optimize local permitting processes by promoting best practices for county and local permitting 140
11.4 Encourage specialized equipment sharing 141
11.5 Assess drop costs 141
11.6 Reduce labor costs 141
11.6.1 Strike a balance between skilled and certified labor requirements and the cost of labor 141
11.6.2 Increase supply of labor through workforce development initiatives 141
11.7 Reduce overhead costs 141
11.7.1 Adopt reasonable, compliance-focused regulatory and reporting requirements 142
11.7.2 Create fast-track screening for environmental compliance 142
11.7.3 Create an ISP and agency technical assistance committee 142
11.8 Reduce the initial capital cost burden on smaller ISPs 142
11.8.1 Provide “letter of information” to in-State community banks and credit unions to facilitate letters of credit 142
11.8.2 Connect local and community banks with service areas overlapping eligible locations to local grant participants 142
12 CLIMATE ASSESSMENT (REQUIREMENT 15) 144
12.1 Identifying geographic areas subject to initial hazard screening 145
12.2 Characterizing which weather and climate hazards may be most important to account for and respond to these in these areas and over the relevant time horizons 147
12.2.1 Geologic hazards 148
12.2.2 Flood hazards 155
12.2.3 Wildfire hazard 166
12.2.4 Other hazards 170
12.3 Characterizing weather and climate risks to new infrastructure deployed using BEAD program fund for the next 20 years 185
12.4 Strategies for mitigating climate risks 186
12.4.1 Hazard mitigation for anticipated BEAD-funded projects in California 186

12.4.2 Adopted risk mitigation processes 187
12.5 Processes to ensure that evolving risks are continuously understood, characterized, and addressed 188
13 LOW-COST BROADBAND SERVICE OPTION (REQUIREMENT 16) 189
13.1 Low-cost broadband service options that must be offered and why the options best serve the needs of California residents 190
13.2 Certification 195
14 MIDDLE-CLASS AFFORDABILITY PLANS 196
15 USE OF 20 PERCENT OF FUNDING (REQUIREMENT 17) 200
15.1 Planned use of funds requested 200
15.2 Amount of Initial Proposal funding request 201
15.3 Certification 201
16 THE CPUC'S REGULATORY APPROACH (REQUIREMENT 18) 202
17 CERTIFICATION OF COMPLIANCE WITH BEAD REQUIREMENTS (REQUIREMENT 19) 203
17.1 Certification of compliance 203
17.2 Subgrantee accountability procedures 203
17.2.1 Overview 203
17.2.2 Risk-based monitoring 203
17.2.3 Fraud, waste, and abuse 204
17.2.4 Distribution of funds on a reimbursement basis 204
17.2.5 Claw back provisions 205
17.2.6 Timely reporting requirements 205
17.2.7 Robust subgrantee monitoring 205
17.3 Certification of nondiscrimination and civil rights 206
17.4 Certification of cybersecurity and supply chain risk management 206
APPENDIX A: LOCAL COORDINATION TRACKER TOOL 209
APPENDIX B: SCHEDULE OF PUBLIC ENGAGEMENTS 210
CPUC – CDT BEAD workshops flyer 213
Regional-Local Workshop example 1 215
Regional-Local Workshop example 2 216
Regional-Local Workshop example 3 217
APPENDIX C: SUMMARY OF TRIBAL CONSULTATIONS 218
Tribal consultation example 1 219
Tribal consultation example 2 220
APPENDIX D: SUMMARY OF SUBGRANTEE SELECTION PROCESS 221

APPENDIX E: PROPOSED SCORING RUBRIC 228

Figures

Figure 1: 30-minute drive time around Northern California institutions training roles relevant to broadband construction field-work 100

Figure 2: 30-minute drive time around Central California institutions training roles relevant to broadband construction field-work 101

Figure 3: 30-minute drive time around Southern California institutions training roles relevant to broadband construction field-work 102

Figure 4: Composite hazard risk scores in California 146

Figure 5: Earthquake risk in California 149

Figure 6: Landslide risk in California 152

Figure 7: Volcano risk in California 154

Figure 8: Risk of riverine flooding in California 158

Figure 9: Coastal flooding risk in California 161

Figure 10: Tsunami risk in California 164

Figure 11: Wildfire risk in California 169

Figure 12: Avalanche risk in California 171

Figure 13: Heat wave risk in California 174

Figure 14: Cold wave risk in California 176

Figure 15: Hail risk in California 177

Figure 16: Winter weather risk in California 178

Figure 17: Tornado risk in California 180

Figure 18: Lightning risk in California 182

Figure 19: Hurricane risk in California 184

Figure 20: ACP enrollment by county in California 191

Tables

Table 1: Counties in the three primary regions in California 65

Table 2: Performance of California's broadband deployment sector (2018 – 2022) 66

Table 3: Performance of Northern California's broadband deployment sector (2018 – 2022) 68

Table 4: Performance of Central California's broadband deployment sector (2018 – 2022) 69

Table 5: Performance of Southern California's broadband deployment sector (2018 – 2022) 70

Table 6: Anticipated distribution of broadband investment across sectors 71

Table 7: Estimated workforce requirements for broadband deployment occupations in California 72

Table 8: Estimated workforce requirements for broadband deployment occupations in Northern California 73

Table 9: Estimated workforce requirements for broadband deployment occupations in Central California 74

Table 10: Estimated workforce requirements for broadband deployment occupations in Southern California 75

Table 11: Occupations needed for broadband deployment in California (by percentage increase required) 77

Table 12: Occupations needed for broadband deployment in Northern California (by percentage increase required) 77

Table 13: Occupations needed for broadband deployment in Central California (by percentage increase required) 78

Table 14: Occupations needed for broadband deployment in Southern California (by percentage increase required) 79

Table 15: Characteristics of key occupations impacted by broadband investment in California 80

Table 16: Characteristics of key occupations impacted by broadband investment in Northern California 81

Table 17: Characteristics of key occupations impacted by broadband investment in Central California 82

Table 18: Characteristics of key occupations impacted by broadband investment in Southern California 82

Table 19: Work experience of occupations impacted by broadband investment 83

Table 20: Unemployment for occupations impacted by broadband investment in California 85

Table 21: Unemployment for occupations impacted by broadband investment in Northern California 86

Table 22: Unemployment for occupations impacted by broadband investment in Central California ... 87

Table 23: Unemployment for occupations impacted by broadband investment in Southern California 88

Table 24: Occupations impacted by broadband investment in California, job postings vs. hires (2022) 89

Table 25: Occupations impacted by broadband investment in Northern California, job postings vs. hires (2022) 89

Table 26: Occupations impacted by broadband investment in Central California, job postings vs. hires (2022) 90

Table 27: Occupations impacted by broadband investment in Southern California, job postings vs. hires (2022) 91

Table 28: Broadband workforce training programs at public higher education institutions 93

Table 29: U.S. labor laws noted in the BEAD NOFO 109

Table 30: Estimated economic effects of investing $2.2 billion in broadband construction in California 120

Table 31: Estimated economic effects of investing $5.3 billion in broadband construction in California 120

Table 32: Estimated economic effects of investing $950 million in broadband construction in Northern California 120

Table 33: Estimated economic effects of investing $2.2 billion in broadband construction in Northern California 121

Table 34: Estimated economic effects of investing $713 million in broadband construction in Central California 121

Table 35: Estimated economic effects of investing $1.7 billion in broadband construction in Central California 121

Table 36: Estimated economic effects of investing $574 million in broadband construction in Southern California 122

Table 37: Estimated economic effects of investing $1.4 billion in broadband construction in Southern California 122

Table 38: Estimated rate at which households adopt broadband 124

Table 39: California counties with the greatest percent change in remote work between 2016 and 2021 126

Table 40: California counties with the least change in remote work between 2016 and 2021 126

Table 41: Threats to infrastructure posed by weather and climate risks 185

Table 42: Planned use of funds requested 200

Table 43: Schedule of public engagements 210

Table 44: Schedule of Tribal consultations 218

Table 45: Summary of the subgrantee selection process documents and milestones 221

1. Introduction

The California Public Utilities Commission (CPUC) hereby submits to the National Telecommunications and Information Administration (NTIA) this second volume of the State of California's Broadband Equity, Access, and Deployment (BEAD) Initial Proposal in alignment with NTIA's BEAD guidance and requirements. The CPUC reserves the right to update this Initial Proposal pending revised or additional guidance from NTIA.

The BEAD program, established by the Infrastructure Investment and Jobs Act (IIJA) in 2021 and administered by NTIA, provides $42.45 billion to expand high-speed internet access by funding planning, infrastructure deployment, and adoption programs in all 50 states, Washington D.C., and U.S. territories. California has been allocated approximately $1.86 billion under BEAD based on the federal government's calculation of California's share of unserved locations nationally, and the CPUC was designated by the Governor as the recipient of and administering agent for the BEAD program in the State.[1]

This document represents one of four separate reports the CPUC is preparing for NTIA in compliance with the BEAD Notice of Funding Opportunity (NOFO).[2] The other documents are California's Five-Year Action Plan, Initial Proposal Volume I, and Final Proposal.

This document includes the following requirements outlined in the BEAD NOFO:[3]

1. This document outlines long-term objectives for deploying broadband, closing the digital divide, addressing access, affordability, equity, and adoption issues, and enhancing economic growth and job creation. (Initial Proposal Requirement 1)

2. This document identifies and outlines steps to support, local, Tribal, and regional broadband planning processes or ongoing efforts to deploy broadband or close the digital divide and describe coordination with local and Tribal governments, along with local, Tribal, and regional broadband planning processes. (Initial Proposal Requirement 2)

3. The CPUC certifies that it has conducted coordination, including with Tribal governments, local community organizations, unions and worker organizations, and other groups, consistent with the requirements set forth in Section IV.C.1.c of the NOFO, describes the coordination conducted, summarizes the impact such coordination had on the content of

[1] "California Broadband Equity, Access, and Deployment (BEAD) Program," CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/bead-program.

[2] BEAD NOFO, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf.

[3] See BEAD NOFO, Section IV.B.5.b, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, p. 31.

the Initial Proposal, details ongoing coordination efforts, and sets forth the plan for how the CPUC will fulfill the coordination requirements associated with its Final Proposal. (Initial Proposal Requirement 4)

4. A detailed plan is included to competitively award subgrants consistent with Section IV.B.7.a of the NOFO regarding both last-mile broadband deployment projects and other eligible activities. It covers how the CPUC will ensure timely deployment of last-mile projects and minimize the BEAD subsidy required to serve consumers consistent with Section IV.B.7 and the other priorities set out in the NOFO. It also includes a detailed process for identifying an Extremely High Cost Per Location Threshold to be utilized during the subgrantee selection process described in Section IV.B.7 of the NOFO. (Initial Proposal Requirement 8)

5. With respect to non-deployment eligible activities, this Proposal explains any preferences the CPUC will employ in selecting the type of initiatives it intends to support using BEAD program funds, the means by which subgrantees for these eligible activities will be selected, how the CPUC expects the initiatives it pursues to address the needs of California residents, the ways in which engagement with localities and stakeholders will inform the selection of eligible activities, and any efforts the CPUC will undertake to determine whether other uses of the funds might be more effective in achieving the BEAD program's equity, access, and deployment goals. (Initial Proposal Requirement 9)

6. This document describes any initiatives the CPUC proposes to implement as the recipient without making a subgrant, and why it proposes that approach. (Initial Proposal Requirement 10)

7. This document details how the CPUC will ensure that subgrantees, contractors, and subcontractors use strong labor standards and protections, such as those listed in Section IV.C.1.e of the NOFO, and how the CPUC will implement and apply the labor-related subgrantee selection criteria described in Section IV.C.1.e of the NOFO. (Initial Proposal Requirement 11)

8. This document details how the CPUC will ensure an available, diverse, and highly skilled workforce consistent with Section IV.C.1.e of the NOFO. (Initial Proposal Requirement 12)

9. This document describes the process, strategy, and data tracking method(s) that the CPUC will implement to ensure that minority businesses, women-owned business enterprises, and labor surplus area firms are recruited, used, and retained when possible. (Initial Proposal Requirement 13)

10. This document identifies steps to reduce costs and barriers to deployment, promote the use of existing infrastructure, promote and adopt dig-once policies, streamlined permitting processes, and cost-effective access to poles, conduits, easements, and rights-of-way,

including the imposition of reasonable access requirements. (Initial Proposal Requirement 14)

11. This document provides an assessment of climate threats within California and proposed mitigation methods consistent with the requirements of Section IV.C.1.h of the NOFO. (Initial Proposal Requirement 15)

12. This document describes the low-cost plan(s) that must be offered by subgrantees consistent with the requirements of Section IV.C.2.c.i of the NOFO. (Initial Proposal Requirement 16)

13. This document describes the intended use of the 20 percent of total funding allocation that is made available upon approval of the Initial Proposal consistent with Section IV.B.8 of the NOFO. (Initial Proposal Requirement 17)

14. This document discloses (1) whether the State will waive all laws concerning broadband, utility services, or similar subjects, whether they predate or postdate enactment of the Infrastructure Act, that either (a) preclude certain public sector providers from participation in the subgrant competition or (b) impose specific requirements on public sector entities, such as limitations on the sources of financing, the required imputation of costs not actually incurred by the public sector entity, or restrictions on the service a public sector entity can offer; and (2) if it will not waive all such laws for BEAD program project selection purposes, identify those that it will not waive and describe how they will be applied in connection with the competition for subgrants. (Initial Proposal Requirement 18)

15. The CPUC certifies its intent to comply with all applicable requirements of the Program, including the reporting requirements, and describes subgrantee accountability procedures. (Initial Proposal Requirement 19)

2. Objectives (Requirement 1)

This Initial Proposal Volume II aligns with the State of California's Broadband for All initiative,[4] which reflects Governor Gavin Newsom's significant commitment to close the digital divide in California. This is exemplified in the Broadband for All Action Plan,[5] prepared in response to Executive Order N-73-20,[6] and in the once-in-a-lifetime investments authorized under Senate Bill 156[7] (Chapter 112, Statutes of 2021) which committed $6 billion toward development of a statewide open-access middle-mile network and grants for last-mile infrastructure and technical assistance. When signing this legislation, Governor Newsom noted the critical importance to California of making broadband more accessible by expanding economic growth and job creation, as well as access to healthcare and essential services "across the spectrum for students, families and businesses."[8]

The State of California developed the Broadband for All Action Plan with the goal of achieving equity through broadband access that is affordable and reliable for every Californian. The CPUC's goals—which are aligned with the principal focus of the BEAD program[9]—are as follows:

- Ensure every Californian has access to quality, reliable, high-speed internet, no matter where they live, whether in rural communities, in cites or suburbs, or on sovereign Tribal lands.
- Make quality, reliable, high-speed internet more affordable across California, particularly for individuals living on limited incomes.
- Support expansion of broadband in California's Tribal communities by partnering with interested California Tribes and the recognition of the Tribe's sovereign right to choose the mechanisms that best meet an individual Tribe's needs in the expansion of broadband services, including but not limited to the development of Tribal-owned broadband networks.

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[4] Broadband for All, https://broadbandforall.cdt.ca.gov/.

[5] "California Broadband for All Action Plan," California Broadband Council, 2020, https://broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final.pdf.

[6] Executive Order N-73-20, signed by the Governor August 14, 2020, https://www.gov.ca.gov/wp-content/uploads/2020/08/8.14.20-EO-N-73-20.pdf.

[7] SB 156, approved by the Governor July 20, 2021, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB156.

[8] "Governor Newsom Signs Historic Broadband Legislation to Help Bridge the Digital Divide," Office of the Governor news release, July 20, 2021, https://www.gov.ca.gov/2021/07/20/governor-newsom-signs-historic-broadband-legislation-to-help-bridge-digital-divide/.

[9] See BEAD NOFO, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, p. 7.

- Empower local and Tribal governments across California to develop and implement reliable, high-performance broadband infrastructure to support local community goals and needs and support broadband networks owned, operated by, or affiliated with local and Tribal governments, nonprofits, and cooperatives, which have less pressure to generate profits and are committed to serving entire communities.

To seek to achieve these goals, the CPUC has established the following objectives:

- Establish a data-driven strategy to map and assess unserved and underserved locations in California to effectively target resources to close deployment gaps.
- Leverage all available federal and State sources of broadband funding to achieve California's broadband deployment goals, including but not limited to the California Advanced Services Fund (CASF) and broadband programs created under California Senate Bill 156 (SB 156).
- Create a holistic approach and framework for California's broadband infrastructure funding programs to encourage and support projects that will advance equal access to affordable, high-performance broadband that include the devices, training, and skills necessary for digital inclusion of all Californians.
- Provide technical assistance and support local and Tribal governments, schools, community-based organizations, anchor institutions, and other carriers serving at-risk communities to help them prepare to leverage federal and State funding opportunities related to broadband.

3. Local, Tribal, and regional broadband planning processes (Requirement 2)

California has engaged in an extensive effort to identify stakeholders and stakeholder groups, including but not limited to conducting community engagement events across the State with a broad range of communities, consulting with California Tribes regionally and upon request consulting with individual Tribes, and meeting with carriers and community-based organizations to discuss the Program.

The CPUC conducted a comprehensive external engagement process in preparation of the BEAD Five-Year Action Plan and this Initial Proposal Volume II. The CPUC intends to continue its stakeholder engagement and outreach efforts around broadband deployment and digital equity in the State—particularly to engage with covered populations and stakeholders that historically may not have had as much representation in public planning processes.

The California Department of Technology (CDT) is responsible for preparing the State's Digital Equity Plan (SDEP)—and, as such, has conducted its own parallel stakeholder engagement process related to broadband affordability, broadband adoption, and other elements of digital equity.

The CPUC partnered with CDT to jointly conduct 17 Broadband for All, Digital Equity, and BEAD Planning Regional-Local Workshops in communities across California. These events were attended by more than 2,000 community members, local officials, and interested parties, and provided a forum for attendees to learn about planning for their communities to access programs to create digital equity, submit feedback on how the State's efforts to close the digital divide could be improved or made more inclusive, and connect with members of their communities who are passionate about digital equity in California.

In addition, the CPUC conducted three regional Tribal consultations at three Tribal locations in Northern, Central, and Southern California. Each consultation included representatives of several Tribes. Several Tribes also requested individual consultations. Efforts to engage Tribal governments and the CPUC Tribal consultation process are discussed in more detail in Section 4 below.

Following the Regional-Local Workshops and Tribal consultations, the CPUC evaluated opportunities to partner with recommended entities, including community-based organizations, to continue to engage covered populations and historically underrepresented communities in the planning process through community partners that have built trust with key populations in underrepresented communities.

The CPUC has also participated extensively in the process of crafting the State Digital Equity Plan, led by CDT, including participating in the quarterly Statewide Planning Group, attending meetings of the Outcome Area Working Groups, and engaging with CDT to support solicitation of input for the State Digital Equity Survey and Digital Equity Ecosystem Mapping (DEEM) Tool.

4. Local coordination (Requirement 4)

This section describes how the CPUC has coordinated and will continue to coordinate with local and Tribal governments, communities, and stakeholders representing marginalized and underrepresented populations.

The Local Coordination Tracker Tool is attached as Appendix A.

4.1. Public deliberative rulemaking

To develop rules for BEAD subgrantees, the CPUC is engaging in a public deliberative rulemaking and soliciting extensive feedback from stakeholders, similar to the process that the CPUC must take to form the basis of any CPUC-adopted decision establishing program rules, as governed by statute.[10] This is in addition to requirements in NTIA's BEAD NOFO. This means the CPUC will provide multiple additional opportunities for stakeholders and members of the public to provide input on the implementation of BEAD through the formal rulemaking process.

Prior to submitting this Initial Proposal Volume II to NTIA for its required review by the end of 2023, the CPUC issued a draft version for comments from stakeholders and members of the public on the proposed program design, including the BEAD-specific eligibility map, Challenge Process, Subgrantee Selection Process, project affordability requirements, labor and workforce requirements, and all other required elements of the Initial Proposal necessary to describe the proposed implementation of BEAD.

In response to comments on the draft Initial Proposal the CPUC may revise the proposal and then submit the revised proposal to NTIA for its approval. Following NTIA's approval of the Initial

[10] California Public Utilities Code Section 1701.1 (c) requires the CPUC, upon initiating a quasi-legislative proceeding, to assign one or more commissioners to oversee the case and an administrative law judge. The assigned commissioner shall prepare and issue by order or ruling a scoping memo that describes the issues to be considered and the applicable timetable for resolution and that, consistent with due process, public policy, and statutory requirements, determines whether the proceeding requires a hearing.

Section1701.2 (d) requires the assigned commissioner or the administrative law judge to prepare and file a decision setting forth recommendations, findings, and conclusions at least 30 days prior to a CPUC vote meeting, to allow for public comment.

Section 1701.2 (e) requires that a CPUC decision be supported by findings of fact on all issues material to the decision, and the findings of fact shall be based on the record developed during the proceeding.

Section 1701.1 (e) (8) requires the CPUC to render its decisions based on the law and on the evidence in the record.

Proposal, the CPUC will issue a Proposed Decision formalizing the BEAD rules. Parties will have the opportunity to file comments on the Proposed Decision before the CPUC adopts it.[11]

4.2. Tribal consultation

In addition to the 17 Regional-Local Workshops, the CPUC and CDT conducted three in-person Broadband for All, Digital Equity, and BEAD Regional Tribal Consultations with representatives of California Tribes in Northern, Central, and Southern California, as well as an additional virtual consultation. (See Appendix C.) The CPUC is also conducting government-to-government consultations with individual Tribal government representatives that requested individual consultations to further discuss the BEAD program and the individual Tribe's specific circumstances.

The CPUC has also had an appointed Tribal Advisor since 2020, who is supporting California Tribes in navigating and accessing the process for participation in the BEAD program. The Tribal Advisor is working with the CPUC's Communications Division and other entities to provide information to assist Tribes in maximizing opportunities to deploy affordable, reliable broadband service for Tribal communities utilizing strategies that respect Tribal sovereignty.

4.3. Full geographic coverage

The CPUC conducted engagement activities throughout the full geographic range of California with proceeding parties, community stakeholders, and the public. As described above, the CPUC partnered with CDT to jointly conduct 17 Broadband for All, Digital Equity, and BEAD Planning Regional-Local Workshops in communities across California.

4.4. Meaningful engagement and outreach to diverse stakeholder groups

To organize each jointly conducted Regional-Local Workshop, the CPUC and CDT collaborated with a variety of partners to engage each region's diverse stakeholder groups. Partner organizations included:

- Regional Broadband Consortia
- Community-based organizations, philanthropy, and other nonprofit organizations
- Economic development organizations

[11] Rule 14.3 (a) of the CPUC's Rules of Practice and Procedure allows parties to file comments on a proposed decision within 20 days of the date of its service on the parties.

- Local governments and associations of government

Partner organizations helped with outreach to community members and local organizations in each region, with an emphasis on members of communities identified as covered populations or underrepresented communities in the Digital Equity Act and BEAD guidelines. More than 2,000 community members, local officials, and interested parties attended the workshops.

With the support of the CPUC's dedicated Tribal Advisor, the CPUC and CDT invited Tribal leaders, Tribal technical staff and advisors, and Tribal community members to the formal Tribal Consultations in Northern, Central, and Southern California, and one statewide virtual consultation, as well as the community engagement meetings held throughout the State.

The full list of Regional-Local Workshop partners is included in Appendix B.

4.5. Multiple awareness and participation mechanisms

Regional-Local Workshops and Tribal Consultations were shared on CDT's Broadband for All Portal, the CPUC's Events page, and the Broadband for All Eventbrite site for Digital Equity and BEAD Planning Workshops.[12] Additionally, all Tribes listed on the contact list maintained by the Native American Heritage Commission (NAHC) were sent notification of the three regional and one virtual Tribal consultation. Partner organizations helped to raise awareness of the events and the overall BEAD planning process. Based on their experience and local knowledge, partners used outreach methods that were best suited to reach stakeholders in their regions. Methods included flyers, newsletters, social media, and local media. The CPUC and CDT also promoted the workshops and shared updates through their respective newsletters, reaching an audience of government, nonprofit, and private sector stakeholders and interested parties throughout the State.

Regional-Local Workshops and Tribal Consultations were held in person to allow for deeper engagement and interaction with stakeholders in each region. A virtual Tribal Consultation was held for any Tribes unable to attend the in-person consultations, and the CPUC conducted a Technical Workshop and public forums online to engage stakeholders and to solicit input on crafting the Initial Proposal.

In addition to in-person and virtual events, the CPUC's public deliberative rulemaking proceeding on BEAD will also solicit extensive feedback from stakeholders and the public through written comments.

[12] "Digital Equity and BEAD Planning Workshops," CDT Eventbrite, https://www.eventbrite.com/cc/digital-equity-and-bead-planning-workshops-1979869.

4.6. Clear procedures to ensure transparency

The CPUC followed clear procedures to ensure transparency around development of the BEAD rules through the proceeding. The BEAD proceeding, docketed as Rulemaking 23-02-016, was initiated via an Order Instituting Rulemaking (OIR)[13] approved at the CPUC's February 23, 2023, voting meeting. The OIR indicated that the CPUC would consider rules to determine grant funding, eligibility, and compliance for funds distributed to California under the federal BEAD program and invited interested parties to provide comments on the issues identified as part of the initial proceeding scope.

The CPUC received opening and/or reply comments on these initial issues and the appropriate proceeding scope from 32 parties, many of which represent a consortia or collaboration among different stakeholder groups including labor, ISPs, small businesses, educational professionals, and advocacy organizations.

After reviewing party comments and input received at the 17 Broadband for All, Digital Equity, and BEAD Planning Regional-Local Workshops, three in-person Tribal consultations, and one virtual Tribal consultation, the assigned Administrative Law Judge for R. 23-02-016 issued a Scoping Memo in July 2023, finalizing the scope of issues to be considered in the proceeding and the timeline for resolving these issues. In conducting this proceeding, the CPUC will abide by its established Rules of Practice and Procedure,[14] including the requirements governing *Ex Parte* communications with decisionmakers, to ensure that the public deliberative process is fully transparent. This is a rulemaking proceeding categorized as quasi-legislative so there are no *Ex Parte* reporting requirements or restrictions for this proceeding.

As described in the Scoping Memo, the CPUC held a public technical workshop on October 26, 2023, to solicit input on key policy issues to be addressed in a draft Initial Proposal. Parties were encouraged to submit additional written comments on the subjects discussed at the workshop and both opening and reply comments on the draft Initial Proposal. Local and Tribal governments that were not parties to the proceeding were also encouraged to submit written feedback on the Initial Proposal. The CPUC will formalize the BEAD program rules by voting on two Proposed Decisions corresponding to Volume I and Volume II respectively as approved by NTIA. Pursuant to the CPUC's rules, the Proposed Decisions will be available for public comment at least 30 days before being voted on by the full Commission.

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[13] "Order Instituting Rulemaking Proceeding to Consider Rules to Implement the Broadband Equity, Access, and Deployment Program," CPUC, March 1, 2023, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M502/K991/502991618.PDF.

[14] "Rules of Practice and Procedure," CPUC, May 2021, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/administrative-law-judge-division/documents/rules-of-practice-and-procedure-may-2021.pdf.

4.7. Outreach and engagement of unserved and underserved communities

The CPUC and CDT actively sought to engage representatives of defined covered populations and historically underrepresented communities in the planning and execution of the 17 Broadband for All, Digital Equity, and BEAD Planning Regional-Local Workshops to ensure representation of defined covered populations, including specific sections of each workshop highlighting lived experiences from members of the covered populations.

The CPUC also conducted significant outreach to all California Tribes listed on the list maintained by the NAHC to invite participation in the regional and virtual Tribal consultations.[15] The CPUC mailed a formal letter to all Tribal Leaders on the list maintained by the NAHC inviting each to participate in the Tribal consultations. The CPUC's Tribal Advisor coordinated with CPUC staff to follow up on this correspondence by making direct telephone calls to as many Tribes as could be reached.

The CPUC also advertised the Tribal consultations on its website, social media platforms, and in verbal conversations with Tribal representatives and community stakeholders leading up to the events. The CPUC also held an online-only virtual consultation for any Tribes that were unable to attend the in-person regional consultations. Following these consultations, the CPUC received 20 requests for individual consultations from Tribes, which the CPUC is in the process of conducting.

[15] Administrative Law Judge's Ruling Providing Notice of Tribal Consultations, Docket 23-02-016, May 22, 2023, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M509/K544/509544728.PDF.

5. Deployment subgrantee selection (Requirement 8)

This section of Volume II describes in detail how the CPUC proposes to structure, design, and implement its grant program to award BEAD funds to subgrantees to deploy broadband infrastructure in California. This section includes extensive discussion of the proposed structure of the program, the timeline, the scoring, and steps the CPUC will take to try to maximize the reach and impact of the BEAD funds throughout California.

Maximizing the benefit of public comment

The CPUC developed this subgrantee selection process to meet both NTIA's requirements and the goals of the State of California. To maximize the value of the public comment process, this draft of Requirement 8 of the Initial Proposal Volume II lays out multiple potential approaches to the subgrantee selection process. The CPUC seeks public comment regarding the alternative strategies that are proposed below to be able to refine and then propose to NTIA, for federal approval, an approach that best reflects the breadth of interests of California stakeholders.

The framework of federal requirements

As with all the states, California's plan for how to award BEAD funds is determined by federal requirements based on provisions of the law that funded BEAD and interpretation of that statute by NTIA. The CPUC's proposed strategy is thus required to fit within the federal parameters.

Those federal requirements are referenced throughout this document and, for purposes of the CPUC's proposal for structure of the grant program, include the following critical elements among many others:

- **Prioritization of locations**. Consistent with NTIA's BEAD rules, California intends to "seek proposals to serve unserved locations, underserved locations, and CAIs collectively or separately, so long as it awards funding in a manner that prioritizes Unserved Service Projects and once it certifies that it will ensure coverage of all unserved locations within California, prioritizes Underserved Service Projects."[16] Further information on prioritization of locations prescribed by NTIA can be found on page 41 of the BEAD NOFO.

- **Prioritization of end-to-end fiber.** Based on the language of the statute regarding "Priority Broadband Projects," NTIA requires that end-to-end fiber be funded, with exceptions for other technologies being permissible (and subject to NTIA's explicit permission) only in the

[16] See BEAD NOFO, Section IV.B.7.a.ii, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf.

event that the locations would be too costly to serve with fiber. The determination of the cost at which locations would be too costly to be served with fiber is required to be undertaken through analysis of an "Extremely High Cost Per Location Threshold" that is based on a calculation of all applications received considering the available funds.[17]

- **Scoring**. NTIA has predetermined a mandatory minimum of 75 percent of the scoring for three factors: cost, affordability, and labor considerations, as well as at least 1 percent for the factor of time to deployment and, for non-fiber projects only, at least 1 percent for the factor of technology capability. "The primary criteria must collectively account for no less than three-quarters of the total benefits available across all the criteria the Eligible Entity employs in choosing between or among competing proposals."[18] States have flexibility to use scoring to achieve their own policy goals only in the remaining portion.[19]

- **Timeline.** The timeline for the BEAD program, including completing the Challenge Process and grant administration process, is directed by the statute, which provides one year for full administration of the program following NTIA approval of the Initial Proposal. "An Eligible Entity may initiate its competitive subgrantee selection process upon approval of its Initial Proposal and will have up to one year to conduct additional local coordination, complete the selection process, and submit a Final Proposal to NTIA."[20] During this one-year time period, the eligible entity will continue to coordinate with NTIA, consistent with program rules, the review and approval of interim steps leading up to the Final Proposal that will be submitted to NTIA.[21]

- **Provisional awards**. States may issue awards to grantees after the Final Proposal required by the BEAD NOFO is submitted to NTIA following administration of the grant program and NTIA has approved (or required changes to) each award.[22]

- **Eligible locations**. The locations eligible for funding are not at the discretion of any state. Federal rules require that states make awards only to eligible addresses that are found in the FCC's National Broadband Map address list (or "fabric"), which states do not have the power to correct where it is inaccurate. "After the publication of broadband coverage maps being prepared by the Federal Communications Commission (Broadband DATA Maps),

[17] See BEAD NOFO, Section I.B.1.: "With respect to the deployment of last-mile broadband infrastructure, the Program prioritizes projects designed to provide fiber connectivity directly to the end user."

[18] See BEAD NOFO, Section IV.B.7.b., p. 43.

[19] See BEAD NOFO, Section IV.B.7.b., p. 43.

[20] See BEAD NOFO, Section I.B.2., p. 9.

[21] See BEAD NOFO, Section I.B.2., p. 9.

[22] Ibid.

> which will be used to determine the number of unserved locations in every State and Territory, NTIA will notify Eligible Entities of their total funding allocations, calculated in accordance with Sections 60102(c)(1) and (c)(3) of the Infrastructure Act, and inclusive of the minimum initial allocation and Initial Planning Funds."[23] States will have the potential to improve the service availability data on the FCC map through a structured Challenge Process that states can propose to NTIA under federal rules, but all states' corrections to the data regarding what locations are served, unserved, and underserved are subject to NTIA approval.[24]

The need for simplicity

Within the framework of the federal rules, the CPUC seeks to maximize the simplicity of the BEAD grant program given the compressed timeline and the goal of making the program as accessible, fair, and open as possible for a full range of ISPs of all types and sizes, including municipal, county, Tribal, and nonprofit entities. Furthermore, it will be important to keep the program manageable in scale given the significant size and complexity of California, the number of existing and emerging ISPs in the State, and the great diversity of unserved and underserved locations.

For these reasons, the CPUC anticipates that the grant program should be efficient to administer and should not require lengthy, expansive negotiations with many applicants. To that end, the strategies proposed below are designed to include limited negotiations over a shorter period of time, building more time into the window for applicants to prepare their proposals, within NTIA's timeline.

The challenge presented

California recognizes the challenging underlying economics of deploying broadband to the locations that are currently unserved or underserved; for example, even with a generous grant program, some areas may not attract any applications at all, or may attract only a single application whose costs are not constrained by competition for funds to serve that area. This is because, even where deployment is fully funded with BEAD funds, it may be economically challenging for a grantee to operate and sustain the network because of low revenue opportunity and high operating costs.

The BEAD program was designed by Congress and NTIA to meet the goal of extending future-proof broadband to all locations in the states and territories. The program has mandated unique requirements to ensure the allocated funds meet this ambitious objective in a fair, open, and competitive process. CPUC has designed its approach within the framework of these requirements and adapted its grant program design where feasible and appropriate to meet California's unique needs. With finite funds and unique, ambitious goals, the CPUC recognizes there are competing and

[23] See BEAD NOFO, p. 3.

[24] See BEAD NOFO, Section IV.B.5.b.

valid solutions to balance the various requirements. The CPUC seeks public input to ensure its approach reflects regional and local challenges as well as the capabilities of prospective providers.

5.1 Deployment subgrantee selection process

The subgrantee selection process described below is designed to be fair and to avoid arbitrary decisions. It does this through detailed description of selection rules and procedures, discussion of application of fair and consistent rules to all applicants, and to the extent possible, definition of quantitative scoring methods that minimizes subjective judgement in grant decisions. The process and rules proposed below include such protections as requirements that selection officers will certify that they do not have conflicts of interest and that they will apply grant rules fairly and without bias.

The CPUC's grant making principles and strategies are designed to ensure impact, equity, openness, competition, and participation.

5.1.1 Principles

The CPUC is an experienced grant making entity and has administered multiple successful broadband grant programs in recent years that reflect its experience managing a fair, open, and competitive process to deploy broadband to unserved and underserved households throughout California.

The CPUC intends to use the capabilities and structures it has developed for other statewide broadband grant programs to inform, to the greatest extent possible, the BEAD deployment subgrantee selection process in a way that is open, fair, and competitive. All elements of the BEAD program have been designed with these goals at the forefront, as well as the CPUC's related BEAD design principles:

a. Impact

   - Grant strategy should seek to make limited funds reach as many locations as possible
   - Fiber-to-the-premises should be prioritized and funded to the extent possible; with alternative technologies being considered where appropriate while taking into account the Extremely High Cost Per Location Threshold
   - Process and requirements should make prudent use of public funds through rigorous review and qualification of applications

b. Simplicity and widespread participation

   - The process should be designed to encourage maximum participation by eligible applicants and opportunities for smaller local applicants
   - The program, from design to final execution of grant agreements, should limit burdens on applicants and enable efficient applicant participation

- The program design should also enable efficient grant program administration while accounting for BEAD's complexity

c. Openness, fairness, and competition

- The process should reflect the key goals of enabling participation through openness, sharing of information, fairness, and commitment to competition
- All elements of the grant strategy, including geographic units for proposals, should be designed to increase the potential for competition among applicants statewide and in specific areas, as well as for public entities and Tribal internet service providers
- The preferences of California Tribes should be the determining factor as to which entities are awarded funds to deploy broadband on Tribal lands

Openness is crucial to ensure the best outcomes for unserved and underserved communities and will involve a range of strategies:

1. Open and inclusive eligibility for grant awards, welcoming applications from both public and private entities large and small, as well as collaborations and public-private partnerships
2. Scoring criteria that reward open access and open competition on the funded network
3. Community input at all stages of the BEAD process, including through engagement and feedback to the planning process and the plans themselves
4. To ensure against risks of bias, collusion, conflict of interest, and self-dealing, the CPUC will ensure that all reviewers are entirely financially independent of all applicants. Reviewers will be required to certify in writing that they have no employment, contractor, or other business relationship with any applicant or any affiliate or subsidiary of any applicant

Fairness for applicants is essential to encourage competition, innovation, and the efficient use of resources while ensuring that unserved and underserved areas receive the connectivity they need. To ensure fairness in its BEAD grant process, the CPUC will ensure the following:

1. An open and transparent process, with all grant materials and guidance available to all potential applicants on the same timeline, including publication of the scoring rubric and guidance for how to self-score applications based on the scoring criteria established by the CPUC

2. Ongoing and frequent communications through public means, such as grant workshops and frequently updated FAQs, to enable maximum information sharing with potential applicants

3. Inclusive eligibility criteria that are clear and not overly restrictive, within the parameters of the BEAD program, to ensure that entities of all sizes, both public and private, can participate

4. Transparent scoring criteria

5. A competitive process that encourages applicants to submit innovative proposals and cost-effective solutions

6. A fair review process that is impartial and free from conflicts of interest, with independent evaluators engaged to assess proposals

Competition is a key component of the CPUC's goals, methodology, and commitments. Creating a competitive environment for the BEAD grant program will be ensured through multiple means:

1. Broad eligibility and participation, including Tribes, municipalities, counties, electric utilities, and a full range of nonprofit and for-profit private entities

2. A low-burden grant program that aligns with the considerable demands of the federal BEAD program but is simultaneously designed to make it feasible for all sizes of entities to compete without facing unreasonable costs or level of effort

3. Incentives for collaboration by applicants with other providers, local and Tribal governments, and community organizations

5.1.2 Technical assistance, communications protocols, and administrative support

To support openness, fairness, and competition in its BEAD grant efforts, the CPUC plans to provide robust communication, technical assistance, and administrative support for applicants throughout the process. The CPUC manages a substantial technical assistance program that provides engineering and business planning guidance to communities, with a particular focus on local governments and Tribal entities.

The CPUC has an extensive email list of stakeholders, including service providers, local and Tribal governments, community anchor institutions, State agencies, and nonprofit organizations. The CPUC also has an extensive web, engagement, and social media presence. The CPUC will use these tools to alert potential applicants of each milestone in the grant application and selection process as well as to provide information on technical assistance opportunities or updated information about program requirements. The CPUC's organizational partners will also be encouraged to further distribute information about the BEAD program through their own email lists and website postings.

The CPUC will also use its website as a repository for potential applicants to access detailed application materials and technical assistance resources, with clear version control notation to ensure that applicants are always able to access the latest guidance.

The CPUC expects to implement the following open and transparent process for its BEAD outreach and communications:

- The CPUC will announce the dates of the opening of its BEAD application window at least 30 days prior to the opening of the window.
- At approximately the same time as this announcement of the application dates, the CPUC will make BEAD application materials available on its website. These materials will include an Application, Program Guide, and Frequently Asked Questions (FAQ) documents. The CPUC will provide additional resources on its website to direct potential applicants to third-party resources that may be of use, including those provided by NTIA, NIST, FCC, and others.
- The CPUC will provide details regarding the Project Areas and associated materials and information, as detailed in Section 5.1.4.
- The CPUC will conduct at least one online application workshop. This workshop will provide general instructions, discuss the program's goals and objectives, map out major program milestones, answer questions, and provide other technical assistance. This workshop will be recorded and available on the CPUC website and the FAQ document will be updated to reflect questions and answers from the workshop.
- The CPUC will have a dedicated email address available for participants to use to ask questions and request technical assistance. To provide transparency, fairness, and additional technical assistance, the CPUC will update its FAQ document on a regular basis with the questions and answers generated by the email inquiries and in-person meetings. Users will be able to register on the CPUC website to receive email updates when the FAQs or other program resource documents are updated.
- The CPUC will seek to replicate for BEAD its current program for providing training and support to public and nonprofit entities, to support grant applications that propose to build networks owned, operated by, or affiliated with a local government, Tribe, or nonprofit. To encourage and support applications from these types of entities with respect to its other broadband grant programs, the CPUC has created a Broadband Internet Caseworker program that may be a model for the BEAD program. The program includes both in-person seminars and a series of online webinars and materials to help these entities identify local economic and social benefits from high-speed broadband and to navigate the complex landscape of strategies and funding for developing these projects. Program materials address critical path issues such as broadband technology choice, network planning, business models,

workforce and economic development opportunities, market structure, local needs assessments, and elements of the construction process. The program also provides links to data and mapping resources, third-party broadband planning resources, and descriptions of different funding programs. The CPUC plans to frequently update and add to this resource and to continue to try to make its programs, including funding programs, more accessible for localities, nonprofits, and Tribal entities.[25]

- If feasible given the limited timeline for the BEAD grant program, the CPUC will allow for reasonable curing to seek to ensure an optimal participation level of qualified applicants.

The CPUC will continue to use all available communication channels to update applicants on milestones, deadlines, updated FAQs, and technical assistance resources as they are made available by the CPUC, NTIA, NIST, FCC, or other relevant partners.

5.1.3 Overview of planned Subgrantee Selection Process

The following is the CPUC's planned Subgrantee Selection Process, which is part of the CPUC's larger plan for ensuring service to all California locations that are currently unserved or underserved.

Prioritization of fiber projects

The CPUC recognizes the preference in federal BEAD policy for projects that involve deployment of fiber-to-the-premises, which are considered by NTIA to be "Priority Broadband Projects."[26] That federal preference is consistent with the State of California's own policy to use public funds to build infrastructure that will meet the needs of the future wherever possible. Given these two considerations, the CPUC plans to prioritize end-to-end fiber proposals, consistent with the BEAD NOFO, and to make awards for alternative technologies—such as fixed wireless and coaxial cable—where the costs of fiber exceed the Extremely High Cost Per Location Threshold, per NTIA's requirements, or where no proposals are received for fiber because of geographic or other constraints.

While significant, BEAD funding will not enable deployment of broadband infrastructure to these unserved and underserved locations in the State if not spent prudently, coordinated effectively, and targeted toward communities most in need.

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[25] "Broadband Internet Caseworkers," CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/broadband-caseworkers.

[26] According to the federal government's rules for this program, "the term 'Priority Broadband Project' means a project that will provision service via end-to-end fiber-optic facilities to each end-user premises." The rules provide that projects can only be funded with alternative technologies if the costs for fiber-to-the-premises exceed a cost threshold (known as the "Extremely High Cost Per Location Threshold") that is calculated to enable all unserved locations to receive service with the available BEAD funding. States may decline to fund fiber-to-the-premises only in the event that the costs exceed the Extremely High Cost Per Location Threshold and the alternative approach is approved by NTIA. See BEAD NOFO, Section IV.B.7.

Project Area design

In determining how to structure the BEAD grant program, a critical issue is the question of how grant funding areas (Project Areas) will be designed, by whom, and with what requirements. This issue is of critical importance because of the dual challenges of (1) the need to deploy to as many unserved and underserved locations as possible, and (2) the economic challenge presented by some of the most remote locations, not only for the high cost of construction but also the very high cost of operations relative to potential revenue. How grant Project Areas are defined—and the rules for provision of service to all unserved and underserved locations within them—is a critical step in framing the geography grant applications will cover.

The federal rules that govern the BEAD program allow each state to determine how to design Project Areas or to choose to allow applicants to do so, so long as the state has a plan to address the needs of all unserved and underserved locations.[27]

The CPUC has developed two alternative options for Project Area design and seeks comment and input on the following alternative options, each of which is summarized below and referred to throughout this comment draft of the Initial Proposal Volume II.

The two alternatives include:

- **Option 1: Applicants define Project Areas**
- **Option 2: Project Areas are based on established political boundaries**

Detailed discussion of the two alternatives is provided below in Section 5.7.

Service commitment percentages

With respect to any of the approaches for defining Project Areas, the CPUC proposes to require applicants to provide proposed pricing for service to 100 percent of unserved and underserved locations in the Project Area. In addition, the CPUC seeks comment on the potential to allow applicants to also propose to serve a lower percentage of unserved and underserved locations in each Project Area, in recognition of the fact that every Project Area may include locations that are so

[27] According to the BEAD NOFO, a state "may solicit proposals from prospective subgrantees at the geographic level of its choosing—for example, on a per-location basis, per-census block basis, per-town, per-county or another geographic unit. An Eligible Entity may alternatively solicit proposals for project areas it defines or ask prospective subgrantees to define their own proposed project areas. If the Eligible Entity allows prospective subgrantees to define proposed project areas, it must develop a mechanism for de-conflicting overlapping proposals (for example, by de-scoping some locations from a provider's proposed project area) to allow for like-to-like comparison of competing proposals. Whatever process is selected, the Eligible Entity must ensure it has a plan for serving all unserved and (where it has sufficient funding) underserved locations." See BEAD NOFO, p. 38.

remote and hard to reach—with any terrestrial technology—that including those locations in an application may serve to make the area too costly to be funded.

For these reasons, the CPUC would allow proposed pricing for less than 100 percent of eligible locations in a Project Area, seeking alternative pricing to reach nearly all unserved and underserved locations in the Project Area to increase the chances of funding the vast majority of these locations throughout the State with the best technology possible.

This strategy will allow for the option of funding proposals to serve *many* unserved and underserved locations in a Project Area if no cost-effective application is received for 100 percent of these locations.

Detailed discussion of the issue of service area commitments is provided below in Section 5.7.

The Extremely High Cost Per Location Threshold

Given the unpredictability of fiber construction costs during the BEAD timeline and considering the challenges to reach many extremely remote locations in some parts of California, the costs to deploy fiber to all unserved and underserved locations may exceed available BEAD resources. For that reason, the CPUC anticipates using the Extremely High Cost Per Location Threshold (EHCPLT) mechanism for making awards for alternative technologies, such as fixed wireless and coaxial cable, that may be necessary to address the needs of some locations. Consistent with NTIA rules, the CPUC will make those awards as necessary only for locations that do not receive fiber proposals or whose fiber proposals exceed the NTIA-mandated EHCPLT. [28]

The EHCPLT is the mechanism NTIA requires that states use to determine the cost at which it is infeasible to fund fiber to eligible locations; above that threshold, alternative, lower-cost technologies can be funded based on the EHCPLT calculation that funding more fiber to those locations would exceed the available BEAD budget. As a result, the EHCPLT enables states to identify the higher-cost locations that are too costly for fiber deployment and where NTIA will allow approved alternative technologies that are less expensive but still meet BEAD's definition of broadband.

The EHCPLT is thus a critical element of determining how to serve Grant Areas that do not receive cost-effective proposals for fiber, as well as how to serve locations that are excluded from fiber proposals by applicants.

Detailed discussion of the CPUC's strategy for using the EHCPLT is provided below in Section 5.11.

[28] The EHCPLT is described by NTIA as "a BEAD subsidy cost per location to be utilized during the subgrantee selection process in which an Eligible Entity may decline to select a proposal if the use of an alternative technology meeting the BEAD Program's technical requirements would be less expensive." See BEAD NOFO, p. 13.

5.1.4 Phases

The BEAD funding effort will be comprised of the following phases:

a. **Application Phase**, during which applicants will submit their subgrantee qualification materials and proposed projects

b. **Negotiation Phase**, during which the CPUC will engage with applicants to reach final project boundaries and costs

c. **Provisional Award**, in which the CPUC announces preliminary award areas, drafts the BEAD Final Proposal, and then submits the Final Proposal to NTIA (following public comment) for approval and authorization to award grants. Under NTIA rules, no project can be funded without federal approval of the Final Proposal.

The following sections provide further details on the CPUC's BEAD grant process.

5.1.4.1 APPLICATION PHASE

During the Application Phase, the CPUC will accept, review, and score grant applications for specific projects—and will conduct a series of related necessary activities, prior to and following acceptance of the grant applications. The Application Phase will follow full authorization from NTIA based on approval of the outcome of the Challenge Process and of the Initial Proposal Volume II.

Once the CPUC has received NTIA's full authorization, the CPUC will distribute grant materials and begin accepting applications for proposed projects. The application materials will require applicants to (1) establish their qualifications to participate in the BEAD program and successfully complete and operate a BEAD project, and (2) present a compliant, fundable grant application to deploy and operate a communications network that meets the requirements of the CPUC's program.

The BEAD application materials will specify the materials and certifications that are required for qualification, together with the format and date for submission. The qualifications materials and certifications will be focused on materials that address financial, managerial, and technical qualifications as well as experience and capacity. The project materials will be focused on the proposed network, budget, deployment schedule and other matters related to construction and operation of the proposed network.

Given the rigorous and robust documentary requirements for BEAD, the application process will require evaluating proposals from organizations that meet NTIA's and the State's requirements and are most likely to achieve the objectives of the BEAD program.

The Application Phase process will allow a limited curing opportunity by providing additional time for follow-up data requests by the CPUC as necessary.

While both qualification and proposed project materials will be part of each application, acceptable qualification materials will be a prerequisite for the scoring of grant applications. All entities whose qualification materials are determined to be sufficient will also be scored on their project proposals.

5.1.4.2 NEGOTIATION PHASE

A detailed discussion of the CPUC's plans for the Negotiation Phase is included in the sections regarding the EHCPLT below, as the two matters are deeply interrelated. The following is an overview of the potential approach to negotiations.

Following receipt of applications, the CPUC will engage with applicants in negotiations designed to reach final agreement on two topics: project area boundaries and costs.

The CPUC will evaluate the full range of applications that are received and will consider how to follow up in a process that is designed to enable the CPUC to reach the best possible comprehensive and statewide outcome as a result of the grant process. NTIA's rules for the program explicitly allow for negotiation for a range of purposes, including to reduce or change pricing and to expand or reduce a proposed Project Area.

The CPUC will negotiate pricing, both with respect to locations that received no applications and to which the CPUC would like to attract other applicants, and with respect to locations where the proposals were too costly (and exceed the EHCPLT) and where there exists potential to secure lower pricing.

The CPUC reserves flexibility to negotiate with one or more entities regarding potential pricing, seeking to maximize the reach and value of the BEAD funds to bring fiber to locations throughout California. Among the range of circumstances in which the CPUC may wish to negotiate pricing are the following:

- Applications for a given Project Area exceed the EHCPLT and the CPUC negotiates with all to secure best and final offers, to bring costs for that Project Area below and EHCPLT
- A grant applicant proposes to serve a number of different Project Areas and the CPUC negotiates lower pricing with the applicant based on the potential award of multiple aggregated Project Areas

The CPUC will additionally negotiate proposal area boundaries. In the event that there exist defined Project Areas that do not receive any applications, the CPUC will negotiate with one or more applicants to determine whether and under what circumstances they would be willing to serve those Project Areas. The CPUC may negotiate with one or more entities at a time in order to ensure the best possible use of taxpayer funds, maximizing the reach of BEAD funds.

In sum, the CPUC believes that flexibility to take the necessary steps during the Negotiation Phase is an essential element of securing the best, fairest, and most competitive outcome for the BEAD process, consistent with plans to eliminate the digital divide in California.

5.1.4.3 PROVISIONAL AWARD

Once the CPUC and the applicants have concluded successful negotiations, the CPUC will announce provisional awards under the agreed upon terms. These pending awards will be included in the CPUC's Final Proposal that will be submitted to the NTIA following a 30-day public comment period, as required by federal rules.

Upon NTIA approval of the Final Proposal, the CPUC will finalize the provisional awards through subgrant agreement negotiation and execution with the applicants. Included in its formal subgrant agreement with subgrantees, the CPUC will implement NTIA's recommended Sub-granting Accountability Procedures, which will include: 1) disbursement of funding on a reimbursable basis, to ensure completion of subsidized activities; 2) claw-back provisions to allow for the recoupment of funds in the case of broken commitments; and 3) timely subgrantee reporting mandates and robust monitoring procedures aligned with the CPUC reporting schedule to NTIA.

If an applicant is provisionally awarded one or more projects and the awarded party fails to execute on all commitments—such as when the party is not willing to accept full responsibility of the entire award—the CPUC reserves the right to declare the award in default and solicit alternate proposals from incumbents or proposers of nearby project areas.

5.2 BEAD Grant Process overall timeline

The following is a tentative overall timeline for the BEAD Grant Process. All elements of the tentative timeline are subject to change based on the federal requirement that multiple NTIA approvals must precede the Challenge Process, grant administration process, and awards. The CPUC will have no control over the timeline in which NTIA will review and offer approvals. This tentative timeline is thus offered as an illustration of the potential schedule for administration of the BEAD program in 2024 and early 2025.

Process element	Approximate date
Challenge Process	First quarter 2024, following approval by NTIA of Initial Proposal Volume I
Initiation of BEAD grant program, with application materials, including Project Areas, released. Additional materials will be provided closer to the opening of the grant window.	Within 60 calendar days following approval by NTIA of Initial Proposal Volume II and the results of the Challenge Process, whichever is latest
BEAD grant application workshop/webinar	Within five business days of initiation of BEAD grant program

Process element	Approximate date
Final deadline for submission of BEAD grant applications	60 calendar days following initiation of BEAD grant program
Review of BEAD grant application materials, including negotiations and/or second phase grant window	120 calendar days following final deadline for submission of BEAD grant applications
Announcement of provisional BEAD determinations, subject to NTIA approval of the Final Proposal	Within approximately 255 calendar days of initiation of BEAD grant program
Public comment on Final Proposal	30 calendar days from the time of publishing the draft Final Proposal
Submission to NTIA of the Final Proposal	Within 365 calendar days following NTIA approval of the Initial Proposal Volume II

5.3 Scoring methodology

5.3.1 Qualification and certification submissions

California's BEAD application materials will specify the materials and certifications that are required to qualify for funding for a BEAD project, together with the format and date for submission. The materials and certifications will be focused on materials that address financial, managerial, and technical qualifications as well as experience and capacity. These requirements are discussed further below.

These certifications and materials will not be scored but will rather be evaluated to determine whether or not the submitting entity is qualified to participate in the process. Materials regarding Fair Labor Standards will be evaluated and included in scoring consideration, per the scoring rubric included below.

In the event reviewers find the data submitted to be insufficient or unclear, the CPUC may choose to cure submissions by providing applicants with opportunity to clarify or submit additional materials. All requests for clarification or additional submissions will be made in writing and all responses will be required to be in writing, with full documentation.

All entities whose qualification materials are determined to be sufficient will have their proposed projects reviewed and scored by the CPUC.

The CPUC will require the following materials for purposes of determining whether prospective subgrantees are qualified to receive awards in the event their applications score accordingly:

Financial capability

- Unqualified audited financial statements from the last three years
- Statements signed by an executive with the authority to bind the company that certifies the financial qualifications

Managerial capability

- Resumes of relevant management staff that cumulatively demonstrate a minimum of five years of experience with broadband network design, construction, maintenance, and operations
- Organizational chart and a narrative detailing the applicant's processes and structure to manage large projects

Technical capability

- If not submitted as part of the managerial capability requirements, applicants must provide the resumes of an employed CTO and contractor oversight team with the relevant certifications (both management and non-management) for deployment projects as mandated by State and federal law
- Certification that if the applicant chooses to contract resources, all contracted resources will have the relevant and necessary skills

Operational capability

- Certification that applicants have provided a voice, broadband, and/or electric transmission or distribution service for at least two consecutive years or that they are a wholly owned subsidiary of such an entity and attest to and specify the number of years the applicant or its parent company has been operating
- If the applicant has provided a voice and/or broadband service, certification that the application has filed FCC Form 477s and Broadband DATA Act submissions, if applicable, as required during this time period, and otherwise has complied with FCC requirements and certification that the applicant has complied with CPUC requirements regarding broadband data collection and mapping.
- If the applicant has not provided broadband service and has operated only an electric transmission or distribution service, the applicant will be asked to submit qualified operating or financial reports, that it has filed with the relevant financial institution for the relevant time period along with a certification that the submission is a true and accurate copy of the reports that were provided to the relevant financial institution

Legal compliance

- A legal opinion from the applicant's legal counsel attesting to compliance and detailing any violations or pending court proceedings
- Certification that the applicant will permit workers on BEAD deployment projects to create worker-led health and safety committees that management will meet with upon reasonable request
- Ownership information consistent with the requirements set forth in 47 C.F.R. § 1.2112(a)(1)-(7)
- Certify that applicant has no history of failure to comply with environmental and historic preservation requirements or BABA, to the extent applicable
- Certification that applicant intends to comply with environmental and historic preservation requirements, including the National Environmental Preservation Act and the National Historic Preservation Act and requirements of the California State Historic Preservation Office, as applicable, under any BEAD award
- Any applicant that is unable to certify a track record of full compliance will be required to provide detailed narrative and documentation regarding its histories of challenges or noncompliance

Cybersecurity compliance

- Certification that the applicant has a cybersecurity risk management plan in place that is either: (a) operational, if the applicant is providing service prior to the award of the grant; or (b) ready to be operationalized upon providing service, if the applicant is not yet providing service prior to the grant award
- Certification that the applicant's cybersecurity plan reflects the latest version of the National Institute of Standards and Technology (NIST) Framework for Improving Critical Infrastructure Cybersecurity (currently Version 1.1) and the standards and controls set forth in Executive Order 14028 and specifies the security and privacy controls being implemented
- Certification that the applicant's cybersecurity plan will be reevaluated and updated on a periodic basis and as events warrant and a timeline for how frequently the plan is reevaluated and updated
- Certification that the applicant's cybersecurity plan will be submitted to the CPUC following execution of grant agreements, and if the applicant makes any substantive changes to the plan, a new version will be submitted to the CPUC within 30 days

Supply chain compliance

- Certification that the applicant has a supply chain risk management plan in place that is either: (a) operational, if the applicant is already providing service at the time of the grant; or (b) ready to be operationalized, if the applicant is not yet providing service at the time of grant award

- Certification that the applicant's supply chain risk management plan is based upon the key practices discussed in the NIST publication NISTIR 8276, Key Practices in Cyber Supply Chain Risk Management: Observations from Industry and related SCRM guidance from NIST, including NIST 800-161, Cybersecurity Supply Chain Risk Management Practices for Systems and Organizations and specifies the supply chain risk management controls being implemented

- Certification that the applicant's supply chain risk management plan will be reevaluated and updated on a periodic basis and as events warrant and a timeline for how frequently the plan is reevaluated and updated

- Certification that the applicant's supply chain risk management plan will be submitted to the CPUC prior to the allocation of funds, and if the applicant makes any substantive changes to the plan, a new version will be submitted within 30 days

Other public funding

- A list of applications the applicant submitted or plans to submit related to federal or State broadband funding, and every broadband deployment project that the applicant or its affiliates are undertaking or have committed to undertake at the time of the application using public funds

In addition, consistent both with NTIA's requirements and the requirements of California State labor laws and regulations, the CPUC will require the following materials regarding **Fair Labor Practices**, which will be part of a qualification checklist of managerial and operational qualifications and later considered as part of project proposal scoring:

1. Certification from an Officer/Director-level employee, or an equivalent, of consistent past compliance with federal labor and employment laws on broadband deployment projects in the last three years, including:

    - Certification that the prospective subgrantee, as well as its contractors and subcontractors, have not been found to have violated laws such as the Occupational Safety and Health Act, the Fair Labor Standards Act, or any other applicable labor and employment laws for the preceding three years; or

    - Disclosure of any findings of such violations

2. Certification that the potential subgrantee, and its proposed contractors and subcontractors, have existing labor and employment practices in place and that the subgrantee will recertify this annually for the duration of the BEAD implementation period, including:
    - Applicable wage scales and wage and overtime payment practices for each class of employees expected to be involved directly in the physical construction of the network
    - Certification that the potential subgrantee will ensure the implementation of workplace safety committees that are authorized to raise health and safety concerns in connection with the delivery of deployment projects and that the applicant will recertify this annually for the duration of the BEAD implementation period
3. Discussion of the potential subgrantee's workforce plan, including information on training and safety, job quality, local hire and targeted hire, accountability and subcontracting practices, and ongoing operational workforce
4. Discussion of current and planned future practices regarding using a directly employed workforce, robust in-house training, wages and benefits, and a locally based workforce
5. Current and planned future practice regarding public disclosure of workforce plans and labor commitments on a website or online portal
6. Discussion of job quality considerations as part of the applicant's workforce development strategies
7. Discussion of track record and commitment to maintaining high standards of workplace safety practices, training certification or licensure for all relevant workers, and compliance with State and federal workplace protections
8. Certification of compliance with relevant workplace protections including the Occupational Safety and Health Act, the Fair Labor Standards Act, Title VII of the Civil Rights Act of 1964, relevant State safety standards and California State labor and employment laws
9. Discussion of whether the construction workforce will be directly employed or subcontracted, the anticipated size of the workforce required to carry out the proposed work, a description of plans to maximize use of local or regional workforce, and a description of the expected workplace safety standards and training to ensure the project is completed at a high standard

5.3.2 Scoring criteria

The CPUC's scoring rubric is consistent with NTIA's rules, which specify three primary criteria that together must account for 75 percent of scoring,[29] as well as secondary criteria that are based on California's own public policy priorities.

The CPUC will begin its evaluation of proposals by ensuring that the applicant provided all required materials. Incomplete proposals will not be considered.

Affordability: up to 40 points

For Priority Broadband Projects: Applications will be scored based on applicants' commitments to offer a symmetrical 1 Gbps service to BEAD-funded locations at $50 per month, inclusive of all taxes and fees. Full points will be awarded to applications that make this commitment in clear and unambiguous terms, without caveats that compromise the commitment. For every additional $1 per month that the applicant proposes to price its symmetrical 1 Gbps service, 1 point will be deducted from the 40-point maximum.

For Other Last-Mile Broadband Deployment Projects: Applications will be scored based on applicants' commitments to offer 100/20 Mbps to BEAD-funded locations at $30 per month, inclusive of all fees. Full points will be awarded to applications that make this commitment in clear and unambiguous terms, without caveats that compromise the commitment. For every additional $1 per month that the applicant proposes to price its 100/20 Mbps service, 1 point will be deducted from the 40-point maximum.

Labor Standards: up to 20 points

Up to 20 points will be awarded, with 10 points based on (1) a demonstrated history of compliance with federal labor laws; (2) demonstrated commitments to future compliance with federal labor laws; and (3) the quality and contents of labor practice-related items submitted during the Application Phase. Projects on Tribal lands will receive the 10 points for labor standards as long as the project complies with Tribal and applicable federal law concerning labor standards. Additionally, up to 10 points will be awarded to all projects on the basis of workforce capacity building and development commitments, especially those prioritizing equitable workforce development.

New entrants without a lengthy record of labor and employment law compliance will receive points in this category based on specific, concrete commitments to strong labor and employment standards and protections and equitable workforce development commitments going forward.

Up to 10 points will be deducted for official labor relations complaints or violations in the five years preceding the date of application.

[29] See BEAD NOFO, Section IV.B.6.b, page 43.

Minimum BEAD Outlay: up to 15 points

Applicants will be scored based on the grant amount requested and amount of matching funding committed by the applicant. Applicants will earn 10 points for meeting the 25 percent match requirement. Applicants will receive 15 points for a 50 percent match amount.

Speed to Deployment: 5 points for Priority Broadband Projects and 1 point for Other Last-Mile Broadband Projects

Applicants must demonstrate that the project will be complete within two years of receiving funds (barring CEQA) to receive points under this criterion. Failure to demonstrate compliance with this timeline, for either Priority Broadband Projects or Other Last-Mile Broadband Projects, will result in zero points.

Equity: 10 points

As an additional prioritization factor for both Priority Broadband Projects and Other Last-Mile Broadband Deployment Projects, applicants will receive up to 10 points for the number of locations they propose to serve that are located in a disadvantaged or low-income community. One point will be awarded per 10 percent (rounded down) of the locations in a proposed project that are located in a disadvantaged or low-income community, for a total of 10 points.

Resilience: 10 points

As an additional prioritization factor for both Priority Broadband Projects and Other Last-Mile Broadband Deployment Projects, applicants will receive up to 10 points for the number of locations located in a Tier 2 or Tier 3 High-Fire Threat District. One point will be awarded per 10 percent (rounded down) of locations in a Tier 2 or Tier 3 High-Fire Threat District, for a total of 10 points.

Technical Capability: 4 points

For Other Last-Mile Broadband Deployment Projects only, applicants will be awarded a total of 4 points for offering a plan below the top pricing tier that can achieve 500 Mbps downstream service speed. For every commitment of 100 Mbps slower for the downstream service speed, 1 point will be deducted from the 4-point maximum.

5.3.3 Scoring rubric

When this Initial Proposal is submitted to NTIA, it will include a complete and expanded scoring rubric in Appendix E: Proposed scoring rubric that fulfills NTIA's full guidance and takes the NTIA scoring rubric template as a model. A tabular summary of the CPUC's proposed scoring rubric for both end-to-end fiber and other last mile deployment projects is provided below:

Scoring Criteria for Priority Broadband Projects (end-to-end fiber)

Scoring Criterion	Points available
Primary Criteria (required under NTIA Rules)	
Affordability	40
Labor Standards	20
Minimum BEAD outlay	15
Primary Criteria subtotal	75
Secondary Criterion (required under NTIA Rules)	
Speed to Deployment	5
Secondary Criteria subtotal	5
Additional Prioritization Factors	
Equity	10
Resilience	10
Additional Prioritization Factors subtotal	20
Total	100

Scoring Criteria for Other Last-Mile Broadband Deployment Projects

Scoring Criterion	Points available
Primary Criteria (required under NTIA Rules)	
Affordability	40
Labor Standards	20
Minimum BEAD outlay	15
Primary Criteria subtotal	75
Secondary Criteria (required under NTIA rules)	
Technical Capability	4
Speed to Deployment	1
Secondary Criteria subtotal	5
Additional Prioritization Factors	
Equity	10
Resilience	10
Additional Prioritization Factors subtotal	20
Total	100

5.4 Prioritization of unserved BSLs, underserved BSLs, and eligible CAIs

In the Infrastructure Investment and Jobs Act, Congress clearly established that addressing the needs of unserved locations is the first priority of the BEAD program, followed by underserved

locations as the second priority, and CAIs as the third. This prioritization is statutorily mandated and confirmed by NTIA's BEAD Notice of Funding Opportunity.[30]

The BEAD priorities also align with the State of California's proposal to utilize the BEAD funds. California's internal modeling suggests that the funds available through BEAD could possibly provide for fiber-to-the-premises to a substantial portion of unserved locations in California. However, the CPUC believes it will be challenging to do so given current inflationary pressures and projected demand for broadband construction labor and materials during the BEAD deployment process. California will work to efficiently utilize BEAD funds to serve as many unserved locations, underserved locations, and CAIs as possible consistent with the BEAD-mandated prioritization. The State will consider how to best leverage existing broadband programs to support California's goals under Broadband for All, which align with the goals for BEAD. The CPUC is in the process of considering how these programs can be used in conjunction with BEAD and other programs to further broadband expansions by municipal and nonprofit entities in areas that have experienced historic disinvestment.

Given this analysis, the CPUC proposes to review applications for BEAD funding with a focus on utilizing the funds available to serve as many qualifying locations as possible consistent with the mandates of the program, and allowing as much flexibility as possible in defining a Project Area to ensure that the Final Proposal maximizes the number of locations that will be served with BEAD funding. The CPUC reserves the right and opportunity to undertake an additional application round if funds are available to provide broadband to any locations not covered in the initial application round.

In the event that BEAD funds are insufficient to deliver fiber to all locations, the CPUC will prioritize projects to serve unserved and underserved locations located in high-poverty and persistent poverty counties, consistent with the BEAD NOFO,[31] as well as projects to serve locations on Tribal lands.

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[30] According to the BEAD NOFO, a state "shall award funding in a manner that ensures the deployment of service to all unserved locations within the Eligible Entity's jurisdiction. If the Eligible Entity has sufficient funds to ensure deployment of service to all underserved locations within its jurisdiction, it must ensure such deployment as well. If the Eligible Entity lacks sufficient funds to ensure deployment of service to all underserved locations, it must commit the remainder of its BEAD funds to ensure deployment to underserved locations. Eligible Entities must submit Initial Proposals and Final Proposals that will result in coverage for all unserved locations, and (to the extent funds are available) all underserved locations." See BEAD NOFO, p. 41. To this end, a state "may seek proposals to serve unserved locations, underserved locations, and CAIs collectively or separately, so long as the Eligible Entity awards funding in a manner that prioritizes Unserved Service Projects and once it certifies that it will ensure coverage of all unserved locations within the Eligible Entity, prioritizes Underserved Service Projects." See BEAD NOFO, p. 37.

[31] "To the extent that an Eligible Entity demonstrates that there are insufficient funds available to fund deployment to all unserved, underserved, or eligible CAI locations, the Eligible Entity must prioritize projects within each of those categories based on a strong preference for projects in high poverty areas or persistent poverty counties," See BEAD NOFO, p. 41.

5.5 Prioritization of non-deployment projects

Not applicable.

5.6 Environmental and historic preservation and Build America, Buy America Act compliance

The State of California is deeply committed to the public policy goals of environmental and historic preservation as well as Build America, Buy America (BABA),[32] restrictions on purchases of fiber equipment manufactured in the People's Republic of China,[33] and the federal Secure and Trusted Communications Networks Act of 2019.[34] The CPUC plans to highlight the criticality of these requirements for potential applicants during the application workshops and in program application materials—and will require that all applicants certify their intention to comply with all related requirements.

The CPUC will also require applicants to certify that they have no history of failure to comply with environmental and historic preservation requirements or BABA, to the extent applicable.

Any applicant that cannot certify a track record of full compliance will be required to provide detailed narrative and documentation regarding its histories of challenges or noncompliance. In addition, the CPUC intends that it will actively use its subgrantee monitoring program post-award to verify that applicants are indeed compliant with these requirements.

5.7 Project Area definition

The CPUC offers for public comment two potential approaches to the definition of Project Areas.

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[32] Build America, Buy America Act, Pub. L. 117-53, Sections 70901-70952 (41 U.S.C. §8301 et seq.) (BABA) adopts a domestic content procurement preference and requires that certain inputs and construction materials used to design and build broadband infrastructure, including fiber optic network equipment, are produced in the United States. The Department of Commerce has proposed a limited waiver of the BABA requirements (see "Limited Applicability Nonavailability Waiver of the Buy America Domestic Content Procurement Preference," https://www.commerce.gov/sites/default/files/2023-09/BEAD%20BABA%20Waiver%20Replacement.pdf.) This waiver provides limited exemptions for all BEAD subgrantees from the requirements of the Buy American preference as applied to some, but not all, network equipment and construction materials used to design and build broadband infrastructure.

[33] Infrastructure Investment and Jobs Act §60102(g)(1)(D)(ii); BEAD NOFO Section VII.D.6.

[34] Section 9 of the **Secure and Trusted Communications Networks Act of 2019** (Pub. L. 116-124, December 27, 2020) (47 U.S.C. § 1608). The Act directs the FCC to develop and maintain a public list of "covered communications equipment or services." The list is updated from time to time using the FCC's methodology set forth in 47 CFR §1.50002. The list can be found at https://www.fcc.gov/supplychain/coveredlist. Subgrantees will not be reimbursed for any costs to procure or obtain prohibited covered communications services or equipment and any BEAD program grant funds used by grantees for such costs will be subject to recoupment.

- **Option 1: Applicants define Project Areas**
- **Option 2: Project Areas are based on established political boundaries**

Each of these options is designed to accomplish the following goals, among others:

1. Allow for efficient, non-burdensome grant application preparation by applicants of all types and sizes
2. Enable rigorous, efficient review and comparison of applications, which is particularly important given the compressed BEAD timeline
3. Simplify the deconfliction process by minimizing potential overlap of proposed Project Areas
4. Maximize the reach of the BEAD funds by creating incentives for service to as many as locations as possible within a Project Area
5. Create equal opportunity for grant-funded service to all portions of California

In developing the following options, the CPUC took into consideration the following factors:

- **Geographic boundaries** of Tribal lands
- **Urban areas** with demonstrated need based on concentration of unserved locations or demographic factors
- **Rural areas** with unserved locations in proximity to served locations
- **Locations of underserved locations and their proximity to unserved locations,** increasing the likelihood that grant-funded deployment to unserved locations could result in awardees also serving underserved locations, even without funding explicitly for the underserved locations, because of the efficiencies and business opportunity presented for the applicant
- **Proximity of existing network infrastructure** and potential to efficiently extend that infrastructure
- **Geographic and topographic factors** such as mountains, highways, rivers, and railway lines that naturally define broadband infrastructure architecture because traversing them is complex and costly
- **Potential for competition** among applicants to submit competitive and attractive applications to serve those areas. Ideally, Project Area design will encourage competition among applicants and result in multiple bids

- **Economic and technical viability and efficiency** in which the CPUC's internal data, modeling, and engineering expertise will help to define the most economically viable grouping of unserved and underserved locations into a single geographic unit for bidding
- **Community needs** where possible to ensure that boundaries reflect unique local circumstances

The CPUC encourages comment on these factors and others that should be considered in designing project areas. Similarly, the CPUC encourages applicants to consider these factors in constructing their projects.

Each of these options is described in detail below so that commenters may provide input to the CPUC on the alternative models. In addition to these specific options, the CPUC welcomes alternative proposals to those proposed below. Commenters proposing alternative options for Project Areas should explain how proposed alternatives will serve the BEAD program's statutory goals, including achieving complete coverage of unserved and underserved locations, as well as facilitate efficient execution of the application process, scoring and comparison of competing applications, and de-confliction of overlapping applications (if necessary). Parties should include any alternative proposals in formal comments, and non-parties to the BEAD proceeding may include alternative proposals in letters submitted via email to BEAD@cpuc.ca.gov.

Option 1: Applicants define Project Areas

In this option, the CPUC will allow applicants to draw their own project areas using the minimum geographic unit of a Census Block Group (CBG). Applicants may create a proposed Project Area by selecting as many contiguous CBGs for deployment as they choose.

The applicants' design of Project Areas would be required to include a minimum threshold of high cost or high need CBGs, as determined by the CPUC using a designation of high-cost CBGs and high-need CBGs (CBGs within a Disadvantaged Community or Low-Income Area).

In this approach, applicants will thus apply for funding for locations based on service boundaries that the applicants largely determine themselves, subject to the boundaries of CBGs. By enabling applicants to do this design themselves, applicants of all sizes and types would have equal opportunity to apply for the funds. This approach is designed to provide that small, public, and Tribal internet service providers are not disadvantaged by the structure of the grant program. Furthermore, this approach recognizes that applicants, including local and Tribal governments, are frequently best suited to determine the most economically viable grouping of locations into a single geographic unit for application.

This approach may lead to receipt of applications for overlapping CBGs that will require a deconfliction and clarification effort. To that end, the CPUC would undertake a negotiation process with applicants to arrive at an outcome that addresses the needs of as many as possible eligible locations. The selection of CBGs (rather than individual addresses) as the minimum geographic unit

for assembly of Project Areas is intended in part to enable somewhat simpler deconfliction than if applicants could define Project Areas at the address level, leading to overlapping applications without defined geographic boundaries for simpler, more efficient comparative analysis.

Option 2: Project Area boundaries are based on established jurisdictional boundaries

In this second approach, the boundaries of Tribal lands and school districts should serve as the boundaries for the Project Areas and applicants would be required to provide a proposal for all eligible locations within the political boundaries of their selected Project Area. Where there exists overlap between Tribal and school district geographic boundaries, the school district Project Area would include all locations within the district other than those within Tribal boundaries, as the Tribal boundaries will constitute a separate and distinct Project Area.[35]

School district and Tribal boundaries are logical Project Area boundaries in that they respect Tribal sovereignty; enable like-for-like comparison of applications; and may align with efficient broadband design parameters.

In this option, applicants would be required to provide a separate application for each Project Area.

Service commitments related to both approaches to Project Area definition

With respect to the two approaches for defining Project Areas, the CPUC will require applicants to provide proposed pricing for service to 100 percent of unserved and underserved locations in the Project Area.

In addition, the CPUC is considering and seeks comment on the potential to allow applicants to also propose to serve a lower percentage of unserved and underserved locations in each Project Area.

This approach recognizes that, in every Project Area, there may be individual locations that are so remote and hard to reach—with any terrestrial technology—that including those locations in an application may serve to make the area non-viable for applications at a cost that enables complete coverage of locations statewide or may serve to reduce or eliminate the chance of any applications being received for that Project Area.

For these reasons, the CPUC would allow proposed pricing for less than 100 percent of eligible locations in a Project Area, seeking alternative pricing to reach nearly all eligible locations in the Project Area to increase the chances of funding the vast majority of unserved and underserved locations throughout the State with the best technology possible.

The CPUC thus proposes that applicants could apply as follows:

[35] To the extent an applicant includes Tribal lands in its application, the applicant would also need to submit evidence that demonstrates Tribal consent or partnership as to the proposal set forth in the application.

- Applicants will be required to propose a grant amount to serve 100 percent of locations in any Project Area for which they submit an application
- Applicants will also have the option of proposing a grant amount to serve a lower percentage of locations and to provide a list of the locations they propose to remove from their grant obligations, as well as the rationale for the removal

The following is the format in which the CPUC would provide the opportunity for applicants to submit alternative applications for a single Project Area based on this approach:

Application Project Area [identification number]	**Percentage of eligible locations**	**Requested grant funds per location**	**Total requested grant funds for Project Area**
	100% (mandatory)	$_____	$_____
	[alternative number]% (optional)	$_____	$_____

Applicants would also be required to provide a list of any locations excluded from their service commitment, as well as related mapping data per the CPUC's specifications, so that applications can be scored and compared to each other.

This approach would allow for efficient comparison of proposals for each Project Area, while creating as much competitive dynamic as possible for well-priced applications for as much as possible of each Project Area. Applicants would have the freedom to propose to serve a Project Area at a lower percentage than 100 percent but will also understand that they may be competing with applications that propose to serve a higher percentage of locations.

The CPUC understands that this may result in proposals that vary significantly. Indeed, that varied pricing is part of the CPUC's goal for this strategy as it will allow for the option of funding proposals to serve *many* locations in a Project Area if no cost-effective application is received for 100 percent of eligible locations. As a result, this strategy would provide a range of alternative options for how the CPUC can use California's finite BEAD funds to reach as many eligible California locations as possible in the most efficient and impactful way.

So long as the pricing for 100 percent of locations is viable given the statewide need for funding, the CPUC will make awards to applications that propose to serve 100 percent of locations. In the event that the CPUC receives two or more identical proposals for identical Project Areas, then the CPUC will select the proposal with the highest score.

5.8 Approach to subsequent funding rounds if no proposals are received

In the event no proposal (or no viable proposal) is received for any given Project Area, the CPUC plans to undertake one or both of the following processes, depending on the circumstances.

1. First, the CPUC anticipates undertaking negotiations with one or more applicants that have applied for adjacent areas to determine whether other applicants would be willing to take on commitments to fund those locations, based on costs that will be negotiated between the applicant and the CPUC. The CPUC may choose to negotiate with one or more applicants to maximize the chances of determining a solution for those locations.

2. Second, the CPUC anticipates that, depending on circumstances, it may choose to undertake a second (and possibly third) competitive process to formally attract applications for those locations.

The CPUC reserves for itself the flexibility to undertake one or both of these processes following receipt of the applications. The CPUC believes that the flexibility to undertake these processes based on circumstances will increase the competitive pressure on applicants and for that reason declines to limit its options in this regard.

5.9 Projects on Tribal lands

The CPUC does not intend to award any funds for deployment on Tribal lands without a written formal Resolution of Consent from the applicable Tribal government. This requirement must be met prior to the CPUC's submission of its Final Proposal to NTIA, and the CPUC strongly encourages prospective subgrantees to deeply engage in meaningful consultation with Tribal governments well in advance of any application to ensure that a formal Resolution of Consent may be reviewed as part of the CPUC's evaluation of applications.

In limited circumstances, the CPUC may consider and score an application for deployment on Tribal lands where no Resolution of Consent has yet been provided if substantial evidence of meaningful and sustained consultation with the Tribal government is provided, but a formal Resolution of Consent must be submitted to the CPUC before funds may be formally committed. Furthermore, the CPUC strongly encourages applicants to meaningfully engage with the applicable Tribal governments in developing their applications where projects will be located on or near Tribal lands and to seek Tribal support and approval early in the process.

Recognizing that Tribal communities may extend beyond existing formal boundaries of Tribal lands and many Tribal members do not live within those boundaries, the CPUC encourages prospective applicants to construe requirements for meaningful consultation and demonstration of consent broadly and seek Tribal consent and collaboration to serve Tribal members living in proximity to Tribal lands. The term Tribal lands will be construed broadly and include Tribal communities within

ancestral Tribal lands where Tribal members reside. The CPUC seeks comments from Tribal entities to assist in refining this definition to ensure we fully address the need of California's Tribal communities to connect to broadband.

For any applications that include projects on Tribal lands, the above referenced documents will be a required element of the review to be determined to be a presumptive awardee. In the event that a presumptive awardee cannot provide documentation of support and approval from Tribal authorities, the CPUC will use the Negotiation Phase to engage with other applicants and/or to meet with Tribal authorities to understand their preferences.

The CPUC believes that these parameters and processes for Tribal engagement and consent to proposed projects on Tribal lands will result in more equitable and informed outcomes that benefit both the State and Tribal communities.

5.10 Identifying the Extremely High Cost Per Location Threshold (EHCPLT)

The CPUC seeks public comment regarding the process of identifying—and acting on—the EHCPLT. Consistent with NTIA rules, the CPUC anticipates developing the EHCPLT to determine at what cost per unit (if any) fiber-to-the-premises is too costly to achieve the statutory BEAD goal of achieving 100 percent broadband coverage with the funds provided in the BEAD allocation.[36] Pursuant to the federal requirement as stated in the NOFO "to set the Extremely High Cost Per Location Threshold as high as possible to help ensure that end-to-end fiber projects are deployed wherever feasible," CPUC will prioritize an EHCPLT as high as feasible to ensure greater fiber coverage "and maximize use of the best available technology while ensuring that the program can meet the prioritization and scoring requirements."[37]

The CPUC seeks input from parties and other stakeholders on the appropriate timing for establishment of the EHCPLT, and two options are presented below. In addition, the CPUC welcomes proposals of additional options to those proposed below.

Option 1: Establish EHCPLT based on BEAD applications received

[36] The EHCPLT is the mechanism NTIA requires that states use to determine the cost at which it is infeasible to fund fiber to eligible locations; above that threshold, alternative, lower-cost technologies can be funded based on the EHCPLT calculation that funding more fiber to those locations would exceed the available BEAD budget. As a result, the EHCPLT enables states to identify the higher-cost locations that are too costly for fiber deployment and where NTIA will allow approve alternative technologies that are less expensive but still meet BEAD's definition of broadband. The EHCT is described by NTIA as "a BEAD subsidy cost per location to be utilized during the subgrantee selection process in which an Eligible Entity may decline to select a proposal if the use of an alternative technology meeting the BEAD Program's technical requirements would be less expensive." See BEAD NOFO, p. 13.

[37] See BEAD NOFO, Section 1.B.2.C.

Under this approach, the CPUC will determine the EHCPLT once it has received all grant applications and will use it to efficiently allocate its BEAD funding based on the applications received. Based on both State and federal goals (and the federal requirement) to fund fiber-to-the-premises wherever possible, the CPUC will prioritize an EHCPLT as high as feasible to ensure greater fiber coverage while also prioritizing the federal statutory goal of complete coverage of unserved locations, followed by underserved locations and Community Anchor Institutions.

The EHCPLT will be developed using the proposed grant funding amounts in the applications received and may be adjusted during the Negotiation Phase based on feedback and outcomes from the negotiation process.

Option 2: Establish EHCPLT prior to BEAD application window

Under this approach, the CPUC will utilize cost modeling for BEAD unserved locations, including per-location costs for applications received for other CPUC broadband grant programs, to identify an EHCPLT prior to initiating the BEAD grant period. Applicants would therefore be aware of the EHCPLT prior to submitting applications and could pursue applications with an understanding of where fiber deployment costs may exceed the EHCPLT. As with Option 1, the CPUC would prioritize an EHCPLT as high as feasible to ensure greater fiber coverage while also prioritizing the federal statutory goal of complete coverage of unserved locations, followed by underserved locations and Community Anchor Institutions.

5.11 Utilizing the EHCPLT

The CPUC seeks comment on how to utilize the EHCPLT in light of the proposed approach, described above (in Section 5.7, Project Area definition), to allow applicants to provide proposed pricing not only for 100 percent of unserved and underserved locations in a Project Area but also for a lower percentage of locations. How the CPUC will use EHCPLT is closely related to that approach, as NTIA will require a plan for providing broadband to any location that is excluded from the 100 percent funding commitment per Project Area (as well as for those Project Areas that receive either no proposal or only proposals that are too costly to be funded within the finite BEAD budget).

The proposed approach below is designed to enable effective use of the EHCPLT and the Negotiation Phase of the BEAD grant program to maximize the use of the BEAD funds within California while aligning with NTIA's requirements.

The CPUC thus proposes the following overall approach: first, the CPUC will determine which proposals for 100 percent of eligible locations in a Project Area exceed the EHCPLT and will consider whether to fund applications for lower percentages; and second, the CPUC will consider whether to fund fiber applications that exceed the EHCPLT where a lower cost non-Priority Broadband Project has been proposed and meets the minimum standards.

The approach, in sequenced order of how the CPUC seeks to undertake it, is as follows:

1. The CPUC will review applications to determine whether there exists sufficient funding to fund all of the highest-scoring fiber applications for 100 percent coverage in all Project Areas. If this is the case, there will be no need for the EHCPLT.

2. If the CPUC determines that there are insufficient funds, it will identify the Project Areas for which fiber applications for 100 percent of eligible locations exceed the EHCPLT and will classify them based on highest per unit pricing.

3. Beginning with the most costly average per-unit Project Area, the CPUC will negotiate with the applicant that submitted the fiber proposal for that Project Area, offering an opportunity to revise its proposal so that it does not exceed the EHCPLT. In the event that two or more applicants have submitted proposals for the Project Area that exceed the EHCPLT, the CPUC will negotiate first with the highest scoring applicant.

    a. If the applicant is unable to reduce its cost per location sufficiently, the CPUC will then negotiate the same with the other applicant(s) for that Project Area, in order of highest-scoring application.

4. If no applicant for that Project Area is able to reduce its proposal below the EHCPLT, the CPUC will consider whether other applicants that have provided fiber proposals for nearby areas could potentially serve the applicable area. If such potential exists, the CPUC will negotiate with one or more of those applicants to determine if they will amend their application to include the subject areas at a cost that is below the EHCPLT.

5. The CPUC will undertake this process with respect to all Project Areas for which fiber applications for 100 percent coverage exceed the EHCPLT until the EHCPLT has been sufficiently increased (based on lower aggregate grant funds requested) such that all Project Areas can be funded with fiber.

6. If, following these negotiations, there still exist Project Areas for which the fiber applications for 100 percent coverage exceed the EHCPLT, the CPUC will evaluate the proposed alternative (lower than 100 percent) pricing in applications for each Project Area that exceeds the EHCPLT and will repeat the above steps based on the next highest proposed alternative coverage pricing. This succession of steps will be repeated until all Project Areas have a fiber award, either at 100 percent coverage or at a lower coverage percentage, within the funding available.

7. If it is not possible to secure awards for fiber for all Project Areas through the process above because there exist Project Areas for which no applicant will agree to deploy fiber below the EHCPLT, the CPUC will then evaluate applications that propose an alternative, non-fiber technology that meets the BEAD program's requirements for Reliable Broadband Service.

8. If it is not possible to secure awards for alternative, non-fiber technology that meets the BEAD program's requirements for Reliable Broadband Service through the process above,

the CPUC will then consider applications for non-fiber technologies that *do not* meet the BEAD program's requirements for Reliable Broadband Service (while otherwise satisfying the Program's technical requirements) because no technology meeting the Reliable Broadband Service requirements can be deployed for less than the EHCPLT in those Project Areas.

9. For all Project Areas for which no satisfactory application—for any technology—is received, as well as for locations that are removed from grant commitments because the alternative coverage percentage proposal is awarded, the CPUC may undertake an additional grant round and seek alternative proposals or may otherwise seek alternative solutions for securing broadband to those areas and locations.

5.12 Requiring prospective subgrantees to certify their qualifications

The CPUC will require prospective subgrantees to demonstrate financial, technical, and managerial capability, as well as other necessary qualifications and capabilities, through a series of application questions and document requests. Potential subgrantee responses and documentation will be collected through an online portal and analyzed to support an informed assessment of the potential subgrantee's capability to meet the obligations of the project, maintain available funds to support the project, and demonstrate financial and technical viability of the project.

The CPUC's application will require potential subgrantees to provide narrative responses, certifications, and documentation to demonstrate expertise and available resources to meet program requirements and successfully complete a funded project. In addition to the certification and document requirements discussed below, there are additional requirements for potential subgrantees listed in other sections of this Proposal including Section 8, Labor standards and protection (Requirement 11).

5.12.1 Financial capability

5.12.1.1 OFFICER CERTIFICATIONS

The CPUC will require a certification from an officer or director of a potential subgrantee that the organization has the necessary financial qualifications, capabilities, and resources to comply with all program requirements and successfully participate in the program.

Only qualified applicants will move on to have their applications reviewed for funding of a proposed project. Applicants will also be required to submit project-specific certifications by an officer or director of the company. The organization will certify that it will have sufficient financial resources to successfully complete its proposed project and will further certify that it understands the program will use a reimbursement model, requiring subgrantees to commit resources to construct the network and begin service prior to receiving grant award funding as reimbursement for eligible expenses.

Additionally, the CPUC will require certifications from the applicant that it will have sufficient financial resources to provide the pledged matching funding as required by the program rules. Applicants will also be required to certify that they will have the financial resources to support all project costs necessary to complete the project, even if those costs exceed the amount of grant award and pledged matching funds.

These certifications, along with the financial documentation described in Sections 5.12.1.3 and 5.12.1.4 below, will provide the CPUC with necessary assurances of the applicant's financial qualifications and capabilities.

5.12.1.2 LETTER OF CREDIT

***Note**: On November 1, just a few days before the CPUC released this draft document for public comment, NTIA provided new guidance and a waiver regarding the letter of credit requirement.[38] The CPUC seeks public comment regarding how to address the waiver and new requirements. The language below was developed based on NTIA's original guidance, which is no longer current as of November 1.*

The BEAD program rules require subgrantees to obtain an irrevocable standby letter of credit from a qualified financial institution as part of its demonstration of financial capability to participate in the program and successfully complete a project. Pursuant to BEAD program rules and the BEAD Notice of Funding Opportunity Section IV.D.2.a.ii, the CPUC will implement a letter of credit process using the framework adopted by the Federal Communications Commission for its Rural Digital Opportunities Fund program (47 C.F.R. §54.804(c)).

The CPUC will post a model letter of credit on its website as part of the BEAD application materials and will discuss the requirements for a letter of credit during its application workshop and additional technical assistance outreach.

Applicants will be required to present a *letter of commitment* from a qualified financial institution. The CPUC will define a "qualified financial institution" as one that meets the program rules for the FCC's RDOF program (47 C.F.R. §54.804(c)(2)). This definition presents the applicants with a choice of different types of financial institutions to request a letter of commitment and ultimately fund the required letter of credit.

This letter of commitment must describe the type of financial institution that is making the commitment using the categories in 47 C.F.R. §54.804(c)(2). The letter of commitment must also state that the financial institution stands ready to issue an irrevocable standby letter of credit for the proposed project in the required amount and must specify the expected amount. The financial institution must also state that it has reviewed the model letter of credit and is prepared to comply with all terms and conditions for the letter of credit under this program.

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[38] "BEAD Letter of Credit Waiver," NTIA, November 1, 2023, https://broadbandusa.ntia.gov/funding-programs/policies-waivers/BEAD-Letter-of-Credit-Waiver.

Upon completion of the Application Phase, successful subgrantees with awarded projects will be required to obtain their irrevocable standby letters of credit from the previously committed financial institutions.

Submission of this letter of credit will be a condition of a final award agreement. A copy of the letter of credit for each funded project must be submitted directly from the issuing financial institution within 30 days of the notification of the award and prior to the finalization of the final award agreement. The CPUC will ensure that funding will only be committed or distributed upon submission of a proper letter of credit.

As an additional condition of the final award agreement, subgrantees will be required to submit a bankruptcy opinion letter from legal counsel that states the letter of credit is drafted in such a way that under a Title 11 bankruptcy proceeding the bankruptcy court will not treat the letter of credit or proceeds from the letter of credit as "property" of the subgrantee's bankruptcy estate under Section 541 of the United States Bankruptcy Code.

5.12.1.3 FINANCIAL STATEMENTS

In addition to the certifications discussed above, the CPUC will require potential subgrantees to submit documentation of their financial capabilities. This documentation must sufficiently demonstrate the potential subgrantee's financial capability to participate in the BEAD program and demonstrate the financial capability specifically with respect to the applicant's proposed project.

During the Application Phase, potential subgrantees will be required to submit audited financial statements from the prior fiscal year. These financials must be audited by an independent certified public accountant and conform to industry standards.

These financial statements should be "unqualified" and the subject of a clean financial audit. If the submitted statements contain "qualifications" by the auditor, the potential subgrantee must describe and explain the qualification, the reason for the qualification, and measures taken by the company to address the qualification, if applicable.

If a potential subgrantee does not have audited financial statements in the ordinary course of business, it must describe the circumstances and reasons for the lack of audited financials and provide financial statements from the prior fiscal year that contain substantially the same level of detail and information. A potential subgrantee without audited financial statements must also certify that it will provide audited financials within 12 weeks of submitting its application.

Other entities that may have alternative financial reporting requirements, such as public entities, will be allowed to submit relevant and applicable financial documentation that provide substantially similar information and that will allow the CPUC to substantiate the public entity's financial qualifications and capabilities to participate in the program. A certification by an officer of the entity and a narrative explanation by the public entity must accompany the submitted financial documentation.

The CPUC will review these financial statements together with the applicant's submission of project-specific financial documentation discussed below, such as budgets, capital expenditures, and pro forma business case analyses, as part of the applicant's overall showing of financial qualifications and capability specific to the proposed project for BEAD funding.

5.12.1.4 FINANCIAL SUSTAINABILITY

During the Application Phase, the CPUC will request specific and detailed documentation and narrative descriptions of the applicant's business plans, budgets, and timelines for the proposed project.

To assess the financial sustainability of a proposed project, the CPUC will require applicants to complete and submit a budget narrative, proposed budget, and pro forma business case analysis. Applicants will be required to use templates provided by the CPUC for these submissions.

Applicants will be allowed to upload additional documentation that they believe will complement the template information and will present a fuller picture of the applicant's financial capabilities and the proposed project's financial sustainability.

The application budget narrative template will require applicants to provide a detailed breakdown of the expected budget for standardized expense categories. Additionally, the narrative will require a description of each expense, the entity or team responsible for that budget expense (if applicable and if known), and how each expense relates to the project objectives. If the applicant will be providing a cash or in-kind match in this cost category, this must be noted and explained in the justification to include a break-down of the grant and match share of each proposed cost.

The CPUC will require applicants to demonstrate that costs proposed for this grant program will be reasonable, allowable, allocable, and necessary for the supported activity. The Application, as well as the Program Guide, will reference 2 CFR Part 200 for applicable administrative requirements and cost principles. These program materials will also discuss program objectives and describe the specific eligible and ineligible costs and activities. The CPUC will provide additional materials and technical assistance to support this element of applicants' submissions.

Applicants will also submit templates to present a pro forma business case analysis to present their financial projections to demonstrate sustainability. These templates will ask for assumptions regarding take-rates, churn, revenue-per-user, operating expenses, cash flow, and capital expenditures over the course of the construction and start-up operations for a 10-year period. The template will also request a proposed project budget with standard categories that correspond with the cost categories in the template budget narrative.

By standardizing this application requirement through the use of templates, the CPUC can review the financial sustainability of each project in a consistent, fair, and transparent manner.

The CPUC will further review these materials, in combination with the applicant's audited financial statements submitted to validate the showing of financial sustainability. The CPUC will additionally

consider the expected growth of the project and ongoing benefits to the community beyond completion of the build and disbursement of grant funding.

However, recognizing that applicants may have different internal record keeping and business planning processes, in addition to the required template information, the CPUC will also accept additional documentation that gives applicants opportunity to present supplementary demonstration of financial sustainability tailored to the proposed project.

The CPUC will ensure that requests for the pro forma and business plan information in this section of the application will be complementary to, not duplicative of, documentation provided by the applicant in response to other sections of the application. To avoid inefficient and duplicative submissions, applicants will be allowed to reference submissions from other parts of its application to satisfy these requirements.

5.12.2 Managerial capability

The CPUC will require potential subgrantees to demonstrate managerial capability to successfully complete and support a BEAD-funded broadband network. The potential subgrantee's showing of its managerial capability is expected to be comprehensive and robust and demonstrate a commitment to long-term success of the project well beyond the period of construction. The CPUC expects to put a detailed reporting framework in place that will require successful subgrantees to demonstrate ongoing commitment of resources, stable leadership, and continued improvement of processes and services to the funded area.

5.12.2.1 KEY MANAGEMENT PERSONNEL RESUMES

During the Application Phase, participants will be required to provide current resumes of all key management personnel, as well as a narrative discussion of each individual's expected role in a BEAD-funded project. Each of the identified individuals shall be an employee of the organization, have at least five years of experience in the same or similar role within the communications industry, and have the demonstrated experience, skills, and authority to successfully fulfill the obligations of the role.

The CPUC will expect applicants to identify and submit resumes for management personnel in roles such as officers and directors of the organization, executive level management, financial planning and strategy, technical design, risk management, equipment procurement, operations, and planning.

5.12.2.2 ORGANIZATIONAL CHARTS

In addition to resumes for key individuals within the organization, potential subgrantees will be required to submit detailed organizational charts of the organization's structure, key management personnel, and relevant operational teams. These charts will also provide information regarding the organization's parent company and affiliates, if any. The organizational chart is expected to correspond to the other elements of the entity's showing of managerial capability, including mapping back to each identified key management personnel and functional teams. The applicant should

describe any recent or expected changes to the organization's structure, processes, and planning that may impact its BEAD project efforts.

5.12.2.3 ORGANIZATIONAL EXPERIENCE AND QUALIFICATIONS

The potential subgrantee also will be required to provide a narrative description of the organization's background and experience, as well as that of the key management personnel, managing broadband infrastructure projects of similar size and scope and under similar circumstances, such as the timeframes, reimbursement models, and geographic characteristics.

The potential subgrantee's narrative will also be required to describe the organization's experience, resources, and readiness to provide the required service offerings, level of service, and maintenance over the completed network. The organization will be required to describe plans to maintain a sufficient level of management resources through training, retention, and recruitment activities to support its service delivery efforts throughout the federal interest period.

The entity will be expected to also describe and provide documentation regarding any independent contractors, consultants, and subcontractors that it plans to retain to supplement its managerial capabilities. This description should include the scope of the third-party contractor's role and the expected term of the engagement.

An applicant that is a new entrant will be required to demonstrate how it will develop its organization's managerial expertise and resources through the recruitment of directly employed key management personnel with the requisite leadership experience of at least five years in prior roles and positions in the communication industry.

All applicants and partnerships must certify that there is no collusion, bias or conflict of interest or provide ownership and partnership disclosures as outlined in 47 CFR 1.2105(a). All applicants and partnerships must likewise disclose foreign interest if pertinent.

All applicants must certify that they will not engage in prohibited communications as defined in 47 CFR 1.2105(a) starting from the date of submission of preregistration application until final award.

5.12.2.4 PROJECT-SPECIFIC MANAGERIAL REQUIREMENTS

Applicants will also be required to provide additional data and descriptions of its management capabilities to specifically address any unique needs of the proposed project. This project-specific management showing should reflect and correspond to other elements of application elements including financial capability, network design, budgeting, and planning.

For example, if a proposed project will primarily serve a rural area, applicants should include specific references to key management personnel, organizational teams, and the entity's general experience with projects in similarly rural areas. Similarly, if an applicant proposes a project that will serve significant numbers of multi-dwelling-unit buildings or utilize a unique construction technique, applicants should highlight the experience of the entity or its management personnel in those areas.

The CPUC will require information that demonstrates that the applicant has sufficient managerial capabilities to support a successful BEAD funded project, with specific reference to the unique characteristics and needs of the project.

5.12.3 Technical capabilities

Applicants will be expected to demonstrate their technical capability to participate in the program and successfully complete a funded project. This showing will complement the applicant's management capabilities and will provide the CPUC additional detail to substantiate overall technical expertise, knowledge, and capabilities as well as information about the applicant's federal and State technical certifications, licenses, and standards. The CPUC expects to develop specific criteria for its technical review, corresponding to program rules and industry standards. It will conduct a close evaluation and analysis of the submissions listed below, in coordination with the other application materials, to ensure that the applicant can successfully build the project and operate the project in compliance with program rules and grant commitments for the period of federal interest.

5.12.3.1 OFFICER AND DIRECTOR CERTIFICATIONS

Applicants will be required to provide certifications from an officer or director of the company that they are fully and properly licensed in California to conduct funded activities and comply with all post-award obligations. Potential subgrantees must also certify, more generally, that they are technically qualified to complete and operate a broadband network as part of a BEAD funded project.

Applicants will further certify that they have the processes and resources in place to employ an appropriately skilled and credentialed workforce and that key technical personnel and technical team members are current on all required training, licensing, and license renewals.

The CPUC will provide a list of required licenses and certifications as part of the application materials posted on its website and discussed during the Application Phase workshop.

5.12.3.2 CERTIFICATIONS AND LICENSES

In addition to the certifications from an officer or director, applicants will be required to provide a list of the business and technical certifications and licenses that it holds nationally and in California and that will be relevant to their participation in the BEAD program and demonstrate that the potential subgrantee is licensed and in good standing with applicable governing bodies. This list will include certifications and licenses held by key technical personnel as well as those held by the organization. The list will be required to include unique identifiers and license numbers to allow the CPUC to validate the reported data.

Applicants will also submit descriptions of workforce training and certification programs that they rely on, or expect to rely on, to support a continued commitment to a highly skilled and trained workforce. These programs should include certified apprenticeship programs, community college

curricula, and for-profit certification programs, programs offered by trade and labor unions, as well as industry sponsored programs.

Information regarding certifications, training, and licensing of key technical personnel submitted as part of this element of the Application Phase will be considered complementary to and not duplicative of the information and data submitted in other elements of the application. Applicants will be encouraged to cross-reference materials to avoid duplicative submissions.

5.12.3.3 NARRATIVE DESCRIPTION

Applicants will also be expected to provide a narrative description of the entity's experience designing and constructing broadband infrastructure projects of similar size and scope and experience operating the network to offer last mile services. This description should reference the key management personnel referenced in the prior application section as well as the experience and expertise of the technical teams the organization will use to design, construct, and operate the proposed project.

5.12.3.4 PROJECT-SPECIFIC CERTIFICATIONS

The CPUC will require applicants to list the employment categories, job titles, and job descriptions that will be necessary to successfully complete the proposed project. Applicants will also be required to provide any additional certifications, licenses, or other qualifications that are unique and specific to the proposed project.

Applicants must provide supporting documentation to demonstrate that they have completed, or are in the process of completing, these additional requirements to become fully and properly qualified to successfully complete the proposed project. Each applicant will also be required to describe the processes it will have in place to track and maintain required certifications, licenses, and training programs for construction and post-construction activities to ensure that the organization will maintain a highly skilled workforce throughout the federal interest period of the project.

5.12.3.5 DESCRIPTION OF THE PROPOSED PROJECT

Applicants will be required to provide a detailed description of the proposed project. Applicants will be encouraged to review the Prioritization and Scoring section of the application (discussed in Section 5.3) to ensure that the project description submitted in this section of the application will satisfy program requirements and related scoring rubric elements.

This submission will consist of the following required elements:

- Network design and diagrams using shapefiles that display fiber routes, interconnect points, and required rights-of-way usage

- Narrative descriptions of the geographic location, characteristics of the local community, anticipated labor requirements, and other related information that will provide the CPUC with a complete picture of the community to be served

- Descriptions of the proposed project's technical specifications and design, including project elements such as the proposed miles of fiber, number of interconnection points, technology types to be deployed, number of passings, and anticipated speeds and latency of the services to be offered over the completed network

- Deployment timelines and milestones that reflect a construction and installation process of no longer than four years, including planning, design, procurement, construction, installation, network turn-up and testing, and service initiation. The proposed deployment timelines and milestones must include the need to obtain necessary permits and CEQA approvals

- In addition to the budget narrative and pro forma analysis provided as part of the showing of financial sustainability (including anticipated take-rates over time, average revenue per user, churn, and other related elements), this section of the application will require applicants to provide documentation of project costs, operational costs, and budgets and to connect these showings to other sections of the application to create a comprehensive description of the proposed project and showing of technical and financial feasibility

The CPUC will review the timelines and milestones for the proposed project to ensure that they correspond and map directly with the capital expenditures and schedules provided as part of the applicant's showing of financial sustainability for the project.

The CPUC will also review the description of the proposed project's technical specifications, network design, and diagrams to ensure that the related project budgets, financial analysis, and business case pro forma analysis coordinates and support the applicants' project-specific financial sustainability showing.

As each of these application elements must correspond and connect with each other to present a comprehensive picture of the proposal project, the CPUC intends these showings to be complementary and not duplicative. Applicants can reference attachments and information provided in other parts of the application.

5.12.3.6 CERTIFICATION OF A PROFESSIONAL ENGINEER

To support the CPUC's own analysis of an applicant's technical capabilities, as well as the reasonableness and benefits of the proposed project, the applicant will be required to produce a certification by an independent Professional Engineer as part of the application. The CPUC will require that the certifying engineer holds all required professional licenses from the State of California.

This certification must state that the engineer has reviewed all necessary elements of the proposed project, including descriptions and documentation of the network design, build-out timelines, business case, and budgets. The engineer must certify that the proposed project meets all applicable program requirements and is designed to be successfully completed and capable of meeting all performance commitments and requirements to all locations served by the project within the proposed timeline.

The applicant will be required to upload documentation of the professional engineer's licenses as well as any written reports, letters, or analysis provided by the engineer regarding the proposed project.

5.12.4 Compliance with applicable laws

The CPUC will require participants to provide a legal opinion by an attorney licensed in California that the organization is aware of the federal and State laws applicable to BEAD-funded broadband deployment projects and that the organization possesses the qualifications and resources to perform BEAD-related commitments in compliance with all applicable federal and State laws.

The legal opinion must further attest to the organization's current compliance with all relevant federal and State laws and describe any violations of applicable laws and regulations, current or pending investigations, and current or pending legal actions.

The legal opinion must be accompanied by a description of the expertise and qualifications of the attorney and demonstration of the attorney's familiarity with relevant areas of the law including preemption and issues of jurisdiction. The attorney must also describe their familiarity with the operations of the organization and broadly describe the types of documents, policies, and procedures that they reviewed to render the opinion.

In the BEAD application supporting materials, the CPUC will reference the types of laws that applicants must consider as part of its demonstration of compliance, including federal procurement laws such as applicable Build America, Buy America requirements, Secure and Trusted Communications Networks Act of 2019 (47 U.S.C. §1608), California State-specific procurement regulations, federal Uniform Guidance regulations, Department of Commerce Standard Terms and Conditions for grant funding, federal and State environmental and historic preservation regulations, federal and State labor laws and regulations regarding contractor diversity, and any specific award conditions that the CPUC or NTIA may develop. The CPUC will also consult with other State and federal agencies to incorporate additional laws and regulations applicable to BEAD program projects. In the event of a conflict between federal, State, or local regulations, the CPUC will require compliance with the most stringent obligations and requirements to the extent those obligations are not preempted by applicable federal law.

The CPUC will also require a narrative description of the processes they have in place to conduct funded activities in compliance with federal and State laws, including descriptions and documentation of procurement practices. Additionally, participants shall be required to provide an

explanation of any special circumstances or considerations that may prevent compliance with specific applicable laws. The narrative must address specific requirements and discuss the participant's plans to mitigate the impact of any noncompliance on its participation in the program. The CPUC will require as part of this narrative description a discussion that the applicant understands California's CEQA requirements and has begun efforts to determine compliance, including contacting CPUC staff to review CEQA obligations and obtain a CEQA questionnaire.

Separately, the CPUC will also require applicants to certify that they have no history of failure to comply with environmental and historic preservation requirements or BABA, to the extent applicable.

Any applicant that cannot certify a track record of full compliance will be required to provide detailed narrative and documentation regarding its histories of challenges or noncompliance. In addition, the CPUC intends that it will actively use its subgrantee monitoring program post-award to verify that applicants are indeed compliant with these requirements.

The CPUC will further require participants to certify that they have, or will have, processes in place to monitor and support compliance with specific State and federal safety regulations applicable to work on BEAD program projects, including federal Occupational Safety and Health Act and California's equivalent OSHA regulations, as well as related State and federal regulations.

As part of this showing, the CPUC will require participants to provide documentation of the organization's policies and practices regarding compliance with health and safety laws and regulations. Participants will also be required to provide documentation of communications with workers and worker representative organizations regarding the applicable labor laws and fair labor standards, as well as the formation of worker-led health and safety committees. Documentation of a participant's outreach to workers on these topics may include sample emails, copies of posters, worker surveys, worker meetings, phone call and social media scripts, as well as organizing activities by worker-led organizations.

5.12.5 Operational capability

5.12.5.1 EXPERIENCE OFFERING VOICE AND BROADBAND SERVICES

The CPUC will require applicants to provide a certification by an officer or director of the organization that it possesses the operational expertise, capabilities, and resources to successfully complete and operate a BEAD funded project. The certification must specify that the organization has at least two years of experience providing voice, broadband, or electric transmission or distribution services to end users or is a wholly owned subsidiary of a parent entity that has two years of operational experience in the communications industry.

If applicants reference operations in other states as part of its demonstration of managerial, technical, or operational capabilities, the organization will be required to provide a list or chart describing operations providing voice and broadband services in other states. The list must include

licensing and certification identifiers, years of operating experience, and descriptions of the services provided in each state either by the organization directly or by its affiliates and parent organization.

5.1.1.1 COMPLIANCE WITH FCC REGULATIONS

Applicants will also be required to provide a separate certification that they are in compliance with any applicable federal laws and regulations implemented by the Federal Communications Commission (FCC), including submission of required reporting under the FCC's Form 477 regulations for reporting deployment and subscription data. This certification should also include compliance with the Broadband DATA Act (Pub. L. No 116-130 (2020)) and implementing regulations including the FCC's Broadband Data Collection process.

If the participant cannot provide the required certification regarding these FCC regulations, it will be required to provide a narrative explanation of any pending or completed enforcement action, litigation, or other action regarding violations or non-compliance with applicable FCC regulations, and a description of any efforts by the organization to cure the noncompliance or violations of the applicable regulations.

5.1.1.2 ELECTRIC SERVICE PROVIDERS AND NEW ENTRANTS

If the applicant is a provider of electricity transmission or distribution services without two years of experience offering communications services or is a new entrant to the communications market, the participant will be required to provide additional documentation of its operational capabilities to successfully complete and operate a BEAD-funded project.

Such documentation will be considered if it can substantiate the expertise and resources of the organization to deploy and operate a broadband network in compliance with BEAD program requirements. Such documentation could include additional operational or financial reports that the electric service provider or new entrant may have originally submitted to a financial institution or applicable regulatory agency. These additional reports must be accompanied by a certification from an officer or director of the organization that they are true and correct copies of the reports originally provided to the financial institution or regulatory agency.

Electric service providers and new entrants will also be required to provide documentation of plans to acquire additional resources to increase the organizations' organizational capabilities, including third-party contractors and partners with relevant operational expertise, to the extent that they cannot demonstrate that they have already acquired those capabilities.

5.12.6 Ownership information

The CPUC will require participants to document their ownership structure and shareholder interests in a manner consistent with federal regulations developed for specific funding and auction programs implemented by the Federal Communications Commission that can be found at 47 C.F.R. §1.2112(a)(1)-(7). The CPUC will specifically request participants to provide a narrative description of their ownership structure and corporate entity type (e.g., publicly held corporation, limited

partnership, limited liability company, general partnership, cooperative). The showing should reference and correspond to the organizational charts, identification of executive leadership, and financial statements provided in other elements of the application.

Applicants will be required to submit a list of the required ownership information specific to the type of corporate entity, including the name, address, and citizenship and proportion of ownership interest of those owning and controlling the organization, including partners and shareholders with more than a 10 percent ownership interest.

For applicants that report to the FCC, the CPUC will review the submitted information to determine that it matches the information submitted by organizations to the FCC in compliance with 47 C.F.R. §1.2112 and other FCC reporting requirements including reporting for Eligible Telecommunications Carrier requirements, licensure, and other purposes. Applicants will be expected to identify and explain any discrepancies or inconsistencies in the reported ownership and corporate structure information between the information reported to the FCC and the information submitted as part of the Application Phase.

The CPUC will also check the submitted information against relevant business licensing requirements for the State of California and will require applicants to explain any discrepancies or inconsistencies between the two sets of reported data.

This requirement is critical for the CPUC, and NTIA, to uphold their commitments to fairness and transparency under the BEAD program. Ownership information for each prospective subgrantee will allow the CPUC to have a full and complete picture of the participants in the program and who is being entrusted with BEAD funding to ensure an efficient and effective use of funds that benefits the largest number of end users.

5.12.7 Information on other public funding

As part of the CPUC's efforts to substantiate an applicant's overall expertise and competence to successfully complete a BEAD funded project, the CPUC will require participants to submit information about their participation in other State or federal publicly funded grant programs.

The CPUC will assess this information to better understand the participant's experience and knowledge regarding publicly grant funded programs, the technical capabilities demonstrated by the sophistication of each project, and the resources that the participant has committed over the term of these projects.

Participants will be required to submit information about their participation and commitments for publicly funded programs including but not limited to the Families First Coronavirus Response Act (Public Law 116-127; 134 Stat. 178), the CARES Act (Public Law 116-136; 134 Stat. 281), the Consolidated Appropriations Act, 2021 (Public Law 116-260; 134 Stat. 1182), the American Rescue Plan of 2021 (Public Law 117-2; 135 Stat. 4), any federal Universal Service Fund high-cost program (e.g., RDOF, CAF), and the CPUC's own broadband grant programs, as well as any State or local universal service or broadband deployment funding program.

6. Non-deployment subgrantee selection (Requirement 9)

This section outlines non-deployment eligible activities the CPUC may support using BEAD program funds.

The CPUC does not anticipate supporting non-deployment eligible activities with BEAD program funds because the State's estimated cost to provide universal service far exceeds its BEAD allocation and available State funding. Therefore, the CPUC does not anticipate having funds remaining for non-deployment activities.

In the event that the CPUC has additional funds after provisionally issuing the broadband deployment grants, it may plan to fund non-deployment activities with its remaining funding.

Consistent with the BEAD Notice of Funding Opportunity, the CPUC will consider supporting additional non-deployment activities related to the following:[39]

1. User training with respect to cybersecurity, privacy, and other digital safety matters.
2. Remote learning or telehealth services/facilities.
3. Digital literacy/upskilling (from beginner level to advanced).
4. Computer science, coding, and cybersecurity education programs.
5. Implementation of California digital equity plans (to supplement, but not to duplicate or supplant, planning grant funds received by the Eligible Entity in connection with the Digital Equity Act of 2021).
6. Broadband sign-up assistance and programs that provide technology support.
7. Multi-lingual outreach to support adoption and digital literacy.
8. Prisoner education to promote pre-release digital literacy, job skills, online job acquisition skills, etc.
9. Digital navigators.

[39] BEAD NOFO, Section 7(a)(iii), https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, p. 39.

10. Direct subsidies for use toward broadband subscription, where California can show the subsidies will improve affordability for the end user population (and to supplement, but not to duplicate or supplant, the subsidies provided by the Affordable Connectivity Program).

11. Costs associated with stakeholder engagement, including travel, capacity-building, or contract support.

12. Other allowable costs necessary to carrying out programmatic activities of an award, not to include ineligible costs described in Section V.H.2 of the NOFO.

Because of the BEAD program's deadlines, the CPUC has a limited window to run the State Challenge Process, implement its grant program (i.e., identify subgrantees), and prepare its Final Proposal for public comment and submittal to NTIA. Given these time constraints, the CPUC anticipates it may need to accelerate efforts to support the workforce or digital equity-related non-deployment activities with any remaining funds. This means the CPUC may need to engage in non-deployment activities directly through the CPUC, its contractors, or other State offices.

As the CPUC runs its subgrant selection process, it will monitor the remaining funds closely. If the CPUC determines that it may have funds remaining, it will begin planning and preparing a non-deployment activity plan to submit as part of its Final Proposal.

7. The CPUC's implementation activities (Requirement 10)

This section describes initiatives the CPUC, as the Eligible Entity, proposes to implement as the recipient without making a subgrant.

As noted above in Section 6, Non-deployment subgrantee selection (Requirement 9), California does not expect to have remaining funds after planning to reach all eligible locations within the State. If, however, the CPUC finds it has additional funds after provisionally issuing the broadband grants, the CPUC may consider implementing non-deployment priorities itself through existing State programs. The CPUC may work with other agencies to support the priorities listed above in Section 6 and in the Five-Year Action Plan.

Additionally, the CPUC plans to implement key grant activities without issuing a subgrant. These activities include those directly related to the BEAD program:

- General administration of the BEAD award
- Oversight of BEAD subgrant applications and issuance
- Other BEAD management processes:
    - Implementing the BEAD challenge process
    - Managing the process for subgrantee applications and issuance
    - Obtaining software to manage both processes
    - Overseeing subgrantee compliance

The CPUC may also use BEAD funds for mapping and data collection efforts that benefit both the BEAD program efforts and other CPUC efforts related to broadband and digital equity. The CPUC may also use BEAD funds to produce data analyses that are relevant to the BEAD program. Finally, the CPUC may use BEAD funds to support interagency efforts with the California Labor and Workforce Development Agency to promote workforce development activities related to the BEAD program.

8. Labor standards and protection (Requirement 11)

This section explains how the CPUC will account for and oversee subgrantee adherence to federal labor and employment laws that mandate minimum safety, wage, anti-discrimination, and other workplace standards for all businesses in the United States.

California is a leader in workplace safety. The California Labor & Workforce Development Agency (LWDA) is an executive branch agency that works to ensure safe and fair workplaces, deliver critical worker benefits, and promote good jobs for all. The Agency oversees seven departments, boards, and panels that serve California employers and workers.[40]

The California Department of Industrial Relations (DIR) protects and improves the health, safety, and economic well-being of over 18 million wage earners and helps their employers comply with State labor laws. DIR is housed within LWDA.[41]

The Division of Occupational Safety and Health (DOSH), better known as Cal/OSHA,[42] is housed within DIR. Among its roles, it protects and improves the health and safety of working people in California. DIR administers the OSHA California State Plan through Cal/OSHA.[43]

8.1 Specific information that prospective subgrantees will be required to provide in their applications and how the Eligible Entity will weigh that information in its competitive subgrantee selection processes

In the application, and as part of the subgrantee selection process, the CPUC will require the following from all applicants:

1. Certification from an Officer/Director-level employee, or an equivalent, of consistent past compliance with federal labor and employment laws on broadband deployment projects in the last three years, including:

[40] LWDA, https://www.labor.ca.gov/.

[41] "About Us," DIR, https://www.dir.ca.gov/aboutdir.html.

[42] Cal/OSHA, https://www.dir.ca.gov/dosh/.

[43] "California," U.S. Department of Labor, Occupational Safety and Health Administration, https://www.osha.gov/stateplans/ca.

- Certification that the prospective subgrantee, as well as its contractors and subcontractors, have not been found to have violated laws such as the Occupational Safety and Health Act, the Fair Labor Standards Act, or any other applicable labor and employment laws for the preceding three years, or
- Disclosure of any findings of such violations

2. Certification that the potential subgrantee, and its proposed contractors and subcontractors, have existing labor and employment practices in place and that the subgrantee will recertify this annually for the duration of the BEAD implementation period, including:
    - Applicable wage scales and wage and overtime payment practices for each class of employees expected to be involved directly in the physical construction of the network
    - Certification that the potential subgrantee will ensure the implementation of workplace safety committees that are authorized to raise health and safety concerns in connection with the delivery of deployment projects and that the applicant will recertify this annually for the duration of the BEAD implementation period
3. Discussion of the potential subgrantee's workforce plan, including information on training and safety, job quality, local hire and targeted hire, apprenticeship utilization, accountability and subcontracting practices, and ongoing operational workforce
4. Discussion of current and planned future practices regarding using a directly employed workforce, robust in-house training, wages and benefits, and a locally based workforce
5. Current and planned future practice regarding public disclosure of workforce plans and labor commitments on a website or online portal
6. Discussion of job quality considerations as part of the applicant's workforce development strategies
7. Discussion of track record and commitment to maintaining high standards of workplace safety practices, training certification or licensure for all relevant workers, and compliance with State and federal workplace protections
8. Certification of compliance with relevant workplace protections including the Occupational Safety and Health Act, the Fair Labor Standards Act, Title VII of the Civil Rights Act of 1964, and California labor and employment laws
9 Discussion of whether the construction workforce will be directly employed or subcontracted, the anticipated size of the workforce required to carry out the proposed work, a description of plans to maximize use of local or regional workforce, and a

description of the expected workplace safety standards and training to ensure the project is completed at a high standard.

With respect to all materials and information provided, the CPUC will review and evaluate the applicant based on the following:

1. Completeness: Are the materials complete and fully responsive to the request?
2. Sufficiency: Do the materials demonstrate the appropriate level of compliance and adherence to the standards and statutes?
3. Concerns: Are there any omissions or other indications that should raise concerns about the potential subgrantees', or its contractors' and subcontractors', track record and commitment to the standards or statutes?

Based on the CPUC's evaluation of these considerations, the applications will be placed into two categories: (1) for those categories that are deemed complete and sufficient and do not raise any concerns, points will be awarded pursuant to the scoring rubric; (2) for those applications that raise concerns based on omissions or other indications, the CPUC will provide clarifying questions to the applicant in writing while affording seven calendar days for the applicant to respond and, upon receipt of the responses, then award points pursuant to the scoring rubric.

8.2 Binding legal commitments in subgrants related to labor standards and protection

Following an award, successful applicants will be required to submit ongoing workforce reports which shall be incorporated as material conditions of their subgrant from the CPUC. The applicants' representations in the Workforce Plan section of their application will become binding commitments upon award of a subgrant, and the subgrantees will be subject to regular reviews to ensure compliance.

In the event that successful applicants fail to meet the Program Requirements or Workforce Plan Data requirements, or otherwise falsify information regarding such requirements, the CPUC shall investigate the failure and issue an appropriate action allowable by law.

To encourage public confidence in the program, applicants' disclosures responding to the workforce criteria will be publicly available on the CPUC's website.

Subgrantees shall be required to provide in regular reports the below information. This information may be anonymized and aggregated to protect individual privacy:

- Whether the workforce will be directly employed by the subgrantee/ISP or whether work will be performed by a subcontracted workforce

- The entities that the subgrantee plans to subcontract with in carrying out the proposed work, if any
- The job titles and size of the workforce (FTE positions) required to carry out the proposed work over the course of the project
- For each job title required to carry out the proposed work, a description of wages, benefits, applicable wage scales including overtime rates and a description of how wages are calculated
- Any in-house training program, including whether the training program is tied to titles, uniform wage scales, and skill codes recognized in the industry; Safety training, certification, and/or licensure requirements, including whether employees are required to have completed OSHA safety training or any training required by law

9. Workforce readiness (Requirement 12)

This section explains how the CPUC will ensure an available, diverse, and highly skilled workforce.

9.1 Supporting the development of an available, diverse, and highly skilled workforce

California's success in executing broadband deployments under the Broadband Equity, Access, and Deployment (BEAD) Program will require unprecedented collaboration across the public, private, and nonprofit sectors, especially with regard to fostering a well-trained and diverse broadband construction workforce.

This section details the workforce needs that will be created by the anticipated spending on broadband construction under the BEAD program and provides an additional analysis that includes broadband construction enabled by Capital Projects Fund (CPF) and California Public Utilities Commission's (CPUC) Last-Mile Federal Funding Account (FFA), due to the significant overlap in the timing of construction from these programs. This section then details the State's approach to helping develop a robust, diverse workforce, documents how the CPUC intends to meet the labor and workforce requirements in the BEAD notice of funding opportunity (NOFO), and describes how BEAD deployments will benefit and work in concert with the State's long-term economic development goals.

To provide more granular geographic detail, this section divides the State's 58 counties into 3 regions: Northern, Central, and Southern,[44] and provides analyses by region as well as statewide. The following table lists the 31 counties in the Northern Region, 21 counties in the Central Region, and 6 counties in the Southern Region.

[44] "Regional Profiles," California Community & Place-Based Solutions, 2023, https://economicdevelopment.business.ca.gov/regional-profiles/ (accessed October 24, 2023).

Table 1: Counties in the three primary regions in California

Northern region counties	Central region counties	Southern region counties
Alameda	Alpine	Imperial
Butte	Amador	Los Angeles
Colusa	Calaveras	Orange
Contra Costa	Fresno	Riverside
Del Norte	Inyo	San Bernardino
El Dorado	Kern	San Diego
Glenn	Kings	
Humboldt	Madera	
Lake	Mariposa	
Lassen	Merced	
Marin	Mono	
Mendocino	Monterey	
Modoc	San Benito	
Napa	San Joaquin	
Nevada	San Luis Obispo	
Placer	Santa Barbara	
Plumas	Santa Cruz	
Sacramento	Stanislaus	
San Francisco	Tulare	
San Mateo	Tuolumne	
Santa Clara	Ventura	
Shasta		
Sierra		
Siskiyou		
Solano		
Sonoma		
Sutter		
Tehama		
Trinity		
Yolo		
Yuba		

9.1.1 Establishing a baseline for the broadband construction sector in California

According to a 2021 Brookings report, "How federal infrastructure investment can put America to work," the workforce clusters involved in broadband deployment are represented by the following North American Industry Classification System (NAICS) categories:

- *Power and Communication Line and Related Structures Construction*
- *Fiber Optic Cable Manufacturing*

- *All Other Electrical Equipment and Component Manufacturing*
- *Cable and Other Subscription Programming*
- *Wired Telecommunications Carriers*
- *Wireless Telecommunications Carriers*[45]

The following table generated using data from the economic and labor market modeling tool Lightcast,[46] outlines the performance of these subsectors that were directly employed in telecommunications in California from 2018 to 2022. (Note: The data nomenclature used by the NAICS changed after the publication of the 2021 Brookings report; the category formerly called *Cable and Other Subscription Programming* is now called *Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers.*)

Table 2: Performance of California's broadband deployment sector (2018 – 2022)

NAICS	Industry	2018 jobs	2022 jobs	2018 - 2022 change	2018 - 2022 % change	Avg earnings per job - California	Avg earnings per job - national
237130	Power and Communication Line and Related Structures Construction	15,827	18,865	3,038	19%	$144,932	$108,440
335921	Fiber Optic Cable Manufacturing	1,388	737	-651	-47%	$141,558	$109,335
335999	All Other Electrical Equipment and Component Manufacturing	6,144	6,388	244	4%	$164,290	$122,081
516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	77,324	78,147	823	1%	$323,055	$239,987

[45] The Broadband Deployment Sector is defined by the March 2021 Brookings Report, "How Federal Infrastructure Investment Can Put America to Work," https://www.brookings.edu/research/how-federal-infrastructure-investment-can-put-america-to-work/. These industries were originally identified by Pollin, et. al. in the October 2020 report, "Impacts of the Reimagine Appalachia & Clean Energy Transition Programs for Ohio" from the Political Economy Research Institute at the University of Massachusetts, Amherst, https://reimagineappalachia.org/wp-content/uploads/2020/10/Pollin-et-al-OHIO-Reimagine-Appalachia-and-Clean-Energy-Programs-10-19-20.pdf.

[46] Lightcast, https://www.economicmodeling.com/.

NAICS	Industry	2018 jobs	2022 jobs	2018 - 2022 change	2018 - 2022 % change	Avg earnings per job - California	Avg earnings per job - national
517111	Wired Telecommunications Carriers	49,159	38,684	-10,475	-21%	$149,095	$126,979
517112	Wireless Telecommunications Carriers (except Satellite)	12,425	9,213	-3,212	-26%	$137,224	$126,584
	Total	**162,267**	**152,035**	**-10,232**	**-6%**	**$237,878**	**$147,794**

Source: Lightcast Datarun 2023.4

There has been significant dynamism within California's broadband deployment sector over the past five years, and the data suggest a few notable trends:

- The growth in *Power and Communication Line and Related Structures Construction* roles indicates ongoing and active new construction and/or utility repair in the State and suggests that there are functioning mechanisms for training and hiring new workers in the State.
- The sharp decline in *Fiber Optic Cable Manufacturing* suggests that manufacturing facilities that existed in 2018 may have contracted, or more likely moved out of state, or invested in automation that reduced the need for workforce.
- The decline in both *Wired* and *Wireless Telecommunications Carriers* is likely the result of several factors, which may include an increased use of technology in ISP operations resulting in less reliance on people, or simply an increase in retirements in the industry, among other factors.

Overall, the State saw a reduction of over 10,200 jobs in industries related to broadband deployment during this timeframe, which was greater than national trends. Specifically, California saw a 6 percent reduction in the broadband deployment workforce, while the same sector shrank by 4 percent nationally over the same timeframe. However, if workers can be enticed back into the sector into their previous occupations, or even into adjacent, in-demand roles—e.g., if workers who left occupations as *Wired Telecommunications Carriers* could be welcomed back into occupations related to *Power and Communications Line and Related Structures Construction*—the challenge of a recently contracting workforce can also be seen as a partial opportunity to reinvigorate the workforce.

Further, wages for Californians in the broadband construction roles are higher than national averages in the same roles, suggesting a competitive compensation environment, which makes it

more likely that trained lineworkers will stay in California rather than pursue higher wages elsewhere.[47]

Additional trends emerge when analyzing the same data from the three primary regions: Northern, Central, and Southern California.

Table 3: Performance of Northern California's broadband deployment sector (2018 – 2022)

NAICS	Industry	2018 jobs	2022 jobs	2018 - 2022 change	2018 - 2022 % change	Avg earnings per job - Northern California	Avg earnings per job - national
237130	Power and Communication Line and Related Structures Construction	4,501	6,256	1,755	39%	$157,123	$108,440
335921	Fiber Optic Cable Manufacturing	989	309	-680	-69%	$178,363	$109,335
335999	All Other Electrical Equipment and Component Manufacturing	3,137	3,382	245	8%	$210,196	$122,081
516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	42,323	48,032	5,709	13%	$402,226	$239,987
517111	Wired Telecommunications Carriers	14,366	12,298	-2,068	-14%	$170,108	$126,979
517112	Wireless Telecommunications Carriers (except Satellite)	2,961	1,928	-1,033	-35%	$143,664	$126,584
	Total	**68,278**	**72,204**	**3,926**	**6%**	**$324,600**	**$147,794**

Source: Lightcast Datarun 2023.4

Northern California experienced higher growth in *Power and Communication Line and Related Structures Construction* roles than in the State, and higher growth than in the Central and Southern regions. However, *Fiber Optic Cable Manufacturing* and *Wireless Telecommunications Carriers* declined more sharply in Northern California than in the State overall, Central California, and Southern California. While

[47] Lightcast Datarun 2023.4.

Wired Telecommunications Carriers saw a decline, the rate of decline was lower than in the State and the other regions.

Wages for Northern Californians in the broadband construction roles are higher than national and State averages in the same roles, indicating a highly competitive compensation environment.

Table 4: Performance of Central California's broadband deployment sector (2018 – 2022)

NAICS	Industry	2018 jobs	2022 jobs	2018 - 2022 change	2018 - 2022 % change	Avg earnings per job - Central California	Avg earnings per job - national
237130	Power and Communication Line and Related Structures Construction	2,061	2,512	451	22%	$124,610	$108,440
335921	Fiber Optic Cable Manufacturing	48	79	31	65%	$71,372	$109,335
335999	All Other Electrical Equipment and Component Manufacturing	514	594	80	16%	$105,815	$122,081
516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	2,058	1,760	-298	-14%	$115,685	$239,987
517111	Wired Telecommunications Carriers	5,553	3,885	-1,668	-30%	$108,612	$126,979
517112	Wireless Telecommunications Carriers (except Satellite)	693	607	-86	-12%	$81,281	$126,584
	Total	**10,926**	**9,438**	**-1,488**	**-14%**	**$111,940**	**$147,794**

Source: Lightcast Datarun 2023.4

Wired Telecommunications Carriers declined slightly more sharply in Central California than in the State overall, Central California, and Southern California. *Wireless Telecommunications Carriers* also saw a decline, but the rate of decline was lower than in the State and the other regions. Overall, the broadband deployment workforce shrank by 14 percent, more than in the State and nation. Lastly, while *Fiber Optic Cable Manufacturing* declined throughout the State, it grew by 65 percent in Central California. Wages for Central Californians in most of the broadband construction roles are lower than national and State averages, indicating a significantly different labor market than other areas of the State.

Table 5: Performance of Southern California's broadband deployment sector (2018 – 2022)

NAICS	Industry	2018 jobs	2022 jobs	2018 - 2022 change	2018 - 2022 % change	Avg earnings per job - Southern California	Avg earnings per job - national
237130	Power and Communication Line and Related Structures Construction	8,695	9,750	1,055	12%	$143,209	$108,440
335921	Fiber Optic Cable Manufacturing	348	313	-35	-10%	$107,083	$109,335
335999	All Other Electrical Equipment and Component Manufacturing	2,439	2,327	-112	-5%	$112,338	$122,081
516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	31,160	26,168	-4,992	-16%	$205,180	$239,987
517111	Wired Telecommunications Carriers	27,628	20,204	-7,424	-27%	$134,614	$126,979
517112	Wireless Telecommunications Carriers (except Satellite)	8,149	6,102	-2,047	-25%	$140,161	$126,584
	Total	**78,419**	**64,863**	**-13,556**	**-17%**	**$163,965**	**$147,794**

Source: Lightcast Datarun 2023.4

Southern California experienced less growth in *Power and Communication Line and Related Structures Construction* roles than elsewhere in the State, but still grew by a significant number of jobs. Overall, the broadband deployment workforce shrank by 17 percent, more than in the State and other regions of California. Wages for Southern Californians in the broadband construction roles are varied, or comparable, in their relationship to national averages, but wages for *Power and Communication Line and Related Structures Construction* roles are notably higher than the national average in this region.

9.1.2 Estimating the impact of BEAD on broadband construction jobs

This analysis estimates that the construction spending due to the BEAD program will be approximately $2.2 billion, reflective of the entire BEAD allocation for California ($1,864,136,508.93) plus 20 percent to account for matching funds. Because the construction is happening with significant overlap, this analysis also adds in anticipated spending in the State of $2 billion in anticipated spending from the California Public Utilities Commission's (CPUC) Last-Mile Federal Funding Account and $3.25 billion for the statewide Middle-Mile Broadband Initiative to build the necessary infrastructure to bring internet connectivity to homes, businesses and

community institutions. Taken together, the BEAD, CPF, and CPUC Last-Mile grant investment is expected to be over $5.3 billion including match.

The ultimate amount spent on construction may be higher or lower depending on how much match can be catalyzed for each deployment, with some projects leveraging 25 percent match or more, and some high-cost areas potentially necessitating much lower match; however, analyzing a total estimated construction of $5.3 billion for the State is proportionally accurate for the analysis at this time.

Based on the Brookings research cited above, broadband construction activities are expected to be allocated in the following proportions across the following relevant industry sectors.[48,49]

Table 6: Anticipated distribution of broadband investment across sectors

NAICS	Industry	Weight
237130	Power and Communication Line and Related Structures Construction	25%
335921	Fiber Optic Cable Manufacturing	10%
335999	All Other Electrical Equipment and Component Manufacturing	15%
516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	10%
517111	Wired Telecommunications Carriers	20%
517112	Wireless Telecommunications Carriers (Except Satellite)	20%

Using the anticipated impact across sectors, an input-output methodology with the modeling tool Lightcast was used to understand and analyze the workforce needs based on anticipated broadband spending.

9.1.2.1 BROADBAND CONSTRUCTION SPENDING WILL REQUIRE CALIFORNIA TO GROW THEIR BROADBAND CONSTRUCTION WORKFORCE BY OVER 4,300 JOBS

Though many occupation categories may be involved in broadband deployment in some form or another, this analysis focuses on the 12 biggest occupational categories required to deploy

[48] The distribution of how this investment across broadband industries was based on the work of the Brookings Report "How Federal Infrastructure Investment Can Put America to Work," by Escobari, Gandhi, and Strauss (June 2021), https://www.brookings.edu/wp-content/uploads/2021/03/Federal-infrastructure-investment.pdf, which is based on the work of Pollin et al. (2020).

[49] Pollin, Robert, Wicks-Lim, Jeannette, Chakraborty, Shouvik, and Semieniuk, Gregor, "Impacts of the Reimagine Appalachia & Clean Energy Transition Programs for Ohio: Job Creation, Economic Recovery, and Long-Term Sustainability," PERI at University of Massachusetts Amherst, October 2020, p. 107.

broadband, identified by the Brookings article cited above. The following table estimates the numbers of workers needed in those categories to execute on a $2.2 billion BEAD investment and a $5.3 billion total investment in broadband construction, and the proportional increase in workforce needed for each occupation.

Table 7: Estimated workforce requirements for broadband deployment occupations in California

Occupation	Currently employed in California	$2.2 billion BEAD investment		$5.3 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Project Management Specialists	102,313	114	0.11%	271	0.26%
Business Operations Specialists, All Other	179,220	130	0.07%	308	0.17%
Software Developers	260,775	147	0.06%	345	0.13%
Software Quality Assurance Analysts and Testers	33,022	19	0.06%	44	0.13%
Electronics Engineers, Except Computer	20,899	40	0.19%	94	0.45%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	125,994	165	0.13%	391	0.31%
Customer Service Representatives	207,045	190	0.09%	448	0.22%
Construction Laborers	95,313	398	0.42%	940	0.99%
First-Line Supervisors of Mechanics, Installers, and Repairers	48,095	116	0.24%	273	0.57%
Telecommunications Equipment Installers and Repairers, Except Line Installers	16,177	114	0.70%	270	1.67%
Electrical Power-Line Installers and Repairers	9,394	200	2.13%	474	5.05%
Telecommunications Line Installers and Repairers	12,672	213	1.68%	503	3.97%

Source: Lightcast Datarun 2023.4

Because this chart is based on job classifications regardless of industry (as in, inclusive of more industries than just those in the broadband deployment sector), there are more currently employed workers noted for each job category than in the previous chart, which only included workers employed at broadband deployment-related businesses. In other words, a significant number of lineworkers in the chart above are likely working for electric utilities rather than telecommunications companies. However, this chart gives perspective as to the pool of people who *could* be drawn upon to work—and which categories may be hardest to supply as a percentage of the existing workforce. For example, though *Project Management Specialists* and *Telecommunications Equipment Installers and*

Repairers will need approximately the same amount of new people under the $5.3 Billion scenario (271 and 270, respectively), as a percentage, *Telecommunications Equipment Installers and Repairers* will need to grow by much more, suggesting that it may be significantly harder to fill those roles.

Clearly, significant attention should be put to the categories that need to grow the most in total workers, like *Construction Laborers*, but also the categories that need to grow the most proportionally, including line installers and repairers with both telecommunications and electrical specialties. (The electrical power-line workforce is needed for processes like make-ready work and pole replacements.)

To perform the same analysis for Northern, Central, and Southern California, broadband construction funding was divided proportionally based on the unserved areas in each region. The share of unserved locations is 42.47% in Northern California, 31.86% in Central California, and 25.67% in Southern California.

Accordingly, the following table estimates the numbers of workers needed in Northern California to execute on a $950 million BEAD investment and a $2.2 billion total investment in broadband construction, and the proportional increase in workforce needed for each occupation.

Table 8: Estimated workforce requirements for broadband deployment occupations in Northern California

Occupation	Currently employed in Northern California	$950 million BEAD investment		$2.2 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Project Management Specialists	38,854	34	0.09%	81	0.21%
Business Operations Specialists, All Other	60,271	34	0.06%	83	0.14%
Software Developers	157,696	50	0.03%	121	0.08%
Software Quality Assurance Analysts and Testers	19,156	7	0.04%	16	0.08%
Electronics Engineers, Except Computer	8,831	13	0.15%	31	0.35%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	48,850	49	0.10%	117	0.24%
Customer Service Representatives	58,139	42	0.07%	100	0.17%
Construction Laborers	30,802	148	0.48%	349	1.13%
First-Line Supervisors of Mechanics, Installers, and Repairers	15,347	43	0.28%	103	0.67%

Occupation	Currently employed in Northern California	$950 million BEAD investment		$2.2 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Telecommunications Equipment Installers and Repairers, Except Line Installers	6,277	39	0.62%	90	1.43%
Electrical Power-Line Installers and Repairers	2,816	77	2.73%	183	6.50%
Telecommunications Line Installers and Repairers	4,078	72	1.77%	172	4.22%

Source: Lightcast Datarun 2023.4

The following table estimates the numbers of workers needed in Central California to execute on a $713 million BEAD investment and a $1.7 billion total investment in broadband construction, and the proportional increase in workforce needed for each occupation.

Table 9: Estimated workforce requirements for broadband deployment occupations in Central California

Occupation	Currently employed in Central California	$713 million BEAD investment		$1.7 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Project Management Specialists	7,923	29	0.37%	67	0.85%
Business Operations Specialists, All Other	18,369	26	0.14%	62	0.34%
Software Developers	8,229	20	0.24%	47	0.57%
Software Quality Assurance Analysts and Testers	1,436	5	0.35%	10	0.70%
Electronics Engineers, Except Computer	2,256	18	0.80%	44	1.95%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	10,991	49	0.45%	115	1.05%
Customer Service Representatives	22,713	42	0.18%	98	0.43%
Construction Laborers	15,059	135	0.90%	320	2.12%
First-Line Supervisors of Mechanics, Installers, and Repairers	7,961	42	0.53%	96	1.21%

Occupation	Currently employed in Central California	$713 million BEAD investment		$1.7 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Telecommunications Equipment Installers and Repairers, Except Line Installers	1,976	70	3.54%	168	8.50%
Electrical Power-Line Installers and Repairers	1,669	93	5.57%	218	13.06%
Telecommunications Line Installers and Repairers	1,422	108	7.59%	255	17.93%

Source: Lightcast Datarun 2023.4

The following table estimates the numbers of workers needed in Southern California to execute on a $574 million BEAD investment and a $1.4 billion total investment in broadband construction, and the proportional increase in workforce needed for each occupation.

Table 10: Estimated workforce requirements for broadband deployment occupations in Southern California

Occupation	Currently employed in Southern California	$574 million BEAD investment		$1.4 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Project Management Specialists	50,014	35	0.07%	82	0.16%
Business Operations Specialists, All Other	91,677	38	0.04%	88	0.10%
Software Developers	73,757	36	0.05%	85	0.12%
Software Quality Assurance Analysts and Testers	9,614	5	0.05%	10	0.10%
Electronics Engineers, Except Computer	8,971	11	0.12%	27	0.30%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	57,871	49	0.08%	115	0.20%
Customer Service Representatives	114,667	57	0.05%	133	0.12%
Construction Laborers	46,901	108	0.23%	255	0.54%
First-Line Supervisors of Mechanics, Installers, and Repairers	23,699	30	0.13%	69	0.29%

Occupation	Currently employed in Southern California	$574 million BEAD investment		$1.4 billion BEAD + CPF + last-mile investment	
		New workers needed	% increase	New workers needed	% increase
Telecommunications Equipment Installers and Repairers, Except Line Installers	6,811	32	0.47%	76	1.12%
Electrical Power-Line Installers and Repairers	4,748	52	1.10%	123	2.59%
Telecommunications Line Installers and Repairers	6,424	60	0.93%	142	2.21%

Source: Lightcast Datarun 2023.4

When comparing the three regions analyzed, it is notable that though Northern California has the greatest number of unserved premises, Central California has the greatest workforce gaps. Further, Central California has the greatest percentage gap in certain critical roles; for example, that region will need to grow electrical and telecommunications repairers and installers by double-digit percentages to accommodate the entirety of upcoming broadband deployment. Neither Northern nor Southern California is anticipated to have the same degree of workforce gaps.

Another factor that impacts how difficult it will be to grow the net workforce in a particular category is how concentrated that workforce is relative to the national baseline in a specific area. When there are existing higher-density clusters, not only is filling roles easier with the existing workforce, but there is more possibility for specialization, mentorship, and even recruitment due to an increased visibility in the community.

To demonstrate this, a Location Quotient (LQ) analysis is used to show the relative concentration of an occupation compared to national averages, and as such, which roles may be especially hard to fill. An LQ of 1.00 means an occupation is exactly as concentrated in a region as it is in the whole country. An LQ higher than 1.00 means there is a higher concentration of that occupation in the region (and thus more opportunity for specialization, more resilience when an influx of these occupations is needed, and more of an existing network in the community), while an LQ less than 1.00 represents a lower concentration (and therefore could be considered a greater scarcity issue in times of occupational need).

Table 11: Occupations needed for broadband deployment in California (by percentage increase required)

Occupation	% occupational increase required	Location quotient
Electrical Power-Line Installers and Repairers	5.05%	0.64
Telecommunications Line Installers and Repairers	3.97%	0.98
Telecommunications Equipment Installers and Repairers, Except Line Installers	1.67%	0.80
Construction Laborers	0.99%	0.79
First-Line Supervisors of Mechanics, Installers, and Repairers	0.57%	0.72
Electronics Engineers, Except Computer	0.45%	1.59
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	0.31%	0.97
Project Management Specialists	0.26%	1.00
Customer Service Representatives	0.22%	0.60
Business Operations Specialists, All Other	0.17%	1.35
Software Developers	0.13%	1.40
Software Quality Assurance Analysts and Testers	0.13%	1.39

Source: Lightcast Datarun 2023.4

While some of these impacted occupations are at or above national levels of concentration, there are several that are well below, indicating that those roles may also be especially hard to fill as more broadband deployment demand is generated across the country. Of particular concern, again, are *Telecommunications Line Installers and Repairers* (LQ of 0.98), *Electrical Power-Line Installers and Repairers* (LQ of 0.64), *Telecommunications Equipment Installers and Repairers* (LQ of 0.80), and *Construction Laborers* (LQ of 0.79). This reinforces the need for increased workforce development for those areas.

The following table demonstrates that Northern California has a higher concentration of *Telecommunications Line Installers and Repairers* (LQ of 1.04) and *Telecommunications Equipment Installers and Repairers* (LQ of 1.03) than State concentration levels.

Table 12: Occupations needed for broadband deployment in Northern California (by percentage increase required)

Occupation	% occupational increase required	Location quotient
Electrical Power-Line Installers and Repairers	6.50%	0.64

Occupation	% occupational increase required	Location quotient
Telecommunications Line Installers and Repairers	4.22%	1.04
Telecommunications Equipment Installers and Repairers, Except Line Installers	1.43%	1.03
Construction Laborers	1.13%	0.84
First-Line Supervisors of Mechanics, Installers, and Repairers	0.67%	0.76
Electronics Engineers, Except Computer	0.35%	2.22
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	0.24%	1.24
Project Management Specialists	0.21%	1.26
Customer Service Representatives	0.17%	0.56
Business Operations Specialists, All Other	0.14%	1.50
Software Developers	0.08%	2.80
Software Quality Assurance Analysts and Testers	0.08%	2.65

Source: Lightcast Datarun 2023.4

The following table shows that while Central California has a lower concentration of *Telecommunications Line Installers and Repairers* (LQ of 0.78) and *Telecommunications Equipment Installers and Repairers* (LQ of 0.67) than the State concentration levels, Central California is in better shape with *Electrical Power-Line Installers and Repairers* (LQ of 0.74) than the State.

Table 13: Occupations needed for broadband deployment in Central California (by percentage increase required)

Occupation	% occupational increase required	Location quotient
Telecommunications Line Installers and Repairers	17.93%	0.74
Electrical Power-Line Installers and Repairers	13.06%	0.78
Telecommunications Equipment Installers and Repairers, Except Line Installers	8.50%	0.67
Construction Laborers	2.12%	0.85
Electronics Engineers, Except Computer	1.95%	1.16
First-Line Supervisors of Mechanics, Installers, and Repairers	1.21%	0.81
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	1.05%	0.57

Occupation	% occupational increase required	Location quotient
Project Management Specialists	0.85%	0.53
Software Quality Assurance Analysts and Testers	0.70%	0.41
Software Developers	0.57%	0.3
Customer Service Representatives	0.43%	0.45
Business Operations Specialists, All Other	0.34%	0.94

Source: Lightcast Datarun 2023.4

The following table reveals that Southern California has an even lower concentration of *Electrical Power-Line Installers and Repairers* (LQ of 0.62) and *Telecommunications Equipment Installers and Repairers* (LQ of 0.65) than the State as a whole, Northern California, or Central California.

Table 14: Occupations needed for broadband deployment in Southern California (by percentage increase required)

Occupation	% occupational increase required	Location quotient
Electrical Power-Line Installers and Repairers	2.59%	0.62
Telecommunications Line Installers and Repairers	2.21%	0.95
Telecommunications Equipment Installers and Repairers, Except Line Installers	1.12%	0.65
Construction Laborers	0.54%	0.75
Electronics Engineers, Except Computer	0.30%	1.31
First-Line Supervisors of Mechanics, Installers, and Repairers	0.29%	0.68
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	0.20%	0.85
Project Management Specialists	0.16%	0.94
Software Developers	0.12%	0.76
Customer Service Representatives	0.12%	0.64
Business Operations Specialists, All Other	0.10%	1.33
Software Quality Assurance Analysts and Testers	0.10%	0.77

Source: Lightcast Datarun 2023.4

9.1.2.2 CHARACTERISTICS OF KEY WORKFORCE CATEGORIES

Understanding how to create a robust workforce across key categories requires understanding important characteristics of those job categories such as the average earnings, change in number of employees over the past few years, and importantly, the turnover rate. High turnover rates, which could be represented by people switching jobs or retiring—both of which are trends in parts of the broadband deployment sector—impact the efficiency of organizations by requiring more frequent hiring and training and losing employees with context and experience.

High turnover rates also often indicate occupations where contract work is most common, such as seasonal work in construction and other occupations related to broadband deployment. That said, the intensity and physical demands of broadband construction jobs are significant and are also a factor in higher turnover rates.

The chart below outlines important characteristics of the occupations identified as in need of critical workforce attention.

Table 15: Characteristics of key occupations impacted by broadband investment in California

Occupation	Currently employed in California	2018 - 2022 % change	Median annual earnings	Annual turnover rate
Project Management Specialists	102,313	71%	$104,104	47%
Business Operations Specialists, All Other	179,220	39%	$75,442	50%
Software Developers	260,775	28%	$164,341	31%
Software Quality Assurance Analysts and Testers	33,022	9%	$124,904	37%
Electronics Engineers, Except Computer	20,899	-25%	$132,974	26%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	125,994	-3%	$73,258	66%
Customer Service Representatives	207,045	2%	$44,283	82%
Construction Laborers	95,313	-8%	$48,922	78%
First-Line Supervisors of Mechanics, Installers, and Repairers	48,095	21%	$80,870	44%
Telecommunications Equipment Installers and Repairers, Except Line Installers	16,177	-44%	$66,518	56%
Electrical Power-Line Installers and Repairers	9,394	14%	$104,395	40%
Telecommunications Line Installers and Repairers	12,672	-9%	$79,498	54%

Source: Lightcast Datarun 2023.4

While most of these occupations have seen growth from 2018 to 2022, a few occupations have contracted in numbers, particularly *Telecommunications Equipment Installers and Repairers* and *Electronics*

Engineers. This could be due to retirements, technology changes rendering some jobs obsolete, reclassification of occupations, contractions in the industry, or wages that are lower than national averages, causing outward migration. While some workers may be enticed back out of retirement, or brought back into the industry despite a previous contraction—and the State encourages employers to mount specific efforts to attract former workers—a large number may be out of the sector's workforce for good.

These trends continue when reviewing characteristics of the same occupations in Northern California in the table that follows: *Telecommunications Equipment Installers and Repairers* and *Electronics Engineers* have contracted in numbers, but to a lesser extent than in the whole State.

Table 16: Characteristics of key occupations impacted by broadband investment in Northern California

Occupation	Currently employed in Northern California	2018 - 2022 % change	Median annual earnings	Annual turnover rate
Project Management Specialists	38,854	66%	$123,512.85	41%
Business Operations Specialists, All Other	60,271	34%	$83,189.34	43%
Software Developers	157,696	25%	$180,779.32	28%
Software Quality Assurance Analysts and Testers	19,156	9%	$139,448.56	32%
Electronics Engineers, Except Computer	8,831	-15%	$155,080.38	23%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	48,850	3%	$83,502.27	57%
Customer Service Representatives	58,139	-4%	$46,711.19	74%
Construction Laborers	30,802	-12%	$55,657.73	71%
First-Line Supervisors of Mechanics, Installers, and Repairers	15,347	21%	$86,463.53	43%
Telecommunications Equipment Installers and Repairers, Except Line Installers	6,277	-22%	$74,031.08	52%
Electrical Power-Line Installers and Repairers	2,816	26%	$117,483.04	42%
Telecommunications Line Installers and Repairers	4,078	-11%	$87,031.71	51%

Source: Lightcast Datarun 2023.4

The following table reveals a more pressing concern in Central California: *Telecommunications Equipment Installers and Repairers* and *Telecommunications Line Installers and Repairers* have contracted in greater numbers than in the State as a whole.

Table 17: Characteristics of key occupations impacted by broadband investment in Central California

Occupation	Currently employed in Central California	2018 - 2022 % change	Median annual earnings	Annual turnover rate
Project Management Specialists	7,923	88%	$93,425.46	52%
Business Operations Specialists, All Other	18,369	32%	$70,479.58	49%
Software Developers	8,229	29%	$131,938.97	36%
Software Quality Assurance Analysts and Testers	1,436	36%	$108,651.91	47%
Electronics Engineers, Except Computer	2,256	-18%	$120,207.21	28%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	10,991	-1%	$60,461.50	72%
Customer Service Representatives	22,713	2%	$39,311.80	86%
Construction Laborers	15,059	-1%	$46,829.54	81%
First-Line Supervisors of Mechanics, Installers, and Repairers	7,961	24%	$79,913.21	49%
Telecommunications Equipment Installers and Repairers, Except Line Installers	1,976	-50%	$64,896.65	60%
Electrical Power-Line Installers and Repairers	1,669	15%	$118,051.16	39%
Telecommunications Line Installers and Repairers	1,422	-27%	$74,962.57	56%

Source: Lightcast Datarun 2023.4

Southern California experienced a greater decline in *Telecommunications Equipment Installers and Repairers* and *Electronics Engineers* than in the State as a whole, in Northern California, and in Central California, but saw a smaller contraction in the number of *Telecommunications Line Installers and Repairers*.

Table 18: Characteristics of key occupations impacted by broadband investment in Southern California

Occupation	Currently employed in Southern California	2018 - 2022 % change	Median annual earnings	Annual turnover rate
Project Management Specialists	50,014	68%	$98,980.07	49%
Business Operations Specialists, All Other	91,677	38%	$70,253.83	52%

Occupation	Currently employed in Southern California	2018 - 2022 % change	Median annual earnings	Annual turnover rate
Software Developers	73,757	23%	$136,007.79	35%
Software Quality Assurance Analysts and Testers	9,614	-2%	$105,480.68	42%
Electronics Engineers, Except Computer	8,971	-35%	$129,015.70	27%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	57,871	-13%	$63,872.74	69%
Customer Service Representatives	114,667	4%	$41,883.56	83%
Construction Laborers	46,901	-7%	$47,020.50	80%
First-Line Supervisors of Mechanics, Installers, and Repairers	23,699	20%	$79,105.24	43%
Telecommunications Equipment Installers and Repairers, Except Line Installers	6,811	-57%	$65,465.67	58%
Electrical Power-Line Installers and Repairers	4,748	9%	$101,036.65	38%
Telecommunications Line Installers and Repairers	6,424	-5%	$68,489.21	55%

Source: Lightcast Datarun 2023.4

9.1.2.3 WORKFORCE QUALIFICATION REQUIREMENTS

The following chart outlines qualification requirements for the 12 key broadband deployment occupations, along with typical education and work experience requirements, and typical amount of on-the-job training required to be proficient.

Table 19: Work experience of occupations impacted by broadband investment

Occupation	Typical entry-level education	Work experience required	On-the-job training required
Project Management Specialists	Bachelor's degree	None	None
Business Operations Specialists, All Other	Bachelor's degree	None	None
Software Developers	Bachelor's degree	None	None
Software Quality Assurance Analysts and Testers	Bachelor's degree	None	None
Electronics Engineers, Except Computer	Bachelor's degree	None	None

Occupation	Typical entry-level education	Work experience required	On-the-job training required
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school diploma or equivalent	None	Moderate-term
Customer Service Representatives	High school diploma or equivalent	None	Short-term
Construction Laborers	No formal educational credential	None	Short-term
First-Line Supervisors of Mechanics, Installers, and Repairers	High school diploma or equivalent	Less than 5 years	None
Telecommunications Equipment Installers and Repairers, Except Line Installers	Postsecondary nondegree award	None	Moderate-term
Electrical Power-Line Installers and Repairers	High school diploma or equivalent	None	Long-term
Telecommunications Line Installers and Repairers	High school diploma or equivalent	None	Long-term

Source: Lightcast Datarun 2023.4

A key workforce strategy for filling job openings, retaining existing employees, marketing career opportunities to new recruits, and leveraging on-the-job training opportunities is to define career pathways. Occupations that require more experience and qualifications can sometimes be filled by promotions, thereby transferring the process of bringing new people into the industry to roles that require less previous experience or fewer qualification requirements.

For example, a customer service representative will naturally learn the essential terminology, basic structure of an ISP and broadband network, and customer-facing soft skills through working in a customer service environment and responding to customer calls. With the right lexicon and customer-facing skills honed virtually, the training required to then start doing in-home installations becomes less onerous than training someone with no experience in ISP customer service. From there, that worker may wish to seek more training and transition again to various forms of higher-paid outside plant (OSP) work—such as fiber splicing—and after a few years, may become a supervisor of an OSP team.

9.1.2.4 CURRENT UNEMPLOYMENT METRICS

Though unemployment numbers are only aggregated at more general occupation classification levels, some inferences can be made as to how current unemployment numbers may impact ability to fill open positions in broadband construction.

The chart below outlines the total number of unemployed workers in California by major occupation category, the share of all unemployed people in California represented by that category, and the comparable percentage of all unemployed people in that category for the nation. In other words, while 13 percent of unemployed people in California are from the *Office and Administrative Support* occupations, 14 percent of people nationally who are unemployed are from that category, showing a proportionally smaller availability of those workers in California compared to the nation, and therefore open roles in that category may be more difficult to fill.

Table 20: Unemployment for occupations impacted by broadband investment in California

Occupation	Unemployed in California (May 2023)	% of State unemployment	% of national unemployment
Business and Financial Operations Occupations Project Management Specialists Business Operations Specialists, All Other	52,768	6%	6%
Computer and Mathematical Occupations Software Developers Software Quality Assurance Analysts and Testers	26,195	3%	3%
Architecture and Engineering Occupations Electronics Engineers, Except Computer	11,793	1%	1%
Sales and Related Occupations Sales Representatives of Services	71,307	8%	8%
Office and Administrative Support Occupations Customer Service Representatives	115,326	13%	14%
Construction and Extraction Occupations Construction Laborers	88,055	10%	10%
Installation, Maintenance, and Repair Occupations First-Line Supervisors of Mechanics, Installers, and Repairers Telecommunications Equipment Installers and Repairers Electrical Power-Line Installers and Repairers Telecommunications Line Installers and Repairers	30,601	4%	4%

Source: Lightcast Datarun 2023.4

The following tables represent the same analysis done at the regional level.

Table 21: Unemployment for occupations impacted by broadband investment in Northern California

Occupation	Unemployed in Northern California (May 2023)	% of regional unemployment	% of national unemployment
Business and Financial Operations Occupations Project Management Specialists Business Operations Specialists, All Other	15,180	7%	6%
Computer and Mathematical Occupations Software Developers Software Quality Assurance Analysts and Testers	11,611	6%	3%
Architecture and Engineering Occupations Electronics Engineers, Except Computer	3,853	2%	1%
Sales and Related Occupations Sales Representatives of Services	16,806	8%	8%
Office and Administrative Support Occupations Customer Service Representatives	25,902	12%	14%
Construction and Extraction Occupations Construction Laborers	24,037	11%	10%
Installation, Maintenance, and Repair Occupations First-Line Supervisors of Mechanics, Installers, and Repairers Telecommunications Equipment Installers and Repairers Electrical Power-Line Installers and Repairers Telecommunications Line Installers and Repairers	7,055	3%	4%

Source: Lightcast Datarun 2023.4

Table 22: Unemployment for occupations impacted by broadband investment in Central California

Occupation	Unemployed in Central California (May 2023)	% of regional unemployment	% of national unemployment
Business and Financial Operations Occupations Project Management Specialists Business Operations Specialists, All Other	8,789	4%	6%
Computer and Mathematical Occupations Software Developers Software Quality Assurance Analysts and Testers	2,809	1%	3%
Architecture and Engineering Occupations Electronics Engineers, Except Computer	2,064	1%	1%
Sales and Related Occupations Sales Representatives of Services	16,119	8%	8%
Office and Administrative Support Occupations Customer Service Representatives	24,828	12%	14%
Construction and Extraction Occupations Construction Laborers	21,879	11%	10%
Installation, Maintenance, and Repair Occupations First-Line Supervisors of Mechanics, Installers, and Repairers Telecommunications Equipment Installers and Repairers Electrical Power-Line Installers and Repairers Telecommunications Line Installers and Repairers	8,252	4%	4%

Source: Lightcast Datarun 2023.4

Table 23: Unemployment for occupations impacted by broadband investment in Southern California

Occupation	Unemployed in Southern California (May 2023)	% of regional unemployment	% of national unemployment
Business and Financial Operations Occupations Project Management Specialists Business Operations Specialists, All Other	28,799	6%	6%
Computer and Mathematical Occupations Software Developers Software Quality Assurance Analysts and Testers	11,775	3%	3%
Architecture and Engineering Occupations Electronics Engineers, Except Computer	5,876	1%	1%
Sales and Related Occupations Sales Representatives of Services	38,382	8%	8%
Office and Administrative Support Occupations Customer Service Representatives	64,595	14%	14%
Construction and Extraction Occupations Construction Laborers	42,139	9%	10%
Installation, Maintenance, and Repair Occupations First-Line Supervisors of Mechanics, Installers, and Repairers Telecommunications Equipment Installers and Repairers Electrical Power-Line Installers and Repairers Telecommunications Line Installers and Repairers	15,294	3%	4%

Source: Lightcast Datarun 2023.4

Staffing shortages can also be examined via job postings. The charts below outline average monthly postings versus average monthly hires for the State and Northern, Central, and Southern California. Hiring data are calculated using a combination of Lightcast jobs data, information on separation rates from the Bureau of Labor Statistics (BLS), and industry-based hiring data from the Census Bureau.

Table 24: Occupations impacted by broadband investment in California, job postings vs. hires (2022)

Occupation	Avg monthly postings (Jan – Dec 2022)	Avg monthly hires (Jan – Dec 2022)
Project Management Specialists	3,128	4,552
Business Operations Specialists, All Other	976	8,151
Software Developers	15,207	9,002
Software Quality Assurance Analysts and Testers	1,664	1,241
Electronics Engineers, Except Computer	477	484
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	1,201	7,976
Customer Service Representatives	10,106	15,335
Construction Laborers	1,240	7,112
First-Line Supervisors of Mechanics, Installers, and Repairers	1,662	2,186
Telecommunications Equipment Installers and Repairers, Except Line Installers	573	836
Electrical Power-Line Installers and Repairers	92	336
Telecommunications Line Installers and Repairers	314	597

Source: Lightcast Datarun 2023.4

Table 25: Occupations impacted by broadband investment in Northern California, job postings vs. hires (2022)

Occupation	Avg monthly postings (Jan – Dec 2022)	Avg monthly hires (Jan – Dec 2022)
Project Management Specialists	1,348	1,517
Business Operations Specialists, All Other	310	2,386
Software Developers	8,308	4,753
Software Quality Assurance Analysts and Testers	864	603
Electronics Engineers, Except Computer	197	185
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	383	2,644
Customer Service Representatives	2,992	3,898
Construction Laborers	378	2,094

Occupation	Avg monthly postings (Jan – Dec 2022)	Avg monthly hires (Jan – Dec 2022)
First-Line Supervisors of Mechanics, Installers, and Repairers	602	651
Telecommunications Equipment Installers and Repairers, Except Line Installers	174	299
Electrical Power-Line Installers and Repairers	43	110
Telecommunications Line Installers and Repairers	92	188

Source: Lightcast Datarun 2023.4

Table 26: Occupations impacted by broadband investment in Central California, job postings vs. hires (2022)

Occupation	Avg monthly postings (Jan – Dec 2022)	Avg monthly hires (Jan – Dec 2022)
Project Management Specialists	211	412
Business Operations Specialists, All Other	96	837
Software Developers	633	371
Software Quality Assurance Analysts and Testers	88	70
Electronics Engineers, Except Computer	40	56
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	157	785
Customer Service Representatives	1,415	1,775
Construction Laborers	193	1,161
First-Line Supervisors of Mechanics, Installers, and Repairers	252	394
Telecommunications Equipment Installers and Repairers, Except Line Installers	83	106
Electrical Power-Line Installers and Repairers	14	58
Telecommunications Line Installers and Repairers	83	106

Source: Lightcast Datarun 2023.4

Table 27: Occupations impacted by broadband investment in Southern California, job postings vs. hires (2022)

Occupation	Avg monthly postings (Jan – Dec 2022)	Avg monthly hires (Jan – Dec 2022)
Project Management Specialists	1,531	2,318
Business Operations Specialists, All Other	559	4,377
Software Developers	6,128	3,020
Software Quality Assurance Analysts and Testers	697	435
Electronics Engineers, Except Computer	238	216
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	652	3,880
Customer Service Representatives	5,637	8,518
Construction Laborers	659	3,576
First-Line Supervisors of Mechanics, Installers, and Repairers	796	1,078
Telecommunications Equipment Installers and Repairers, Except Line Installers	313	371
Electrical Power-Line Installers and Repairers	34	161
Telecommunications Line Installers and Repairers	165	303

Source: Lightcast Datarun 2023.4

One challenge of using job postings alone to quantify the hiring gaps is that hiring does not happen on a 1:1 ratio with postings. Within many occupations, more hiring is happening than job postings are listed, suggesting that hiring occurs via direct recruitment, re-hires, contractors, unions, career fairs, or directly from training or educational programs. In addition, it is common for large firms to use one posting to hire multiple roles at the same position and at the same time. That said, postings and hiring are a useful way to understand almost in real time what specific roles are the most sought after and needed across the State.

9.1.2.5 CURRENT TRAINING PROGRAMS AT PUBLIC INSTITUTIONS IN CALIFORNIA

Training for broadband deployment happens in many ways, with a number of partnership configurations and program structures. The State spends over $6 billion annually on workforce training programs overall,[50] and programs both public and private take many forms.

The State wants to recognize that many successful programs have also been established in partnership with unions and employers, such as the partnership between the Communication Workers of America and Chabot-Las Positas Community College District to utilize a Fiber Technician Apprenticeship Program to increase their workforce.[51] In addition, privately run programs such as the certified fiber optic training program at The Fiber School in San Francisco are also bolstering the State workforce.[52]

However, the demand for trained workers likely exceeds what any one sector could meet on their own, and developing a diverse and highly skilled workforce to meet the needs above requires a coordinated effort across the public and private sector. There are numerous examples of technical colleges that have created and grown programs to meet the needs of the construction workforce. Notable national examples that can be used as case studies for their innovative approaches include the Broadband Academy at Northwood Technical College[53] in Rice Lake, Wisconsin, and Bossier Parish Community College Fiber Technician Boot Camp[54] in Bossier Camp, Louisiana; however, robust training programs at public institutions are also present in California already.

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[50] "Improving Workforce Education and Training Data in California," Legislative Analyst's Office, August 18, 2016, https://www.lao.ca.gov/Publications/Report/3494.

[51] "Communications Workers of America District 9, in Partnership with Chabot-Las Positas Community College District, Wins Federal Grant for Statewide Worker-Driven Fiber Technician Apprenticeship Program in California," CWA news release, August 25, 2022, https://cwa-union.org/news/releases/communications-workers-of-america-district-9-in-partnership-chabot-las-positas.

[52] "Fiber Optic Training – San Francisco, CA," The Fiber School, https://thefiberschool.com/locations-methods/scheduled-regional-trainings/san-francisco-california-ca/.

[53] "Broadband Academy," Northwood Technical College, https://www.northwoodtech.edu/continuing-education-and-training/professional-development/broadband-academy.

[54] "Case Study: Bossier Parish Community College | Fiber Optic Technician Bootcamp in Bossier Camp, Louisiana," Internet for All, June 9, 2023, https://www.internetforall.gov/blog/case-study-bossier-parish-community-college-fiber-optic-technician-bootcamp-bossier-camp-0.

The following is a list of institutions and relevant graduates generated by accessing the Integrated Postsecondary Education Data System (IPEDS).[55]

Table 28: Broadband workforce training programs at public higher education institutions

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
Allan Hancock College	Customer Service Support/Call Center/Teleservice Operation	Customer Service Representatives	Santa Barbara County	Central	2
Allan Hancock College	Selling Skills and Sales Operations	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Santa Barbara County	Central	2
Ashford University	Operations Management and Supervision	First-Line Supervisors of Mechanics, Installers, and Repairers	San Diego County	Southern	77
CET-El Centro	Retailing and Retail Operations	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Imperial County	Southern	2
California Institute of Technology	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	42

[55] Because the IPEDs data is collected using Classification of Instructional Programs (CIP) codes rather than the NAICs classification, a CIPs to NAICs crosswalk was used to identify programs training workers relevant to broadband deployment occupations.

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
California Polytechnic State University-San Luis Obispo	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Luis Obispo County	Central	167
California State Polytechnic University-Pomona	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	122
California State University-Bakersfield	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Kern County	Central	30
California State University-Chico	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Butte County	Northern	28
California State University-Fresno	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Fresno County	Central	29
California State University-Fullerton	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Orange County	Southern	92
California State University-Long Beach	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	147
California State University-Los Angeles	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	68
California State University-Northridge	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	103
California State University-Sacramento	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Sacramento County	Northern	114
Chaffey College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	San Bernardino County	Southern	61

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
Citrus College	Customer Service Support/Call Center/Teleservice Operation	Customer Service Representatives	Los Angeles County	Southern	3
East Los Angeles College	Customer Service Support/Call Center/Teleservice Operation	Customer Service Representatives	Los Angeles County	Southern	4
Golden Gate University	Operations Management and Supervision	First-Line Supervisors of Mechanics, Installers, and Repairers	San Francisco County	Northern	2
Imperial Valley College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	Imperial County	Southern	9
Laney College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	Alameda County	Northern	5
Los Angeles Pierce College	Customer Service Support/Call Center/Teleservice Operation	Customer Service Representatives	Los Angeles County	Southern	3
Loyola Marymount University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	14
National University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Diego County	Southern	18

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
Naval Postgraduate School	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Monterey County	Central	66
Naval Postgraduate School	Electrical, Electronics, and Communications Engineering, Other	Electronics Engineers, Except Computer	Monterey County	Central	14
Orange Coast College	Selling Skills and Sales Operations	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Orange County	Southern	10
San Bernardino Valley College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	San Bernardino County	Southern	31
San Diego City College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	San Diego County	Southern	19
San Diego State University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Diego County	Southern	125
San Francisco State University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Francisco County	Northern	41
San Jose State University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Santa Clara County	Northern	186

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
Santa Clara University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Santa Clara County	Northern	12
Santa Monica College	Selling Skills and Sales Operations	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Los Angeles County	Southern	23
Santa Rosa Junior College	Selling Skills and Sales Operations	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Sonoma County	Northern	16
Santiago Canyon College	Electrical and Power Transmission Installation/Installer, General	First-Line Supervisors of Mechanics, Installers, and Repairers; Electrical Power-Line Installers and Repairers	Orange County	Southern	14
Shasta College	Customer Service Support/Call Center/Teleservice Operation	Customer Service Representatives	Shasta County	Northern	2
Sonoma State University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Sonoma County	Northern	25
Southern California Institute of Technology	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Orange County	Southern	18

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
Stanford University	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Santa Clara County	Northern	206
University of California-Berkeley	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Alameda County	Northern	833
University of California-Davis	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Yolo County	Northern	163
University of California-Irvine	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Orange County	Southern	138
University of California-Los Angeles	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	325
University of California-Los Angeles	Electrical, Electronics, and Communications Engineering, Other	Electronics Engineers, Except Computer	Los Angeles County	Southern	13
University of California-Riverside	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Riverside County	Southern	130
University of California-San Diego	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Diego County	Southern	283
University of California-San Diego	Electrical, Electronics, and Communications Engineering, Other	Electronics Engineers, Except Computer	San Diego County	Southern	57
University of California-Santa Barbara	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Santa Barbara County	Central	154
University of California-Santa Cruz	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Santa Cruz County	Central	71
University of San Diego	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Diego County	Southern	23

Institution	Degrees	Associated occupations	County	Region	Number of degrees granted in 2022
University of Southern California	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	Los Angeles County	Southern	304
University of Southern California	Electrical, Electronics, and Communications Engineering, Other	Electronics Engineers, Except Computer	Los Angeles County	Southern	1
University of the Pacific	Electrical and Electronics Engineering	Electronics Engineers, Except Computer	San Joaquin County	Central	12

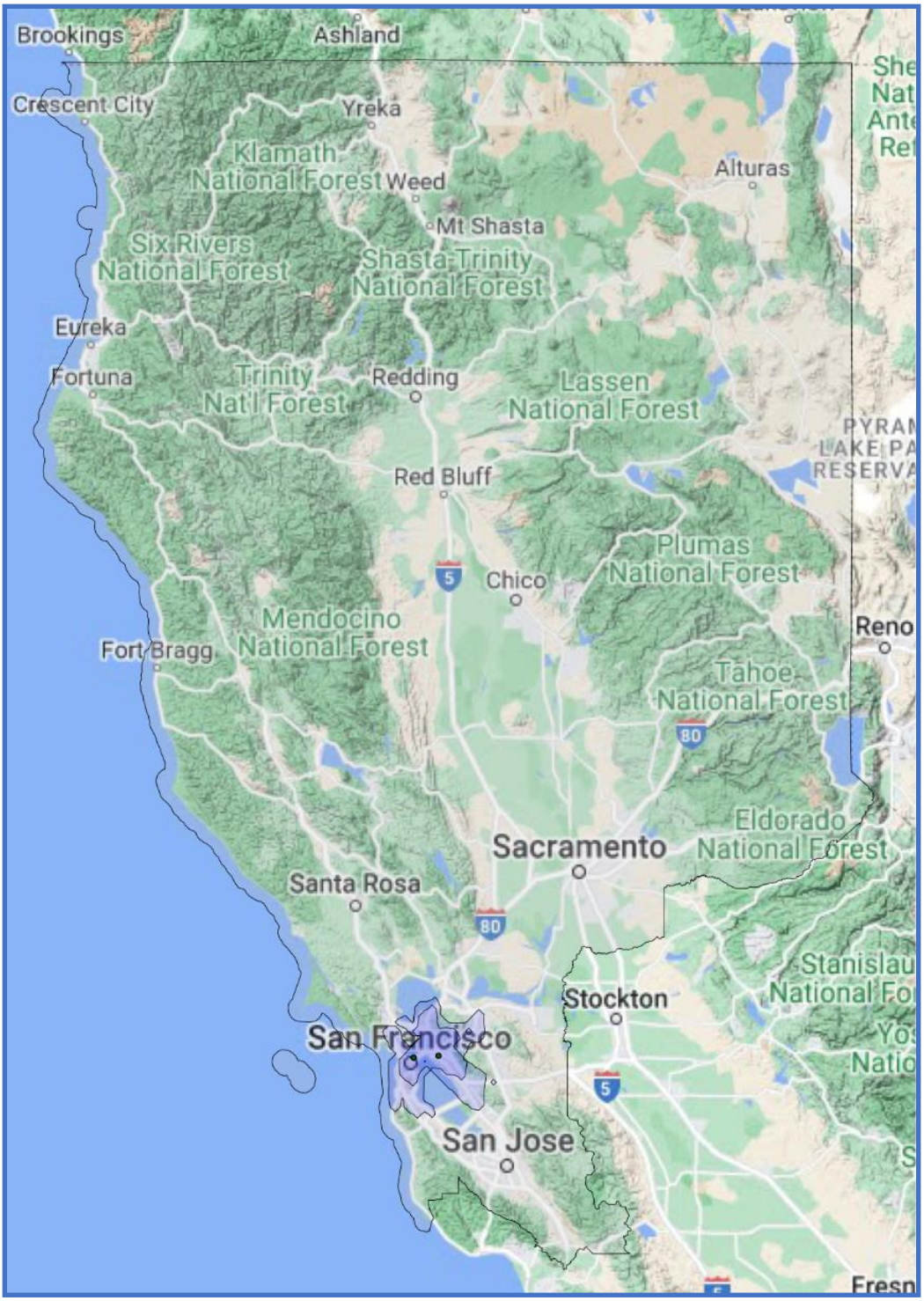
Though this data does not capture graduates from private training programs, technical high schools, or public post-secondary programs that are currently being planned or have been implemented prior to the last year of available data, it does give an indication of the long-standing programs in the State that are producing trained workers able to fit into certain roles.

Another important aspect to consider with training programs is their geographic distribution around the State. While some professions related to broadband construction, like *Fiber Network Engineers* (which are produced under the *Electrical and Electronics Engineering* category), can very effectively operate remotely, others, like lineworkers and installers, are most valuable if they are available across the State to reduce travel and better achieve local hiring goals.

To illustrate potential geographic gaps in training, the following maps show a 30-minute drive-time (the average commute time in California is 29.3 minutes)[56] around public institutions that, in 2022, produced trainees in roles that are needed for field work specifically.

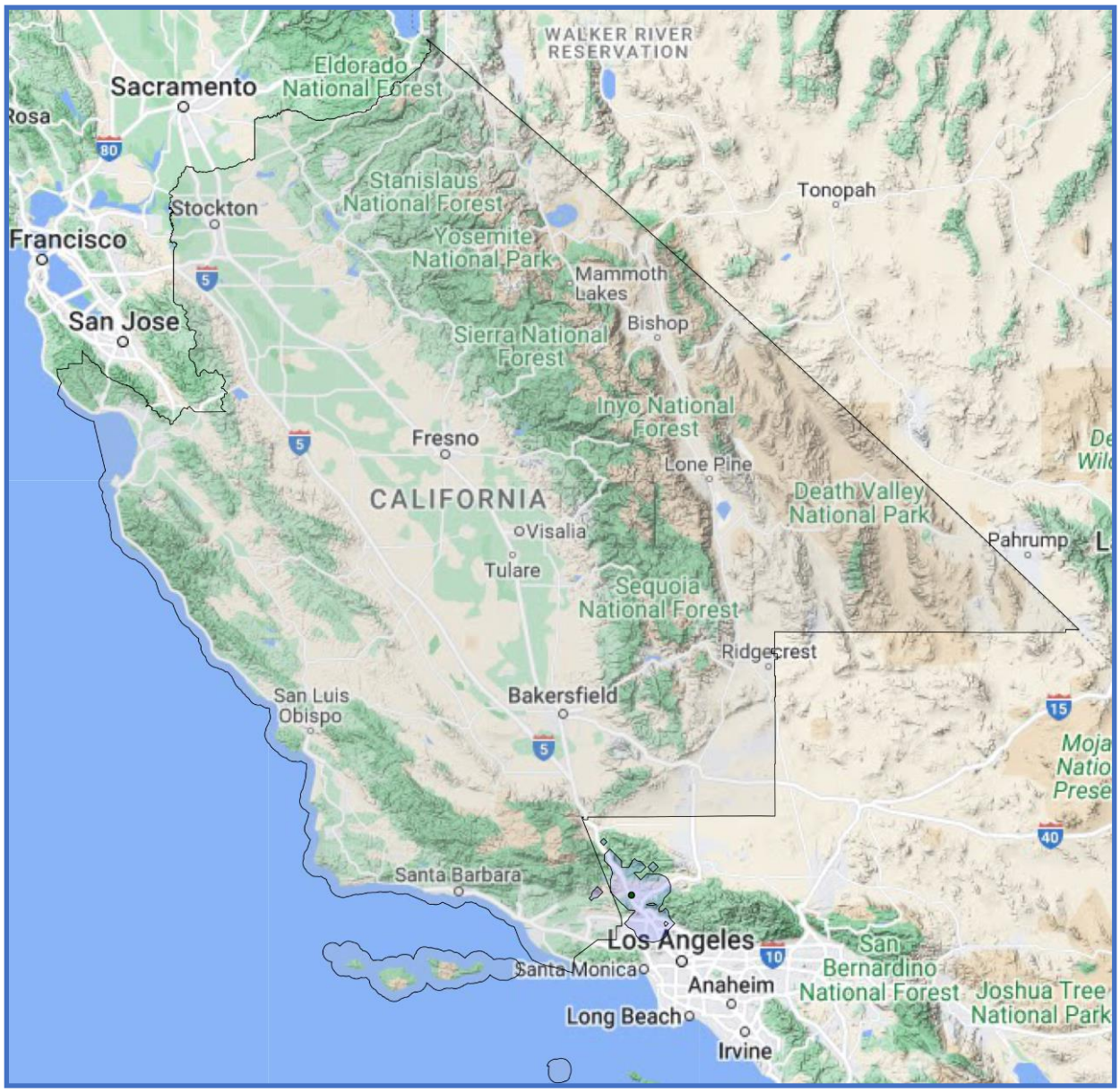
[56] "California Average Commute Time by County," IndexMundi, 2018, https://www.indexmundi.com/facts/united-states/quick-facts/california/average-commute-time#table.

Figure 1: 30-minute drive time around Northern California institutions training roles relevant to broadband construction field-work[57]



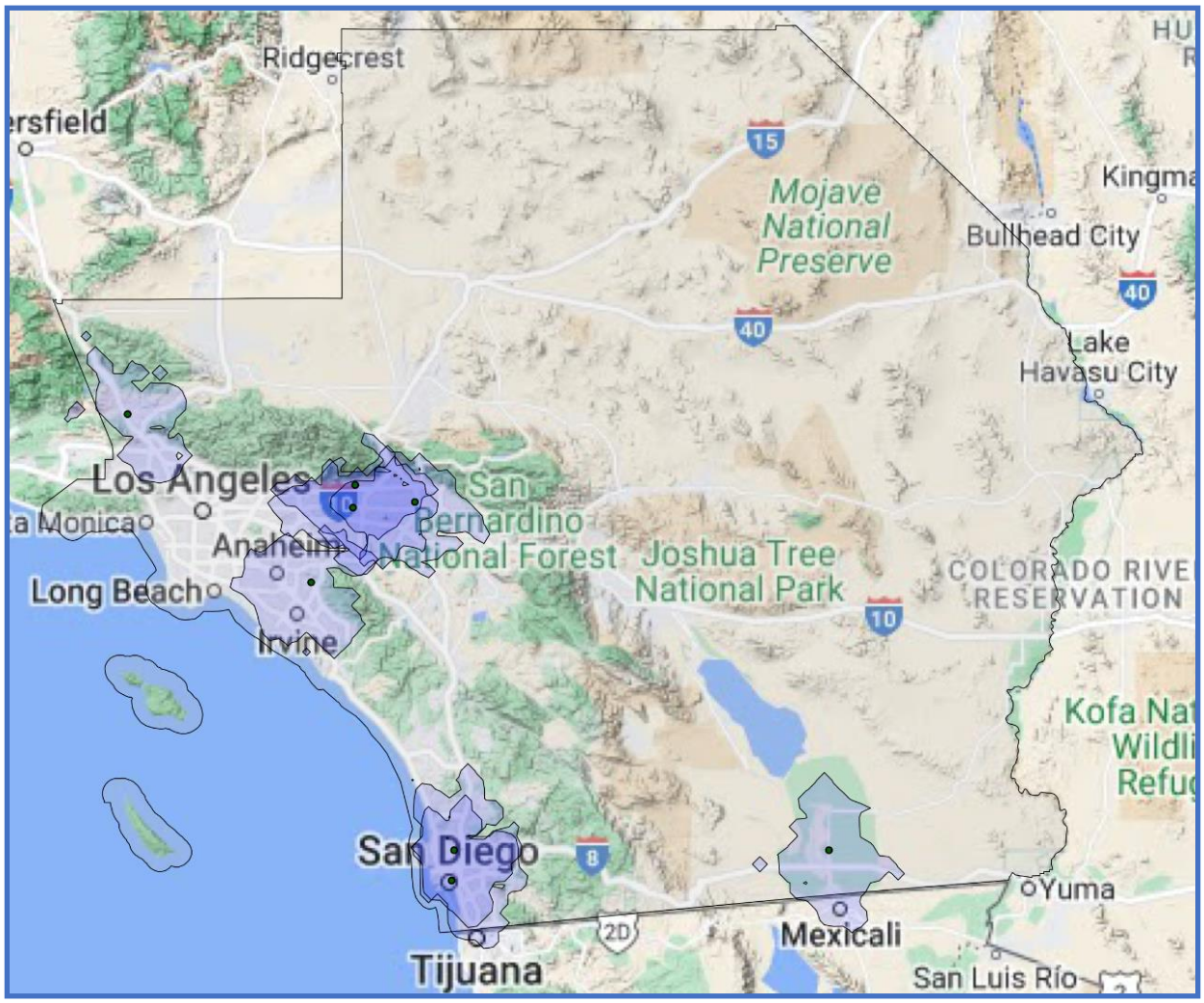
[57] Sources: 2022 IPED; drive time derived using OpenStreetMap; basemap © 2020 Google.

Figure 2: 30-minute drive time around Central California institutions training roles relevant to broadband construction field-work[58]



[58] Sources: 2022 IPED; drive time derived using OpenStreetMap; basemap © 2020 Google.

Figure 3: 30-minute drive time around Southern California institutions training roles relevant to broadband construction field-work[59]



In Northern and Southern California, institutions offering training for roles that are relevant to field-work during broadband construction are clustered in major cities. Importantly, Central California does not have any such institutions within its borders that produced graduates in 2022.

Because the post-secondary training program distribution in California for critical field-work roles is based in population centers, building networks in the rural parts of the State—especially in Central California, north of San Francisco, and in other rural areas—may require importing construction labor, which will increase the cost of construction due to the expense of transportation and lodging. And these potential workforce challenges may be even more acute on Tribal lands; as noted in the

[59] Sources: 2022 IPED; drive time derived using OpenStreetMap; basemap © 2020 Google.

BEAD Five-Year Action Plan, "Labor shortages for broadband deployment projects are particularly pronounced on Tribal lands as Tribal governments in California compete for qualified workers with other projects being planned in the State."[60]

Training skilled workers across the *entire* State—especially workers in rural areas and on Tribal lands—will therefore need to be a central component of the State's workforce strategy.

9.1.3 Continuing to support workforce development in California

Even though the constellation of higher education institutions and private training providers are producing significant qualified workers, many more are needed than public higher education programs can provide on their own. As such, California endeavors to play an active role in ensuring that the State's workforce is ready to meet the needs of the BEAD deployment by actively working to increase the scale of the qualified, diverse workforce in the State.

Importantly, a growing coalition of stakeholders in the State has been discussing the potential for broadband workforce, such as the Public Policy Institute of California in their March 2023 report, and the Association of General Contractors, among others.[61] In addition, California has significant existing relationships with unions, ISPs, and training providers, all of which have been activated in the workforce space in anticipation of increased broadband construction demands.

As part of this ongoing work across the State, the California Public Utilities Commission affirms a few strategies employed in the industry—best practices demonstrated by the training providers locally and nationally noted above. These best practices are critical to combatting worker shortages, retention challenges, and increasing retirement due to an aging workforce, all of which are present in much of the broadband construction sector.

- **Apprenticeships and on-the-job training programs:** Apprenticeship models for industries where apprenticeships exist (i.e., for electricians and for lineworkers, such as those offered by the Communications Workers of America and the International Brotherhood of Electrical Workers), as well as on-the-job training programs for all industries, provide benefits to both employees and employers. Employers can train people in their systems correctly from the beginning of their career and evaluate employees during introductory periods for the qualities that will set them up for long-term success. Furthermore, employees do not have to pay for separate training before getting a paycheck and can experience the

[60] "State of California Five-Year Action Plan Broadband Equity, Access, and Deployment (BEAD) Program," California Public Utilities Commission, 2023, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M513/K977/513977116.PDF (accessed October 25, 2023).

[61] "Achieving Universal Broadband in California," Public Policy Institute of California, March 2023, https://www.ppic.org/publication/achieving-universal-broadband-in-california/, p. 21.

rigors and learning curve of the work in a measured way as they come up to speed in the sector.

- **Marketing to diverse prospective workers:** The CPUC recognizes that our ability to build great networks will be improved with the inclusion of people from all parts of society—including people without significant past representation in the telecom sector. Trade schools, technical colleges, and community colleges have significant experience with outreach to nontraditional students, women, first-generation college students, Black, Latinx, Tribal members, veterans, and others—and their participation in growing a diverse, qualified telecom sector workforce is essential. However, the private sector needs to promote and establish inclusive recruitment and training strategies as well to ensure the entirety of the sector grows in a diverse and inclusive way.

- **Local hiring:** Hiring local workers benefits telecom construction in several ways: It saves money by reducing the travel time and travel expenses (e.g., accommodations) required of laborers; it allows for better recruitment as employees often prefer to stay near their home; and it ensures the benefits of hiring in labor surplus areas stay in that community. The CPUC encourages local hiring to be prioritized, especially in rural and Tribal areas across the State.

- **Explicit pathways to advancement:** Once a new hire takes the first step into a telecommunications career, their ability to stick with that career and grow in the sector requires well-established pathways to advancement. Establishing great growth pathways can both incentivize people to start in the sector, and ensure they stay to build on their skills and knowledge.

- **Coordination between training providers and employers:** Ongoing close coordination between training providers and employers is essential to ensure that training providers understand what credentials are meaningful, adapt programs to stay current with the sector's needs, and collectively evaluate programs' success and iterate as needed.

- **Recruitment strategies tailored to the realities and challenges of the industry:** Enticing people into a new sector and new career—especially one as unique as being a telecommunication worker—is difficult, especially when unemployment rates are low. Successful recruitment strategies involve screening for aptitude and ability to learn, marketing opportunities based on the tangible and intangible benefits of the career, and making sure there are diverse demographics represented in marketing materials. However, due to the challenges of the job that can only be understood fully by experience, there will always be significant numbers of people who leave the telecom workforce within a few weeks or months of employment as a lineworker or installer. Because of this, it is recommended that programs and employers set recruitment targets at double or even triple the number of people needed.

Additionally, given the significant gaps in certain critical in-the-field occupations such as electric and telecommunications lineworkers, and the challenges of getting trained workers to the most rural areas of the State where substantial construction will be happening, the CPUC encourages training providers to develop explicit pathways for people in the rural parts of the State—including people residing on Tribal lands—to take advantage of training programs, including existing programs operated by Tribes for Tribal members. Strategies may include increasing marketing and outreach to rural areas and Tribal Nations, offering more hybrid or fully virtual learning opportunities, or even offering pop-up or temporary training events in rural communities.

Lastly, perhaps the most important workforce role for California is its commitment to ongoing and close coordination with employers, unions, and training programs in the broadband sector. Ultimately, the State's workforce initiatives will be most successful if they are responsive to industry needs. Granular information (e.g., about nuances to the broadband construction process that unions, employers, and ISPs are seeing in the field) is critical for the State to know so that the State may play a role in facilitating mitigation.

A full description of how California intends to stay in close coordination with broadband construction stakeholders is in the next section.

9.2 Coordination with unions and other workforce stakeholders

Without a robust and highly trained workforce, broadband deployment in our State will not happen on time, at cost, and to the high standards that will set California up for success for decades to come. Worker associations and organizations are critical partners both in the deployment of broadband and in the extensive preparation happening across the State to ensure the deployment goes according to plan. In particular, the CPUC would like to thank unions such as the Communications Workers of America (CWA) and International Brotherhood of Electrical Workers (IBEW) for the robust feedback they have provided on broadband workforce concerns and recommendations.

The CPUC has sought input from Tribes, educational providers, organizations working to promote diverse and inclusive economies and society, many representatives of local and State and government, and other stakeholders. Organizations from whom input on workforce considerations was sought includes, but is not limited to, the following list:

- #OaklandUndivided
- Access Humboldt
- Capital Region Coalition for Digital Inclusion (CRCDI)
- Communications Workers of America (CWA)

- Central California Tribes
- Central Coast Broadband Consortium (CCBC)
- Central Sierra Broadband Utility Zone
- Central Valley Higher Education Consortium (CVHEC)
- City of San Francisco Digital Equity
- City of San José
- Connected Capital Area Broadband Consortium (CCABC)
- County of Orange
- County of Riverside
- County of San Bernardino
- County of Santa Clara
- CSU Chico
- East Bay Economic Development Alliance (EBEDA)
- Economic Development Collaborative (EDC)
- Gold Country Broadband Consortium
- Imperial County Transportation Commission (ICTC)
- Imperial Valley Economic Development Corporation (IVEDC)
- Inland Empire Regional Broadband Consortium (IERBC)
- International Brotherhood of Electrical Workers (IBEW)
- Joint Venture Silicon Valley (JVSV)
- Los Angeles Digital Equity Action League (LA DEAL)
- Monterey Bay Economic Partnership (MBEP)
- North Bay North Coast Broadband Consortium
- North State Planning and Development Collective

- Northeastern Regional Broadband Consortium
- Northern California Tribes
- Orange County Business Council (OCBC)
- Redwood Coast Connect Consortium
- Redwood Coast Economic Development Commission
- San Diego Association of Governments (SANDAG)
- San Francisco Tech Council
- San Joaquin Valley Regional Broadband Consortium (SJVRBC)
- Santa Barbara Foundation (SBF)
- Santa Clara County Office of Education (SCCOE)
- Sierra Business Council
- Southern Border Broadband Consortium (SBBC)
- Southern California Association of Governments (SCAG)
- Southern California Tribes
- Tech Exchange
- Upstate Regional Broadband Consortium
- Valley Vision

The feedback of these entities has been instrumental in shaping State plans and understanding the workforce landscape.

The CPUC welcomes and plans on participating in ongoing close coordination with unions, employers, and worker groups, which is essential for the State to create programs to strengthen the workforce and ensure subgrantee awards can be built and executed according to plan. As such, the CPUC will work with previously identified stakeholders and other parties interested in workforce issues to meet regularly and establish open channels of communication.

Specifically, the CPUC seeks ongoing updates from training providers, worker organizations, and firms with workforce needs on:

- Recruitment strategies and their effectiveness, including but not limited to the relative efficacy of online postings, job fairs, paid partnerships, and outreach to community and technical colleges, with specificity regarding the effectiveness of outreach designed to engage diverse communities.

- Progress in training and employing new workers, including training program entrance rates, training program graduation rates, job placement rates, and retention rates after three and six months of employment, or similar data illustrating retention.

- Industry trends that may impact training and recruiting needs, including changes in staffing models, technology, certifications, or skill sets required of workers to be effective throughout deployment.

- Feedback on State programs, as well as additional ideas the CPUC may consider to improve workforce readiness and reach diverse populations.

9.3 Ensuring strong labor standards

Ensuring strong labor standards throughout the entire BEAD deployment process is important not only for the wellbeing of the vast workforce that will be participating in the process, but it is also important for the long-term integrity of broadband networks. Treating employees well, which includes providing adequate training, ensuring fair compensation and sufficient breaks, and following robust safety protocols, will have numerous benefits to the BEAD effort.

1. **Worker safety:** Worker safety is a primary concern for any construction happening in the State. Many protocols and practices essential to ensuring strong labor standards are paramount to increasing worker safety, such as providing regular and sufficient work breaks, proper training and oversight to new workers, and reasonable working hours and expectations.

2. **Worker satisfaction and retention:** Construction trades are physically difficult, and when a job also requires working at dangerous heights, it is understandable that a portion of workers leave shortly after trying the work. Part of reducing turnover, however, involves implementing sufficient training, safety, pay, and break standards so that the physical challenges are minimized and new workers become accustomed to the work within a supportive environment.

3. **Quality, resilient networks:** Inordinately rushing construction, or building networks without appropriate oversight or training, will jeopardize the long-term integrity of the networks being built. Strong labor standards will ensure networks are built to the quality and standards expected of this critical infrastructure.

The first step to strong labor standards is recognizing and highlighting the regulations and laws by which subgrantees are bound. California is very familiar with the nature of the following laws and the work needed to ensure compliance:

Table **29**: U.S. labor laws noted in the BEAD NOFO

Labor law	Summary
Fair Labor Standards Act	Establishment of minimum wage, overtime pay, recordkeeping, and child labor standards affecting full-time and part-time workers across private and public sectors
Occupational Safety and Health Act	Establishment of safe and healthy workplace standards
Service Contract Act	Establishment of standards for contractors and subcontractors performing services on prime contracts in excess of 2,500
Title VI of the Civil Rights Act of 1964 (see also 15 C.F.R. Part 8)	Prohibition on discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance, including from the Department of Commerce
Title IX of the Education Amendments of 1972	Prohibition of discrimination on the basis of sex under federally assisted education programs or activities
The Americans with Disabilities Act of 1990	Prohibition of discrimination on the basis of disability under programs, activities, and services provided or made available by Eligible Entities and local governments or instrumentalities or agencies thereto, as well as public or private entities that provide transportation
Section 504 of the Rehabilitation Act of 1973	Prohibition of discrimination on the basis of handicap under any program or activity receiving or benefiting from federal assistance
The Age Discrimination Act of 1975	Prohibition of discrimination on the basis of age in programs or activities receiving federal financial assistance
Parts II and III of Executive Order 11246, Equal Employment Opportunity	Requires that federally assisted construction contracts incorporate and fulfill the nondiscrimination provisions of §§ 202 and 203 of E.O. 11246 and Department of Labor regulations implementing E.O. 11246 (41 C.F.R. § 60-1.4(b))
Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency	Requires federal agencies to examine the services that they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them

Labor law	Summary
Executive Order 13798, Promoting Free Speech and Religious Liberty (see also OMB M-20-09 Guidance Regarding Federal Grants and Executive Order 13798)	States or other public grantees may not condition sub-awards of federal grant money in a manner that would disadvantage grant applicants based on their religious character

As the first step to ensuring compliance, California will ask applicants to self-certify compliance with the laws and regulations listed in the NOFO and the NTIA's guidance above, as well as all applicable State labor laws that either exceed or address different concerns than federal law. In alignment with NTIA rules, California will require:

- Certification from an Officer/Director-level employee (or equivalent) on past compliance with federal labor and employment laws
- Disclosure of any violations of labor and employment laws in the last three years, or written confirmation of no such violations
- Written description of steps taken to mitigate any violations that occurred in the past three years
- Applicable wage scales and wages and overtime payment practices for each class of employee that will be directly in the physical construction of high-speed internet
- Plans for the implementation of workforce safety committees that will be authorized to raise any health and safety concerns

Self-certification is a common practice that firms are accustomed to complying with and will take place during the subgrantee selection process. The CPUC will ask subgrantee applicants to certify compliance with State workforce and labor laws as well, should State regulations exceed or expand on guidance in the NOFO.

As with potential labor law infractions in other industries, the State makes it known that potential infractions may be reported to the California Labor and Workforce Development Agency and/or the CPUC. Reported infractions will be investigated under the existing protocols established by the State, and the individuals or entities filing reports will be covered under State whistleblower policies as applicable to the situation and law.

To further ensure self-certification results in appropriate adherence to labor laws, the CPUC will follow best practices for evaluation upon indications of noncompliance. Specifically, auditors or compliance workers employed by the State may request and scrutinize business records of subgrantee firms and impose penalties should noncompliance be discovered.

In alignment with NOFO guidance, the CPUC also encourages workers and unions to create worker-led health and safety committees that can then meet with employer management upon request to raise concerns about labor laws and ensure compliance with occupational safety and health requirements. Given California has a strong union presence, and unions in the State have avenues of communication with public officials who establish and oversee labor laws, unions will also provide another check on labor law compliance, especially regarding hours worked, pay, and safety.

Lastly, the CPUC will consider, in collaboration with the California Labor and Workforce Development Agency, how to best publish guidance for potential subgrantees on the requirements for prevailing wage usage. Infrastructure project grants from the California Advanced Services Fund are already subject to a prevailing wage requirement, and the CPUC will maintain consistency with this baseline requirement for BEAD-funded subgrantees by requiring prevailing wage on BEAD subgrants as well. However, the CPUC recognizes the unique circumstances of projects occurring on Tribal lands or conducted by Tribal entities and will not apply this requirement to those projects.

9.4 Ensuring recruitment of diverse firms

Not only does the recruitment of qualified diverse firms as part of the BEAD deployment demonstrate a fair and unbiased process, the scale of the work that needs to be done is so profound that excluding any qualified firms could jeopardize the efficient completion of the work that needs to be done.

The CPUC will affirm during the subgrantee selection process its commitment to hiring qualified diverse firms, and ask that applicants note in their application if they or any of their partners and subcontractors qualify as a women-owned, minority-owned, Tribal-owned, or veteran-owned business. As subgrantee awards are made, these metrics will be shared as part of the final proposal process and publication of awards.

The CPUC also encourages women, minority, and veteran-owned businesses to prepare to engage in the BEAD process, and encourages prospective applicants to proactively engage with these potential partners. Obviously, this includes firms that directly engage in telecommunications activities such as telecom construction contractors, lineworkers and installers, and ISPs; however, the deployment process will also require significant participation from firms and businesses not traditionally associated with telecommunications. For example, the deployment process also requires construction of all types, electricians, road flagging crews, tree-trimmers, accountants, utility locators, and more. The CPUC expects firms that supply these services will frequently be brought on as subcontractors or partners to applicants, and ensuring recruitment of qualified, diverse firms is essential for these types of businesses as well.

To further encourage diverse participation in the workforce, the CPUC will take the following additional actions:

1. Work with entities across the State that share a commitment to inclusive business growth and promotion, such as the Statewide Supplier Diversity Program, Los Angeles Minority Business Development Agency (MBDA) Business Center, Sacramento MBDA Business Center, San Jose MBDA Business Center, Fresno MBDA Native Business Initiative for Transformation, Minority Business Consortium, Southern California Minority Supplier Development Council, CalAsian Chamber of Commerce, California Hispanic Chambers of Commerce, Defy Ventures, Southern California Veterans Business Outreach Center (VBOC), Northern California VBOC, Office of Small Business and Disabled Veteran Business Enterprise Services, California Women's Business Centers, California Capital Women's Business Center, and other partners, to ensure Minority, Veteran, and/or Women Business Enterprises are on all relevant solicitation lists.

2. Maintain and share a list of Minority, Tribal, Veteran, and/or Women Business Enterprises that have expressed interest in participation in BEAD deployments, and promote the list to help make connections to the broader telecommunications business community.

3. Ensure recruitment efforts by training providers and employers target diverse communities by being a conduit between those entities and groups whose goals include encouraging diverse workforce participation, such as job and career centers in communities with higher populations of people of color, as well as stakeholder groups we have consulted with such as Tribal leaders, educational providers, and others who have a focus on promoting inclusive economies.

Lastly, State and local economies and tax bases benefit the most when firms from Labor Surplus Areas are engaged, particularly when they fill staff openings locally. In California, those areas are designated by the U.S. Department of Labor as:

- Northern Region
    - Antioch, Contra Costa County
    - Colusa County
    - Del Norte County
    - Galt, Sacramento County
    - Glenn County
    - Lake County
    - Modoc County
    - Paradise, Butte County
    - Pittsburg, Contra Costa County

    - Plumas County
    - Richmond, Contra Costa County
    - San Pablo, Contra Costa County
    - Siskiyou County
    - Sutter County
    - Tehama County
    - Vallejo, Solano County
    - Woodland, Yolo County
    - Yuba City, Sutter County
    - Yuba County
- Central Region
    - Alpine County
    - Atwater, Merced County
    - Bakersfield, Kern County
    - Ceres, Stanislaus County
    - Corcoran, Kings County
    - Delano, Kern County
    - Dinuba, Tulare County
    - Fresno County
    - Fresno, Fresno County
    - Hanford, Kings County
    - Hollister, San Benito County
    - Kern County
    - Kings County
    - Lathrop, San Joaquin County

- Lemoore, Kings County
- Lodi, San Joaquin County
- Lompoc, Santa Barbara County
- Los Banos, Merced County
- Madera County
- Madera, Madera County
- Mariposa County
- Merced County
- Merced, Merced County
- Modesto, Stanislaus County
- Monterey County
- Porterville, Tulare County
- Reedley, Fresno County
- Salinas, Monterey County
- San Benito County
- San Joaquin County
- Sanger, Fresno County
- Santa Maria, Santa Barbara County
- Santa Paula, Ventura County
- Soledad, Monterey County
- Stanislaus County
- Stockton, San Joaquin County
- Tulare County
- Tulare, Tulare County
- Wasco, Kern County

    - Watsonville, Santa Cruz County
- Southern Region
    - Adelanto, San Bernardino
    - Alhambra, Los Angeles County
    - Apple Valley, San Bernardino County
    - Azusa, Los Angeles County
    - Baldwin Park, Los Angeles County
    - Banning, Riverside County
    - Barstow, San Bernardino County
    - Bell Gardens, Los Angeles County
    - Bell, Los Angeles County
    - Bellflower, Los Angeles County
    - Brawley, Imperial County
    - Burbank, Los Angeles County
    - Calexico, Imperial County
    - Carson, Los Angeles County
    - Coachella, Riverside County
    - Colton, San Bernardino County
    - Compton, Los Angeles County
    - Covina, Los Angeles County
    - Cudahy, Los Angeles County
    - Desert Hot Springs, Riverside County
    - Downey, Los Angeles County
    - El Cajon, San Diego County
    - El Centro, Imperial County

- El Monte, Los Angeles County
- Gardena, Los Angeles County
- Glendale, Los Angeles County
- Hawthorne, Los Angeles County
- Hemet, Riverside County
- Hesperia, San Bernardino County
- Huntington Park, Los Angeles County
- Imperial Beach, San Diego County
- Imperial County
- Indio, Riverside County
- Inglewood, Los Angeles County
- La Mirada, Los Angeles County
- La Puente, Los Angeles County
- Lakewood, Los Angeles County
- Lancaster, Los Angeles County
- Lawndale, Los Angeles County
- Lemon Grove, San Diego County
- Long Beach, Los Angeles County
- Los Angeles County
- Los Angeles, Los Angeles County
- Lynwood, Los Angeles County
- Maywood, Los Angeles County
- Montebello, Los Angeles County
- Monterey Park, Los Angeles County
- Moreno Valley, Riverside County

- National City, San Diego County
- Norwalk, Los Angeles County
- Palmdale, Los Angeles County
- Paramount, Los Angeles County
- Perris, Riverside County
- Pico Rivera, Los Angeles County
- Pomona, Los Angeles County
- Rialto, San Bernardino County
- Rosemead, Los Angeles County
- San Bernardino, San Bernardino County
- San Jacinto, Riverside County
- Santa Clarita, Los Angeles County
- South Gate, Los Angeles County
- Twentynine Palms, San Bernardino County
- Victorville, San Bernardino County
- West Covina, Los Angeles County
- West Hollywood, Los Angeles County
- Whittier, Los Angeles County

9.5 Subgrantee selection process related to workforce considerations

California will take the following approach to the subgrantee selection process as it relates to workforce:

- **Require self-certification that applicants meet federal labor standards indicated in statute, as well as any applicable State laws that expand or exceed federal rules.** As directed in the NOFO, California will prioritize firms that can certify compliance.

- **Require disclosure of any workforce violations within the past three years.** If violations exist, require documentation of how the applicant has updated their policies and practices to ensure compliance moving forward.
- **Require documentation of whether subgrantees, their partners and contractors qualify as a minority-owned enterprise, women-owned enterprise, or Labor Surplus Firm.** The CPUC may use answers to these questions as a tiebreaker in the event that multiple equally qualified and equally scoring applications for the same area are received.
- **Require a written description or affirmation of subgrantee policies or practices for any of the following items:**
    - Using a directly employed workforce, as opposed to a subcontracted workforce
    - Use of project labor agreements
    - Use of local hire provisions
    - Use of labor peace agreements
    - Commitment to union neutrality
    - Steps taken to prevent the misclassification of workers
- **Ask applicants to describe their usage of on-the-job training, internship, or apprenticeship programs, as well as credentials they confer upon program completion.** This can not only lead to better retention of staff, but also allows pathways for workers with a wide range of educational backgrounds to participate.
- **Ask applicants to describe the actions they take specific to recruiting a diverse workforce, and/or future plans to do more outreach to diverse groups.** This answer may include a description of specific outreach or materials intended to be welcoming to women, people of color, or other groups not typically represented in most telecommunications construction workforces.
- **Require subgrantees to certify compliance with Davis-Bacon prevailing wages**, as well as compliance with relevant aspects of California Labor Code § 1770 et seq., "Prevailing wage determination," except as noted for projects occurring on Tribal lands.

Please see Section 5 for a full description of the proposed subgrantee selection process.

9.6 Economic development impacts and opportunities from BEAD deployments

Already the fifth largest economy in the world, with extensive production across all sectors of industry, California's economy is undoubtedly going to benefit from the broadband expansion that will occur over the next few years. Some benefits will happen ambiently simply due to increased spending in the economy during construction, or the increase in home values resulting from the presence of fiber infrastructure. However, the major long-term impacts to the economy will occur if more broadband adoption happens because of these deployments, and if broadband users across the State use their connectivity to access efficient services, move businesses online, leverage new technologies, start digital businesses, access remote learning and working opportunities, use telehealth when appropriate, and more. This section describes how the BEAD deployment will help California's economy in the short and long term.

9.6.1 Short-term economic impact from initial construction outlay

Input-output models are industry-standard tools that use advanced data modeling to estimate how money and workforce flow through the economy and between industries; in this case, the model shows how the sector contributes significant direct, indirect, and induced benefits to the State's economy.[62] The initial broadband construction spending leads to a direct effect that results from the increased demand for goods and services in the broadband construction supply chain (for example, the increased demand for conduit, fiber, and network electronics). The indirect effect results from the increased demand for goods and services that the broadband supply chain *uses* (for example, the increased demand for the materials and equipment that contribute to the manufacture of conduit and fiber, or the transportation needed to deliver said goods). As the initial, direct, and indirect effects increase earnings for workers, these workers spend their earnings on various goods and services (for example, at grocery stores, restaurants, and clothing stores), which is represented by the induced effect.

The charts below outline the total estimated benefits from a $2.2 billion investment and a $5.3 billion investment in broadband in California. The subsequent charts show the same analysis for Northern, Central, and Southern California, with broadband investments again divided proportionally based on the unserved areas in each region. Sales are the industry's total annual gross receipts for products and services. A job is any position in which a worker provides labor in exchange for monetary compensation. Earnings include wages, salaries, supplements (additional employee benefits), and proprietor income.

[62] **Direct effects** result from expenditures within that industry's supply chain. **Indirect effects** are the changes in expenditures and employment in the supply chains of the initial supply chain (as in, one level removed). **Induced effects** are the effects generated by the subsequent spending money at a household level (e.g., lineworkers' use of their paycheck for food and clothing).

Table 30: Estimated economic effects of investing $2.2 billion in broadband construction in California[63]

Effect	Sales	Jobs	Earnings
Initial	$2,236,963,811	3,395	$488,716,778
Direct	$752,956,850	2,791	$252,164,632
Indirect	$361,534,676	1,641	$132,173,312
Induced	$1,884,818,438	9,152	$686,226,013
Total	**$5,236,273,775**	**16,979**	**$1,559,280,735**

Table 31: Estimated economic effects of investing $5.3 billion in broadband construction in California[64]

Effect	Sales	Jobs	Earnings
Initial	$5,285,263,700	8,020	$1,154,688,795
Direct	$1,779,007,549	6,593	$595,788,171
Indirect	$854,196,251	3,878	$312,285,251
Induced	$4,453,251,510	21,624	$1,621,342,919
Total	**$12,371,719,011**	**40,115**	**$3,684,105,136**

Table 32: Estimated economic effects of investing $950 million in broadband construction in Northern California[65]

Effect	Sales	Jobs	Earnings
Initial	$950,113,420	1,249	$207,574,377
Direct	$257,141,241	871	$87,584,039
Indirect	$94,130,173	386	$35,224,764
Induced	$437,378,643	1,919	$162,254,064
Total	**$1,738,763,477**	**4,425**	**$492,637,244**

[63] Lightcast Datarun 2023.4.

[64] Lightcast Datarun 2023.4.

[65] Lightcast Datarun 2023.4.

Table **33**: Estimated economic effects of investing $2.2 billion in broadband construction in Northern California[66]

Effect	Sales	Jobs	Earnings
Initial	$2,244,828,436	2,951	$490,434,989
Direct	$607,546,380	2,057	$206,934,390
Indirect	$222,400,909	913	$83,225,380
Induced	$1,033,392,429	4,533	$383,356,902
Total	**$4,108,168,155**	**10,454**	**$1,163,951,661**

Table 34: Estimated economic effects of investing $713 million in broadband construction in Central California[67]

Effect	Sales	Jobs	Earnings
Initial	$712,676,200	1,520	$155,700,693
Direct	$135,017,581	748	$46,607,703
Indirect	$36,987,652	241	$13,779,128
Induced	$188,246,374	1,180	$71,526,186
Total	**$1,072,927,807**	**3,689**	**$287,613,711**

Table 35: Estimated economic effects of investing $1.7 billion in broadband construction in Central California[68]

Effect	Sales	Jobs	Earnings
Initial	$1,683,836,649	3,592	$367,873,283
Direct	$319,005,393	1,767	$110,119,798
Indirect	$87,390,548	569	$32,555,881
Induced	$444,768,808	2,788	$168,994,578
Total	**$2,535,001,397**	**8,716**	**$679,543,540**

[66] Lightcast Datarun 2023.4.

[67] Lightcast Datarun 2023.4.

[68] Lightcast Datarun 2023.4.

Table 36: Estimated economic effects of investing $574 million in broadband construction in Southern California[69]

Effect	Sales	Jobs	Earnings
Initial	$574,174,191	996	$125,441,708
Direct	$189,496,427	754	$63,219,537
Indirect	$90,053,525	440	$32,797,247
Induced	$462,743,214	2,394	$169,905,619
Total	**$1,316,467,356**	**4,584**	**$391,364,111**

Table 37: Estimated economic effects of investing $1.4 billion in broadband construction in Southern California[70]

Effect	Sales	Jobs	Earnings
Initial	$1,356,598,617	2,354	$296,380,524
Direct	$447,722,302	1,780	$149,368,498
Indirect	$212,769,034	1,039	$77,489,899
Induced	$1,093,321,179	5,657	$401,435,193
Total	**$3,110,411,131**	**10,830**	**$924,674,114**

9.6.2 Long-term objectives for enhancing economic growth and job creation

While the economic benefits from construction spending are considerable, and some economic benefits (like an increase in home values, as demonstrated by Deller and Whitacre in 2019)[71] can be expected just from the presence of fiber on a street, the long-term benefits to California's economy will be fully realized as a result of increased utilization of the internet, especially if that internet is affordable and accessible, to maximize the financial benefits of internet utilization to families. In other words, building better networks is good, but enabling as much adoption as possible is necessary to maximize the long-term economic benefits.

[69] Lightcast Datarun 2023.4.

[70] Lightcast Datarun 2023.4.

[71] Deller, Steven and Whitacre, Brian, "Broadband's relationship to rural housing values," Papers in Regional Science, May 23, 2019, https://rsaiconnect.onlinelibrary.wiley.com/doi/full/10.1111/pirs.12450.

Because broadband touches almost every aspect of life, it is nearly impossible to quantify the economic impacts across all potential aspects of savings, efficiencies, benefits from innovation, or benefits to quality of life. However, a significant number of distinct and measurable benefits have been identified by academic researchers, including:

- Local employment growth (Kolko, 2012)[72]
- Lower unemployment rates (Jayakar and Park, 2013)[73]
- Faster income growth (Whitacre, Gallardo, and Strover, 2014)[74]
- Faster growth in firms and employees (Whitacre, Gallardo, and Strover, 2014)[75]
- Higher attraction rate in new and existing firms (Kim and Orazem, 2017)[76]
- Greater civic engagement (Whitacre and Manlove, 2016)[77]

Since it is nearly impossible to measure long-term benefits across all possible avenues directly, this report uses a Consumer Surplus Analysis methodology to roughly quantify total economic benefits to consumers. The premise of this type of analysis is that if a consumer would pay more for a service than they currently are paying, they are deriving a quantifiable value from that service. For example, if a broadband connection costs $60 per month, but the family would pay $250 per month because it provides them so much opportunity and value across their work and personal life, then one could say that the household is deriving $190 of surplus value each month from that service.

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[72] Kolko, Jed, "Broadband and local growth," Journal of Urban Economics, January 2012, https://www.sciencedirect.com/science/article/abs/pii/S0094119011000490.

[73] Available at https://www.jstor.org/stable/10.5325/jinfopoli.3.2013.0181; log-in required.

[74] Whitacre, Brian, Gallardo, Robert, and Strover, Sharon, "Broadband's contribution to economic growth in rural areas: Moving towards a causal relationship," Telecommunications Policy, December 2014, https://www.sciencedirect.com/science/article/abs/pii/S0308596114000949.

[75] Whitacre, Brian, Gallardo, Robert, and Strover, Sharon, "Does rural broadband impact jobs and income? Evidence from spatial and first-differenced regressions," The Annals of Regional Science, September 9, 2014, https://link.springer.com/article/10.1007/s00168-014-0637-x.

[76] Kim, Younjun and Orazem, Peter F., "Broadband Internet and New Firm Location Decisions in Rural Areas," American Journal of Agricultural Economics, November 16, 2016, https://onlinelibrary.wiley.com/doi/10.1093/ajae/aaw082.

[77] Whitacre, Brian, "Fixed broadband or mobile: What makes us more civically engaged?" Telematics and Informatics, August 2017, https://www.sciencedirect.com/science/article/abs/pii/S073658531630630X.

Analysis by Rembert et al. (2017) suggests that each household has an annual added benefit from broadband worth an estimated $1,850 per year.[78] Given that this research occurred before the COVID-19 pandemic, when broadband increased the benefits and opportunities available to users, that estimated value can be considered conservative.

To estimate the potential economic impacts of expanded broadband in this regard, this report must first model the rate at which adoption may increase across the State.[79] California's 5-Year Action Plan notes that currently, 76.4 percent[80] of Californians use the internet at home, so conversely, 23.6 percent do not. This analysis estimates the impacts of reducing that gap in home adoption in the State by half—in other words, decreasing the percentage of households without broadband from 23.6 percent to 11.8 percent.

In California, cutting the home adoption gap in half will result in approximately 633,654 new households enrolled in a broadband plan after 10 years. But clearly, broadband adoption cannot happen all at once; only *after* infrastructure is built can households become subscribers. The estimated adoption percentages for this analysis are included in the table below, based on adoption trends and projections outlined in previous research from Spell and Low (2021). These adoption percentages assume most new infrastructure is built in years 1 to 5.[81]

Table 38: Estimated rate at which households adopt broadband

Year	1	2	3	4	5	6	7	8	9	10
Percent of households adopted	0%	20%	40%	80%	90%	92%	94%	96%	98%	100%
Cumulative new households	0	126,731	253,462	506,924	570,289	582,962	595,635	608,308	620,981	633,654

[78] Rembert, M., Feng, B., and Partridge, M., "Connecting the Dots of Ohio's Broadband Policy," Swank Program in Rural-Urban Policy, Ohio State University, 2017.

[79] Baseline data were derived from the 2021 American Community Survey 5-Year Estimates.

[80] NTIA, "Digital Nation Data Explorer: Internet Use at Home," November 2021 data, https://ntia.gov/other-publication/2022/digital-nation-data-explorer.

[81] Spell, A. and Low, S., "Economic Benefits of Expanding Broadband in Select Missouri Counties," University of Missouri Extension, 2021, https://mobroadband.org/wp-content/uploads/sites/44/2021/06/Exceed_BroadbandImpactReport_Jun2021.pdf, p 7.

Year	1	2	3	4	5	6	7	8	9	10
Yearly surplus value	0	$234M	$469M	$938M	$1.1B	$1.1B	$1.1B	$1.1B	$1.1B	$1.2B

Then, multiplying the value of broadband identified by Rembert et al. to the new adopters in each year, the cumulative consumer surplus value calculated over 10 years for California can be estimated at approximately $8.2 billion.

9.6.3 Economic development opportunities in California as a result of BEAD deployments

Increased high-speed broadband usage and adoption will greatly benefit the State's existing economic development priorities and plans, and allow the State to build on its strengths as leading the nation in new business ventures and as a major player in global trade.

California's economic strengths dovetail with the ways in which broadband has been shown to impact economies and accelerate efforts like the ones California has prioritized. Whether broadband access is provided in the homes of prospective entrepreneurs, to existing businesses, or to the homes of workers with talents that can be applied remotely, California stands to gain as businesses hire from a greater talent pool, adopt more efficiency-saving cloud software, and access new markets.

There is significant evidence that innovation, entrepreneurship, and talent growth happen more readily with increased access to broadband, and California's substantial entrepreneurship activity will be enhanced by the benefits that broadband can bring. Research by Kolko (2012)[82] and Mack and Faggian (2013)[83] indicates that employment gains that occur with new access to and utilization of high-speed broadband are not achieved across all sectors, but instead concentrated in knowledge-intensive industries. These industries are ones that rely on specialized human capital—often digitally enabled or working in concert with technology—to create value, and often have an income that is more than twice the national average.[84]

[82] Kolko, J, "Broadband and local growth," Journal of Urban Economics, 71(1):100-113, 2012. Cited in Spell and Low, 2021.

[83] Whitacre, B., Gallardo, R., and Strover, S., "Does rural broadband impact jobs and income? Evidence from special and first-difference digressions," The Annals of Regional Science, 53(3):649-670, 2014. Cited in Spell and Low, 2021.

[84] U.S. Census Bureau, https://data.census.gov/cedsci/table?q=S2411&g=01000H0US.

As a result, the increase in knowledge-industry jobs has the potential to dramatically change California's economy by bringing greater earning power to nonmetro areas and greater geographic equity to the economy.

One way to assess the potential that broadband has to transform rural California economies is through analyzing remote work trends. Through the pandemic, remote work percentages rose in almost every county, but as a percentage, metro counties tended to adopt remote work at far greater rates. The following chart shows the 15 counties with the greatest proportional increase in remote work from 2016 to 2021 (which is the latest year that this data is available).

Table 39: California counties with the greatest change in remote work (2016 to 2021)

County	Metro / nonmetro status	% change in share of remote workers from 2016 to 2021
Santa Clara	Metro	228.82%
San Mateo	Metro	199.73%
Alameda	Metro	174.74%
San Francisco	Metro	172.12%
Yolo	Metro	171.68%
San Benito	Metro	150.15%
Contra Costa	Metro	143.54%
Sacramento	Metro	129.99%
Orange	Metro	127.26%
Marin	Metro	117.83%
Trinity	Nonmetro	116.58%
Solano	Metro	110.92%
Los Angeles	Metro	109.47%
Placer	Metro	101.79%
Amador	Nonmetro	101.67%

Importantly, all but two of the counties with the greatest gains in remote work are classified as metro counties. When compared with the 15 counties that had the lowest proportional adoption of remote work over the same period—all but three of which were non-metro—it is clear that metro counties were able to embrace remote work at significantly higher rates.

Table 40: California counties with the least change in remote work (2016 to 2021)

County	Metro / nonmetro Status	% change in share of remote workers from 2016 to 2021
Merced	Metro	34.02%

County	Metro / nonmetro Status	% change in share of remote workers from 2016 to 2021
Mariposa	Nonmetro	29.17%
Tuolumne	Nonmetro	27.71%
Lake	Nonmetro	23.50%
Sierra	Nonmetro	20.37%
Mendocino	Nonmetro	18.86%
Plumas	Nonmetro	17.78%
Modoc	Nonmetro	8.11%
Colusa	Nonmetro	4.87%
Yuba	Metro	4.85%
Siskiyou	Nonmetro	3.67%
Lassen	Nonmetro	-5.71%
Del Norte	Nonmetro	-11.18%
Mono	Nonmetro	-18.52%

The reasons for a greater adoption of remote work in metro areas are manifold, but can largely be attributed to the fact that knowledge-intensive businesses concentrated in urban areas were better able to accommodate remote work during the pandemic, whereas rural businesses were less conducive to remote work. However, bringing quality broadband to all Californians stands to reduce the starkness of these rural–urban differences in several related ways. For one, better home broadband in rural areas should allow more Californians access to knowledge-intensive remote jobs, which require strong internet connections. In addition, ubiquitous broadband should enable Californians to launch knowledge-intensive companies from anywhere.

Most importantly, economic gains will be shared by communities, and it is by no means a requirement that one adopt a knowledge-intensive job to take advantage of the internet-for-all mandate. For instance, knowledge-intensive jobs also have an outsized impact on local economies due to the "multiplier effect"[85]: for every high-tech job created, three to five additional jobs are created locally. Greater broadband access will allow all types of businesses—whether they employ one person or thousands, and whether they are technology based or traditional brick-and-mortar—to benefit from new markets, talent, technological efficiencies, and new revenue opportunities across the State.

[85] "The Multiplier Effect of Innovation Jobs," MIT Sloan Management Review, June 6, 2012, https://sloanreview.mit.edu/article/the-multiplier-effect-of-innovation-jobs/.

10. Minority Business Enterprises (MBE) / Women's Business Enterprises (WBE) / labor surplus area firms inclusion (Requirement 13)

This section documents how the CPUC will promote recruiting, utilizing, and retaining minority business enterprises (MBE), women's business enterprises (WBE), and labor surplus area firms (LSAF), when possible.

Minority- and women-owned businesses (MWBE) are a pillar of the California economy. They accelerate innovation, build community, and make the State's strong economy even more competitive and efficient. Thanks to California's diversity and entrepreneurship, the State leads the nation in the total number of MWBEs. MBEs account for roughly 46 percent of all businesses in California and contribute 2.56 million jobs and $192.8 billion to the California economy.[86] WBEs account for roughly 39 percent of all businesses[87] and likewise provide millions of jobs and billions of dollars to the State.[88]

The California Office of the Small Business Advocate (CalOSBA), part of the Governor's Office of Business and Economic Development (GO-Biz), leads California's initiatives to track and support small businesses and maintains a focus on equity and diversity. It acts as a voice for small businesses, providing them with the information and resources they need to succeed, and it collaborates with diverse local organizations to provide business services for underserved groups. Its offerings include grant programs, one-on-one mentoring, a network of more than 80 offices across California, business strategy resources, and information distribution about government programs, grants, and

[86] "The State of Diverse Businesses in California," CalOSBA, https://calosba.ca.gov/wp-content/uploads/The-State-of-Diverse-Small-Businesses-in-California_Executive-Summary.pdf (accessed October 18, 2023).

[87] "2022 Small Business Profile – California" SBA Office of Advocacy, 2022, https://advocacy.sba.gov/wp-content/uploads/2022/08/Small-Business-Economic-Profile-CA.pdf (accessed October 18, 2023).

[88] "Number of Women-Owned Employer Firms Increased 0.6% From 2017 to 2018," U.S. Census Bureau, https://www.census.gov/library/stories/2021/03/women-business-ownership-in-america-on-rise.html (accessed October 18, 2023).

other opportunities for small businesses.[89] As such, they represent a valuable partner in the effort of including and informing MWBEs and LSAFs in recruitment, utilization, and retention in BEAD grants and contracts.

For its part, the CPUC runs a Supplier Diversity Program that provides diverse businesses, including MBEs and WBEs, with certifications that qualify them for resources and trainings; monitors diversity in procurement; maintains a publicly available interactive list of certified MWBEs and other diverse businesses; and encourages utilities and covered entities to procure from and contract with diverse businesses, including MWBEs.[90]

The U.S. Secretary of Labor is required to annually designate Labor Surplus Areas (LSA) and disseminate this information for the use of all federal agencies in directing procurement activities and in locating new plants or facilities. States may direct federal funding to designated LSAs where there is high unemployment. Employers located in those areas can be given preference in bidding on federal procurement contracts.[91] An area must have an unemployment rate at least 20 percent above the national rate (including Puerto Rico) during the previous two calendar years to qualify as an LSA. The U.S. Department of Labor identifies 142 cities, counties, and balance of county areas in California as LSAs in its 2024 update.[92] In the California counties containing LSAs—which include almost all of California's major population centers—there are approximately 1.2 million small businesses (defined as businesses employing less than 100 people), according to the Employment Development Department's 2022 reports.[93]

The CPUC will work with subgrantees during the award period to maximize their use of MWBEs and LSAFs. The CPUC will work closely with CalOSBA to ensure all prospective and future subgrantees are aware of qualified MWBEs and LSAFs certified by the State, through the Supplier Clearinghouse Certified Directory and CalOSBA's own network and databases of diverse small businesses.

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[89] "Annual Report to the Governor and Legislature," CalOSBA, 2020, https://calosba.ca.gov/wp-content/uploads/2021/07/CalOSBA-Annual-Report-October-2019-September-2020-1.pdf.

[90] "California Public Utilities Commission General Order 156 Certification," California Public Utilities Commission, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/bco/utility-supplier-diversity-program/go156-what-is-certification-3-2023.pdf (accessed October 18, 2023).

[91] See Executive Order 12073 and Executive Order 10582.

[92] "Labor Surplus Area," U.S. Department of Labor, https://www.dol.gov/agencies/eta/lsa (accessed October 18, 2023).

[93] "Size of Business Data – 2012-2022," Employment Development Department, https://labormarketinfo.edd.ca.gov/LMID/Size_of_Business_Data.html (accessed October 23, 2023).

10.1 Process, strategy, and data tracking methods to ensure that minority businesses, women-owned business enterprises, and labor surplus area firms are recruited, used, and retained when possible

The CPUC is committed to promoting diversity and inclusion by encouraging the recruitment, utilization, and retention of MBEs, WBEs, and LSAFs whenever possible.

10.1.1 Place qualified small and minority businesses and women's business enterprises on solicitations lists

The CPUC will continue its current program to certify and list qualified MWBEs and seek to further track, list, and publicize MWBEs on solicitations lists through the BEAD process. As a part of its Supplier Diversity Program, the CPUC runs an existing searchable directory, the Supplier Clearinghouse Certified Directory, that lists 4,134 MBEs and 3,736 WBEs relevant to utilities-related projects, as well as other businesses owned by covered groups such as persons with disabilities business enterprises (PDBE) and disabled veteran business enterprises (DVBE). These firms are listed to publicize and encourage their potential use on projects and grants by the CPUC, participating utilities entities, and other covered entities throughout the State.[94] The Supplier Clearinghouse Certified Directory will be used in the development and deployment of solicitations lists.

Additionally, the CPUC will work with CalOSBA as it provides regional MWBE business development events and outreach, including training sessions, webinars, mentorship opportunities, and programs aimed at connecting MWBEs with California State agencies, authorities, and local contracting opportunities. Through these efforts, the CPUC may be able to identify more small businesses and MWBE firms to connect with its funding and contact opportunities.

10.1.2 Assure that small and minority businesses and women's business enterprises are solicited whenever they are potential sources

The CPUC will encourage CalOSBA to provide information about grant and contracting opportunities for MWBEs through training and mentorship programs, public information offerings, and outreach efforts to connect subgrantees with certified MWBEs. Subcontractors will be encouraged to make all of their grant-funded contracting opportunities available to MWBEs; for example, the CPUC can provide the Supplier Clearinghouse Certified Directory to subgrantees and subcontractors for them to find potential organizations for contracting and grant opportunities.

CalOSBA maintains resources and runs outreach campaigns to ensure that all of California's small

[94] "The Supplier Clearinghouse Certified Directory," https://sch.thesupplierclearinghouse.com/FrontEnd/SearchCertifiedDirectory.asp (accessed October 18, 2023).

businesses and startups have the information and direct support to navigate resources, programs, regulations, and the market as a whole. This includes providing grants itself, as well as informing small businesses of State and federal grants and programs they could benefit from. It operates as a mediator between small businesses and the broader market and other government agencies, representing the interests of small businesses to the larger entities and also providing opportunities and information from the larger entities to the small businesses.[95] As such, the CPUC will work with CalOSBA to provide MWBEs with information about available opportunities through its BEAD grants and contracts.

10.1.3 Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises

If and when feasible, the CPUC will break tasks and requests into smaller, more manageable subcontracts to maximize participation by small and State certified minority owned as well as women's business enterprises.

10.1.4 Establish delivery schedules, where the requirements permit, which encourage participation by small and minority businesses and women's business enterprises

Where requirements permit, the CPUC will establish delivery schedules to encourage participation by small and minority businesses, and women's business enterprises. The CPUC will also seek to be flexible with its requirements to enable greater MWBE participation.

10.1.5 Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce

Through partnerships with organizations such as the Small Business Administration and the Minority Business Development Agency, the CPUC will facilitate the provision of necessary resources and support to MWBEs, thus further developing the thriving and diverse business community in California.

The CPUC will draw upon organizations such as the Small Business Administration (SBA) and the Minority Business Development Agency (MBDA) and will encourage MWBEs to access the resources and expertise of the many business development programs and offices in the State, particularly the 57 SBA Small Business Development Centers across California[96] and the MBDA

[95] "California Office of the Small Business Advocate," CalOSBA, https://calosba.ca.gov/about/office-of-the-small-business-advocate (accessed October 18, 2023).

[96] "Small Business Development Centers," SBA, https://www.sba.gov/local-assistance/resource-partners/small-business-development-centers-sbdc (accessed October 18, 2023).

State-Based Business Centers located in Los Angeles, Sacramento, and San Jose.[97] CalOSBA publicizes the resources of these centers, as well as other business assistance centers funded by the State of California, including Women's Business Centers, through an interactive map on their website that connects businesses with nearby support centers.[98] These offices will be able to provide more information on multiple contracting assistance programs, including the Small Disadvantaged Business program[99] and the Women-Owned Small Business Federal Contract program.[100]

Small businesses make up 99.8 percent of California State businesses and employ 47.9 percent of California's workforce.[101] CalOSBA supports the development and expansion of small businesses and start-ups, directing an array of programs and initiatives supporting small business growth and helping entrepreneurs maximize opportunities for success. As noted above, there are 142 Labor Surplus Areas in California, and in the California counties containing LSAs—which include almost all of California's major population centers—there are approximately 1.2 million small businesses, according to the Employment Development Department's 2022 reports.[102]

10.1.6 Require each subgrantee to take these affirmative steps as they relate to its subcontractors

Through the Workforce Plan scoring criteria above, the CPUC will encourage subgrantees to ensure that they take steps to include qualified MWBEs and LSAFs whenever possible. The CPUC may take steps that include, but are not limited to:

- Providing subgrantees with opportunities to connect with qualified MBEs, WBEs and LSAFs
- Demonstrating diversity in in suppliers and equitable procurement practices
- Formal commitment from subgrantee confirming organizational commitment to supplier diversity and equity inclusion.

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[97] "Business Centers," MBDA, https://www.mbda.gov/mbda-programs/business-centers (accessed October 18, 2023).

[98] "Small Business Center Network," CalOSBA, https://calosba.ca.gov/local-direct-assistance/small-business-centers/ (accessed October 18, 2023).

[99] "Small Disadvantaged Business," SBA, https://www.sba.gov/local-assistance/resource-partners/small-business-development-centers-sbdc (accessed October 18, 2023).

[100] "Women-Owned Small Business Federal Contract program," SBA, https://www.sba.gov/federal-contracting/contracting-assistance-programs/women-owned-small-business-federal-contract-program (accessed October 18, 2023).

[101] "2022 Small Business Profile – California" SBA Office of Advocacy, 2022, https://advocacy.sba.gov/wp-content/uploads/2022/08/Small-Business-Economic-Profile-CA.pdf (accessed October 18, 2023).

[102] "Size of Business Data – 2012-2022," Employment Development Department, https://labormarketinfo.edd.ca.gov/LMID/Size_of_Business_Data.html (accessed October 23, 2023).

- Reporting requirements regarding supplier diversity

10.2 Certification

The CPUC certifies that it will:

☑ Place qualified small and minority businesses and women's business enterprises on solicitation lists

☑ Assure that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources

☑ Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises

☑ Establish delivery schedules, where the requirements permit, which encourages participation by small and minority businesses, and women's business enterprises

☑ Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce

☑ Require each subgrantee to take these affirmative steps as they relate to its subcontractors

11Cost and barrier reduction (Requirement 14)

This section documents the steps the CPUC will take to reduce costs and barriers to deployment through promoting the use of existing infrastructure and promoting and adopting dig-once policies, streamlined permitting processes, and cost-effective access to poles, conduits, easements, and rights-of-way, including the imposition of reasonable access requirements.

Through an extensive review of sources of increased deployment costs and barriers for deployment, the CPUC has identified the following strategies for mitigating cost and barrier risks.

11.1 Promote the use of existing infrastructure

11.1.1 Streamline access to State conduits and poles

The California State Transportation Agency (CalSTA) participates alongside the CPUC in the California Broadband Council—which provides support through its 12 member entities to further implementation of the California Broadband for All initiative.[103]

The California Department of Transportation (Caltrans), the department of CalSTA that manages the State highway system, recognizes that "broadband services are becoming an important utility in the twenty-first century."[104] Noting that "expanded broadband [infrastructure] within the existing highway right-of-way can help increase internet access and help close the digital divide," the California Transportation Plan (CTP) 2050 prepared by Caltrans recommends inter-agency collaboration to support statewide broadband deployment with a focus on underserved and rural areas.[105]

Caltrans accommodates the installation of wired broadband facilities within State highway rights-of-way "when there is a benefit to the public."[106]

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[103] California Broadband Council, https://broadbandcouncil.ca.gov/.

[104] "Broadband FAQs," Caltrans, May 2020, https://dot.ca.gov/-/media/dot-media/programs/design/documents/broadband-faqs-a11y.pdf.

[105] Strategic plan for the State's transportation system prepared by Caltrans under the delegation of the California State Transportation Agency (CalSTA) in compliance with Title 23, CFR § 450.214 and submitted to the State Legislature and the Secretary of the U.S. Department of Transportation pursuant to California Government Code Title 7 Division 1 Ch. 2.3; see, https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf.

[106] "Accommodation of Wired Broadband Facilities Within Access Controlled State Highway Right Of Way," memorandum by Janice Benton, Chief of the Division of Design, Caltrans, March 25, 2022, https://dot.ca.gov/-

As established by AB 1549 (2016), Caltrans is required to notify broadband providers during the planning phase of State highway projects involving construction methods that may be suitable for concurrent installation of conduit, and providers may work with Caltrans to coordinate deployment upon notification.[107] Caltrans maintains an "Opportunity Map"[108] of projects under development on its website to fulfill this requirement and has designated regional contacts and a statewide coordinator to manage partnerships.[109]

Providers must obtain an encroachment permit for broadband infrastructure installations on the State highway system[110] and pay a permit fee based on a standard hourly rate that covers review of the application by Caltrans personnel.[111] Public corporations (i.e., cities and counties) are exempt from this fee.[112] Caltrans is required by California Code to approve or deny applications for an encroachment permit within 60 days of receiving a complete application;[113] Assembly Bill 955 (2021) established additional notification requirements for permitting broadband facilities, stating that "[i]t is the intent of the Legislature to ensure a streamlined, predictable, and expeditious process by which the department reviews broadband facility permit applications in order to achieve the rapid deployment of broadband facilities on highways."[114]

Following the passage of SB 156 (2021), in 2022 Caltrans implemented a revised policy to accommodate wired broadband installations in access-controlled State highway rights-of-way,[115]

/media/dot-media/programs/traffic-operations/documents/encroachment-permits/broadband-accommodation-memo-a11y.pdf.

[107] Assembly Bill 1549 (2016), adding Section 14051 to the Government Code; see, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1549.

[108] Available at https://www.arcgis.com/apps/webappviewer/index.html?id=9323116b932e4755a6acb55ba9311558.

[109] "Caltrans Broadband Coordinators," Caltrans, https://dot.ca.gov/programs/design/wired-broadband/poc.

[110] "Wired Broadband Facilities on State Highway Rights-of-Way," Caltrans, https://dot.ca.gov/programs/design/wired-broadband.

[111] "Encroachment Permits Hourly Rate Adjustment," Caltrans, July 2021, https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/shr-flyer-a11y.pdf.

[112] Per California Streets and Highways Code Section 671.1; see, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=SHC&sectionNum=671.1.

[113] Per California Streets and Highways Code Section 671.5; see, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=SHC&sectionNum=671.5.

[114] For applications for broadband facility encroachment permits, Caltrans must specify all application criteria in writing and notify applicants in writing whether their application is complete within 30 days; Assembly Bill 955, approved by the Governor October 08, 2021, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB955.

[115] "Accommodation of Wired Broadband Facilities Within Access Controlled State Highway Right Of Way," memorandum by Janice Benton, Chief of the Division of Design, Caltrans, March 25, 2022, https://dot.ca.gov/-

anticipating an increase in last-mile deployment enabled by the MMBN. Installations on the interstate system require approval by the Federal Highway Administration (FHWA).

Caltrans maintains resources on its website[116] to help broadband providers navigate its policies and processes, including a "user's guide" for wired broadband installations on State rights-of-way.[117]

To facilitate the deployment of aerial infrastructure, the CPUC initiated a proceeding in 2017 to evaluate strategies for "increased and non-discriminatory access" to poles and conduit by competitive communications providers in compliance with safety regulations.[118] The Commission's most recent Decision in the proceeding, issued in 2022, adopted one-touch make-ready (OTMR) requirements consistent with OTMR rules adopted by the FCC.[119]

11.1.2 Encourage local communities to leverage their poles and conduits

The CPUC will encourage municipalities that own poles or conduits to make them available, and model local ordinances and policies are provided in a "Local Government Permitting Playbook" issued through the State Broadband for All initiative.[120] These localities can indicate availability of such streamlined access and the CPUC will publish this information for eligible areas so grant participants can take it into consideration for their cost proposals.

/media/dot-media/programs/traffic-operations/documents/encroachment-permits/broadband-accommodation-memo-a11y.pdf; "Attachment A: Wired Broadband Facility Accommodation in Access-Controlled Highway Right-of-Way," March 14, 2022, https://dot.ca.gov/-/media/dot-media/programs/design/documents/attachment-a-wired-broadband-facility-accommodation.pdf.

[116] "Wired Broadband Facilities on State Highway Right of Way," Caltrans, https://dot.ca.gov/programs/design/wired-broadband.

[117] Issued in response to AB 1549 (2016), which directed Caltrans to develop guidelines for such installations; "Incorporating Wired Broadband Facility on State Highway Right-of-Way: User Guide," Caltrans, last revised May 25, 2018, https://dot.ca.gov/-/media/dot-media/programs/design/documents/wired-broadband-facility-user-guide--1-01_edition-a11y.pdf.

[118] R.17-06-028, consolidated with I.17-06-027, instituted June 29, 2017, https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:R1706028; see instituting Order, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M191/K656/191656519.PDF.

[119] Decision 22-10-025, CPUC, effective October 20, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M498/K026/498026496.PDF; see also, ruling filed August 16, 2023 by the Administrative Law Judge requesting additional information from six parties who requested extensions to comply with the decision, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M517/K539/517539874.PDF.

[120] "State of California Local Permitting Playbook," Broadband for All, August 2022, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2022/09/California-Local-Jurisdiction-Permitting-Playbook-1.pdf.

11.1.3 Coordinate with the Middle-Mile Broadband Initiative (MMBI)

The middle-mile is the physical infrastructure required to enable internet connectivity for homes, businesses, and community institutions. The middle-mile is made up of high-capacity fiber lines that carry large amounts of data at high speeds over long distances between local networks and global internet networks. The last mile, in contrast, is the final leg of a network that provides service to a home, business, or community anchor institution. The MMBI is designed to facilitate the construction of last mile networks by bringing connections to the global internet closer to unserved and underserved areas of California through construction of the statewide, open access Middle-Mile Broadband Network (MMBN). The MMBN is designed to be completed by December 2026.

In July 2021, Governor Gavin Newsom signed into law Senate Bill 156, which provides $3.25 billion to acquire, build, maintain, and operate an open-access middle-mile network to bring equitable high-speed broadband service to all Californians.[121]. SB 156 also provides $2 billion to complement the middle-mile investment to build last-mile infrastructure in coordination with federal and State universal service programs, such as those to connect schools, users with disabilities, and low-income households—and it provides a $750 million Loan Loss Reserve Fund to assist local governments, Tribes, and nonprofits in securing enhanced private financing to construct and operate new public fiber networks.[122]

This unprecedented and comprehensive vision for statewide middle-mile infrastructure is designed to lower the cost of delivering broadband to all residents of California. The MMBN is open access, which is defined in SB 156 as "equal non-discriminatory access to eligible entities on a technology and competitively neutral basis, regardless of whether the entity is privately or publicly owned."[123]

CDT oversees the acquisition and management of contracts to construct, operate, and maintain the network.[124] CDT has retained a Third-Party Administrator (CENIC, which created GOLDENSTATENET)[125] to construct and establish the network and has created a nine-member

[121] "Middle-Mile Broadband Initiative," CDT, https://middle-mile-broadband-initiative.cdt.ca.gov/.

[122] "Middle-Mile Broadband Initiative Frequently Asked Questions," CDT, https://middle-mile-broadband-initiative.cdt.ca.gov/pages/mmbi-about.

[123] "Senate Bill No. 156," California Legislative Information, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB156.

[124] "Statewide Middle-Mile Network Map," CDT, https://site-cammbi.hub.arcgis.com/pages/statewide-middle-mile-network-map.

[125] GOLDENSTATENET, https://goldenstatenet.org/.

Middle-Mile Advisory Committee (MMAC) whose members include a representative of the CPUC.[126] Additional resources are available on CDT's website.[127]

The CPUC will coordinate BEAD work with CDT, the Third-Party Administrator, and the MMAC, utilizing the resources described above, including its MMAC membership.

11.2 Promote dig-once policies by providing best practice guide for localities

The CPUC will encourage sharing of open trenches and available conduit via the promotion and adoption of dig-once policies, which ensure proper notification has been made before rights-of-way are open with the goal of facilitating collaborative (and concurrent) construction timelines between entities hoping to dig in the same rights-of-way.

As directed by the State's Broadband for All Action Plan,[128] Caltrans has implemented a "Dig Smart" policy (effective as of January 1, 2023)[129] that promotes joint builds of broadband infrastructure within State rights-of-way. The policy establishes two requirements for wired broadband installations through Caltrans' encroachment permit process:

- "Wired broadband project applicants must provide public notice for joint-build opportunities if proposed installation exceeds ten (10) miles in longitudinal length within State highway right-of-way or it is determined that future installation of facilities within the project limits will be limited because of physical constraints, limited right-of-way width, safety, or other relevant factors."

- "At locations where the Dig Smart policy applies and was implemented, broadband underground construction activities will be limited to once every five (5) years. An exception to the five (5)-year moratorium may be approved with adequate justification … ."[130]

[126] "Middle-Mile Broadband Initiative Advisory Committee," CDT, https://middle-mile-broadband-initiative.cdt.ca.gov/pages/mmbi-advisory-committee.

[127] "Middle-Mile Broadband Initiative Resources," CDT, https://middle-mile-broadband-initiative.cdt.ca.gov/pages/resources.

[128] "Action Plan progress tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.

[129] "Wired Broadband Facilities on State Highway Rights-of-Way," Caltrans, https://dot.ca.gov/programs/design/wired-broadband.

[130] "Encroachment Permits Manual," Ch. 600 Section 603.2A, pp. 6-35 – 6-36, https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/chapter-6-ada-a11y.pdf.

Caltrans is also required to notify broadband providers about potential opportunities to install conduit during its own highway construction projects and maintains an online map of projects under development.

The State has published best practices for localities to consider implementing similar dig-once policies and model local codes in the "Local Government Permitting Playbook."[131] This will minimize the number of times rights-of-way will be dug into, allowing even the smallest funded projects to leverage economies of scale to reduce costs.

The General Plan Guidelines from the Governor's Office of Planning and Research, which direct California cities and counties in preparing their general plans, also promote dig-once policies at the local level. The Guidelines note that "dig once policies can substantially reduce costs for providing broadband service to communities,"[132] discussing broadband under the public utilities and facilities component of the "circulation element" (i.e., transportation plan).

California municipalities have been proactive in adopting dig-once policies for communications infrastructure at the local level, according to a 2020 industry report that identifies ten cities, counties, and multi-county consortia with such policies in place.[133]

This approach is in alignment with guidance from the U.S. Federal Highway Administration (FHWA) Office of Transportation Policy Studies, which notes in a policy brief that "the largest cost element for deploying broadband is burying fiber optic cables and conduit underground," citing the FCC. In the brief, FHWA emphasizes the importance of implementing dig once policies at the local level as permits to install or work on existing facilities are often requested from cities and counties.[134]

11.3 Streamline permitting processes

The State's 2020 Broadband for All Action Plan, created by Executive Order,[135] established an action item to "enhance permitting processes at all levels of government through meaningful partnerships." This effort is led by the California Department of Technology in collaboration with

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[131] "State of California Local Permitting Playbook," Broadband for All, August 2022, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2022/09/California-Local-Jurisdiction-Permitting-Playbook-1.pdf; see, pp. 39-43.

[132] "State of California General Plan Guidelines 2017," Governor's Office of Planning and Research, https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf, pp. 81-82.

[133] "Dig Once Policy: 16 State Models," Fiber Optic Sensing Association, July 2020, available for download at https://downloads.regulations.gov/FHWA-2019-0037-0011/attachment_3.pdf.

[134] "Minimizing Excavation Through Coordination," policy brief from the FHWA Office of Transportation Policy Studies, October 2013, https://www.fhwa.dot.gov/policy/otps/policy_brief_dig_once.pdf.

[135] Executive Order N-73-20, signed August 14, 2020, https://www.gov.ca.gov/wp-content/uploads/2020/08/8.14.20-EO-N-73-20.pdf.

the following key parties: Caltrans (focused on the State level), the Governor's Office of Business and Economic Development (focused on the local level), and the California Emerging Technology Fund (working at the regional level).[136]

11.3.1 Optimize local permitting processes by promoting best practices for county and local permitting

The State will leverage its organizational and coordinating power to streamline permitting processes for the many anticipated awardees that will deploy network infrastructure on or in assets owned by counties and localities.

The CPUC in partnership with the California Governor's Office of Business and Economic Development, the California Department of Technology, and the California Emerging Technology Fund has created a "Local Government Permitting Playbook"[137] that outlines best practices in broadband permitting policies for counties and localities to consider. These best practices make recommendations on how localities can best optimize their permitting for broadband deployment, develop and share relevant information regarding their permitting policies, create conditions that make private investment more attractive, develop strategies to increase staffing and administrative support, and publish information on known assets of interest.

In addition, AB 965, approved by the Governor in October 2023, requires localities to undertake "batch processing" of broadband permits when they receive two or more applications submitted at the same time for substantially similar projects from the same applicant. The Legislature found that this process "will be more efficient on the workload of local government staff," stating that "it is in California's best interest for public and private broadband project permits to be processed as quickly and efficiently as possible."[138]

Some municipalities have already implemented efforts to streamline their permitting processes to facilitate broadband deployment. The City of Los Angeles, for example, has developed a permitting manual that clearly outlines the processes for various permit types, and the City of Oakland has published typical and maximum timelines for encroachment permitting to foster shared

[136] "Action plan progress tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.

[137] "State of California Local Permitting Playbook," Broadband for All, August 2022, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2022/09/California-Local-Jurisdiction-Permitting-Playbook-1.pdf.

[138] AB 965 (2023), adding Section 65964.3 to the Government Code, relating to local government; https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202320240AB965.

understanding and transparency. Santa Clara County has implemented a shared online permitting system.[139]

11.4 Encourage specialized equipment sharing

Smaller ISPs in particular may struggle with the high cost and access to specialized equipment needed to drill into hard rock when installing underground fiber. The CPUC will encourage providers to enter into resource sharing agreements as a way to reduce costs and risks.

11.5 Assess drop costs

Drop costs, especially in rural areas where houses are often set back far from the public road, can be very high. Since applicants are required to absorb such costs to connect subscribers under BEAD terms, they will factor these costs into cost proposals.

The CPUC will convene with ILECs and CLECs to assess the feasibility of using existing copper telephone wires on utility poles to overlash drop fiber cables. The CPUC will also convene with electric utilities to assess the feasibility of using existing messenger wires that support low-voltage power to lash drop fiber cables.

11.6 Reduce labor costs

11.6.1 Strike a balance between skilled and certified labor requirements and the cost of labor

Extending Priority Broadband to the maximum number of unserved and underserved residents and businesses requires lowering barriers to entry and the cost of construction, which includes labor costs. At the same time, the CPUC is committed to fair labor standards and wages that reflect the skills and certifications of workers.

Accordingly, the CPUC will require certifications appropriate to specific risks and roles, rather than overly broad professional requirements that would require specialized labor for low-skill tasks. The CPUC will apply standards consistent with previous broadband initiatives and best practices provided by industry organizations.

11.6.2 Increase supply of labor through workforce development initiatives

The CPUC's workforce development plan is outlined in Section 9.

11.7 Reduce overhead costs

[139] "State of California Local Permitting Playbook," Broadband for All, August 2022, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2022/09/California-Local-Jurisdiction-Permitting-Playbook-1.pdf, pp. 3, 4, 10; see also, pp. 57-66.

11.7.1 Adopt reasonable, compliance-focused regulatory and reporting requirements

The CPUC will attempt to reduce the overhead costs of construction and network operation by striking an appropriate balance in its regulatory and reporting policies. The CPUC will keep the interval of required reporting reasonable, publish clear and concise reporting workflows so awardees can focus resources and efforts on construction, and leverage existing reporting templates for State grants, RDOF, or ReConnect where appropriate.

11.7.2 Create fast-track screening for environmental compliance

The CPUC will develop fast-track screening for environmental safety evaluations with NTIA guidance to simplify and help awardees navigate the environmental and historic preservation review process.

11.7.3 Create an ISP and agency technical assistance committee

The CPUC will create a technical assistance committee consisting of ISP and agency representatives to share expertise and information regarding compliance reporting with awardees.

11.8 Reduce the initial capital cost burden on smaller ISPs

11.8.1 Provide "letter of information" to in-State community banks and credit unions to facilitate letters of credit

The letter of credit requirement under BEAD can be a barrier to participation for smaller ISPs in particular. To assist banks unfamiliar with the risk environment for fiber deployments, the CPUC will develop a letter of information and offer assistance including:

- Listing requirements and best practices for risk management to ensure ISPs can apply in accordance with scale
- Providing a primer on approaches to calculate operational costs and estimate the value of collateral assets to allow smaller ISPs and banks to understand how high the credit and maximum total application amount should be
- Allowing ISPs and banks access to a cost model tool to estimate operational costs for proposed project areas

11.8.2 Connect local and community banks with service areas overlapping eligible locations to local grant participants

The CPUC will reach out to credit unions and community banks with unserved locations in their service areas and make a list of such banks available to ISPs. In addition, it will discuss partnership

models and options for banks to work with community development organizations and private partners to underwrite loan guarantees for local banks to provide letters of credit.

12 Climate assessment (Requirement 15)

This section accounts for and provides an assessment of current and future weather and climate-related risks to new broadband infrastructure in California.

In accordance with the Disaster Mitigation Act of 2000, the State of California has published a Statewide Hazard Mitigation Plan (SHMP) and assists local entities in publishing their own plans. The Hazard Mitigation Planning Division of the Governor's Office of Emergency Services (Cal OES) is responsible for publishing the SHMP.[140] Cal OES serves as the State's leadership hub during all major emergencies and disasters and supports local jurisdictions and communities through planning and preparedness activities, training, and facilitating the immediate response to an emergency through the longer-term recovery phase.

The most recent iteration of the SHMP was published in 2018.[141] In the SHMP, the State has worked to identify the hazards most likely to impact California residents and has aggregated data from numerous sources to identify areas of the State that are most at risk of impact from each hazard identified. As of the writing of this Proposal, California is updating the SHMP.

The California Climate Adaptation Strategy is an interactive website, with regular reports, launched in 2021.[142] Goals include reducing the risk of wildfire through increased use of fuel breaks and fuel reduction and to protect, restore, and create coastal wetlands.[143] The strategy was created through meaningful multilingual and culturally relevant outreach[144] and includes a partnership with California's Tribes.[145]

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[140] "Hazard Mitigation Planning," Cal OES, https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/state-hazard-mitigation-planning/.

[141] "California State Hazard Mitigation Plan," Cal OES, 2018, https://www.caloes.ca.gov/wp-content/uploads/002-2018-SHMP_FINAL_ENTIRE-PLAN.pdf.

[142] "Overview of the California Climate Adaptation Strategy," California Climate Adaptation Strategy, https://climateresilience.ca.gov/overview/index.html.

[143] "2021 California Climate Adaptation Strategy: Priorities, Goals, and Actions," California Climate Adaptation Strategy, https://climateresilience.ca.gov/overview/docs/20220404-CAS_Priorities_Goals_Actions.pdf, p. 12.

[144] "2021 California Climate Adaptation Strategy: Priorities, Goals, and Actions," California Climate Adaptation Strategy, https://climateresilience.ca.gov/overview/docs/20220404-CAS_Priorities_Goals_Actions.pdf, p. 2.

[145] "Climate Adaptation in Partnership with California Native American Tribes," California Climate Adaptation Strategy, https://climateresilience.ca.gov/overview/tribes.html.

12.1 Identifying geographic areas subject to initial hazard screening

The SHMP will serve as the main source for evaluating and locating high risk areas, while local plans may provide local useful information.

California is already experiencing the impacts of climate change. In the last decade, Californians have endured severe droughts, floods, historic wildfires, rising seas, and record temperatures all driven by climate change. Building resilience to these impacts requires sustained investment in climate change research and science. California published its Fourth Climate Change Assessment in 2019.[146] Work on the Fifth Climate Change Assessment is underway and should be complete in 2026.[147]

The analysis in this Proposal employs the classification scheme of the Federal Emergency Management Agency (FEMA), assessing each county's risks relative to other counties around the nation, and ranking county's risks as Very Low (0-20th percentile), Relatively Low (20th-40th percentile), Relatively Moderate (40th-60th percentile), Relatively High (60th-80th percentile), or Very High (80th-100th percentile).[148]

Relative to most other states, counties throughout California are at Relatively High or Very High risk of hazards, especially in the Los Angeles and San Francisco areas and along the southern border. Note that this data uses an Expected Annual Loss (EAL) calculation, which represents the average economic loss in dollars resulting from natural hazards each year, which measures building and agriculture values in dollars, and population in fatalities and injuries.[149]

[146] "California's Fourth Climate Change Assessment: Statewide Summary Report," State of California Energy Commission, 2019, https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. See also, California's Fourth Climate Change Assessment, https://climateassessment.ca.gov/.

[147] "Climate Assessment, Science, and Research: California's Fifth Climate Change Assessment, research priorities, and tools," Governor's Office of Planning and Research, https://opr.ca.gov/climate/icarp/climate-assessment/.

[148] "National Risk Index Technical Documentation," FEMA, March 2023, https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf.

[149] "Expected Annual Loss," FEMA, https://hazards.fema.gov/nri/expected-annual-loss.

Figure 4: Composite hazard risk scores in California

12.2 Characterizing which weather and climate hazards may be most important to account for and respond to these in these areas and over the relevant time horizons

This Proposal describes California's plans to handle climate-related hazards that affect broadband infrastructure. However, the SHMP addresses both climate-related hazards and hazards that are not climate-related, and the SHMP focuses on hazards to human life. The SHMP lists three types of geologic hazard—earthquake, landslide, and volcano. It lists five types of flooding hazard, some of which are related to built structures such as dams and levees. It lists two type of fire hazard, wildfire and urban, but this Proposal addresses wildfires—although some urban fires are caused by wildfires that reach urban areas. The SHMP lists an additional eleven "climate and weather-influenced hazards" which are, in alphabetical order:

1. Agricultural and silvicultural pests and diseases
2. Air pollution
3. Aquatic invasive species
4. Avalanches
5. Droughts and water shortages
6. Energy shortage and energy resiliency
7. Epidemic/pandemic/vector borne disease
8. Extreme heat
9. Freeze
10. Severe weather and storms
11. Tree mortality

This Proposal focuses on the mitigation of those climate hazards that impact broadband infrastructure. Therefore, it does not directly address all of the hazards listed above. Additionally, it does not address the hazards listed in the SHMP under the category "sociotechnical/technological hazards" or the category of "threat and disturbance hazards."

This Proposal addresses hazards in the order in which they appear in the SHMP, which is alphabetical by category.

12.2.1 Geologic hazards

12.2.1.1 EARTHQUAKES

Although they are not a climate hazard, earthquakes represent a hazard to broadband infrastructure in California. Earthquakes represent the most destructive source of hazards, risk, and vulnerability, both in terms of recent State history and the probability of future destruction of greater magnitudes than previously recorded.

California is seismically active because it sits on the boundary between two of the earth's tectonic plates. Most of the State—everything east of the San Andreas Fault—is on the North American Plate. The cities of Monterey, Santa Barbara, Los Angeles, and San Diego are on the Pacific Plate, which is constantly moving northwest past the North American Plate. There are over 15,000 identified faults in California. Over 200 of these identified faults are considered very dangerous based on their slip rates in recent geological time (the last 10,000 years).

As of the 2018 SHMP, based on the most recent earthquake forecast model for California, the United States Geological Survey (USGS) and other scientists estimate a 72 percent probability that at least one earthquake of magnitude 6.7 or greater, capable of causing widespread damage, will strike the San Francisco Bay Area before 2044. For the Los Angeles region, the same model forecasts a 60 percent probability that an earthquake of magnitude 6.7 or greater will occur before 2044.

Cal OES published a Bay Area Earthquake Plan in 2016.[150] Cal OES' planning is constantly evolving. For example, on October 19, 2023, Cal OES led what it believes is the largest ever earthquake drill, ShakeOut.[151]

As shown in the map below, nearly all counties in California are at Very High risk of earthquakes, and the remaining counties are at Relatively High risk of earthquakes. The earthquake hazard is best addressed by redundancy as well as other best practices.

Earthquake risk is not thought to be affected by climate change.

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[150] "Bay Area Earthquake Plan," Cal OES, 2016, https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/BayAreaEQConopsPub_Version_2016.pdf.

[151] "Earthquake Preparedness," Cal OES, https://www.caloes.ca.gov/office-of-the-director/operations/planning-preparedness-prevention/seismic-hazards/earthquake-preparedness/; ShakeOut, https://www.shakeout.org/; ShakeOut California, https://www.shakeout.org/california/. For previous year's event, see "'Great ShakeOut' Global Earthquake Safety movement includes more than 18 million U.S. participants in 2022," Great ShakeOut Earthquake Drills press release, October 19, 2022, https://www.prnewswire.com/news-releases/great-shakeout-global-earthquake-safety-movement-includes-more-than-18-million-us-participants-in-2022-301653096.html.

Figure 5: Earthquake risk in California

12.2.1.2 LANDSLIDES

More than one-third of California is mountainous terrain that generally trends parallel to the coast, forming a barrier that captures moisture from offshore storms originating in the Gulf of Alaska and Mexico. Steep topography, weak rocks, heavy winter rains, and occasional earthquakes all lead to slope failures more frequently than would otherwise occur under gravity alone. Although the area affected by a single landslide is less than that of earthquakes, landslides are pervasive in California's mountainous terrain and occur far more often.

Landslides are classified into many different types based on form and type of movement. They range from slow-moving rotational slumps and earth flows, which can slowly distress structures but are less threatening to personal safety, to fast-moving rock avalanches and debris flows that are a serious threat to structures and have been responsible for most fatalities during landslide events. Many large landslides are complex, being a combination of more than one landslide type.

Wildfires can exacerbate landslides by significantly altering the hydrologic response of a watershed to the extent that even moderate rainstorms can produce dangerous flash floods and debris flows. The concern for debris flows following wildfires is particularly acute in the Los Angeles Basin where urban areas encroach upon alluvial fans.

Heavy winter seasons may coincide with El Niño Southern Oscillation in the Pacific Ocean. Every few years, warm equatorial waters are driven to the eastern Pacific, bringing moisture-laden air that results in more frequent and severe winter storms in California. While El Niño is a condition that can result in high total rainfalls, there are other conditions that may result in record levels of rainfall, even in a non-El Niño year.

During heavy rainfall conditions, the added weight of rain-saturated hill slopes and the weakening of slopes caused by the pressure the groundwater exerts on porous hillside materials are triggering agents of slope failure. Improved forecasting of El Niño events or other potentially high rainfall years now provides advanced warning which allows for better preparation and response to potential slope failures and flood events.

Although less frequent, the most devastating landslides worldwide have been triggered by earthquakes. Strong ground shaking can create the additional forces necessary to weaken slopes and cause those already distressed by gravity to fail.

Exposure to landslide hazards can be reduced by effective land use planning and hillside development practice. Like slope steepness and material strength, potential for water-saturated hillsides (or earthquake shaking) is a design parameter that should be considered when preparing a construction site.

Managing landslide risk is primarily the responsibility of local governments where planning and building departments serve as lead agencies. Over 80 percent of California cities have landslide/mudslide ordinances, design standards, or guidelines for hillside development. California's

Seismic Hazards Mapping Act designates landslide zones wherein cities and counties are required to condition construction permits upon adequate landslide site investigation and agreed-upon mitigation. These efforts have proven effective in reducing losses over the past decades, but not all jurisdictions that face potential landslide hazards have such instruments, nor has zoning of all landslide-prone areas been completed under the State program.

Following selected wildfires, California, in coordination with federal agencies, deploys Watershed Emergency Response Teams (WERT)[152] to conduct post-fire assessments. The WERT assessments identify types and locations of threats to life-safety and property (collectively known as "values-at-risk" or VARs) from debris flows, flooding, rockfall, and erosion that are elevated due to wildfire. As part of the WERT assessment, the team develops preliminary emergency protection measures for the identified locations and communicates the findings to responsible emergency management agencies.

In Southern California, the United States Geological Survey (USGS) has identified the rainfall conditions required to trigger post-wildfire debris flows. Based on that data, the National Oceanic and Atmospheric Administration (NOAA) and the USGS have established a demonstration flash flood and debris-flow early warning system for recently burned areas covering eight counties in Southern California.

The early warning system uses the National Weather Service (NWS) Flash Flood Monitoring and Prediction (FFMP) system. The FFMP system identifies when both flash floods and debris flows are likely to occur based on comparisons between radar precipitation estimates and established rainfall intensity-duration threshold values.

When predicted rainfall rates exceed defined thresholds, the early warning system is triggered to send advisories, watches, and warnings to regional emergency management personnel using the NWS Advanced Weather Information Processing System. This information can then be disseminated to local residents to give warning of potential landslide risks or evacuation requirements.

Landslides can result from intense rainfall and runoff events. Projected climate change-associated variance in rainfall events may result in more high-intensity events, which may increase landslide frequency (i.e., due to wetter wet periods and drier dry periods). While total average annual rainfall may decrease, rainfall is predicted to occur in fewer, more intense precipitation events. The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour is likely to cause more mudslides and landslides.

As shown in the map below, a majority of California's counties are at Very High risk of landslides. BEAD-funded broadband deployments will need to take best practices into account.

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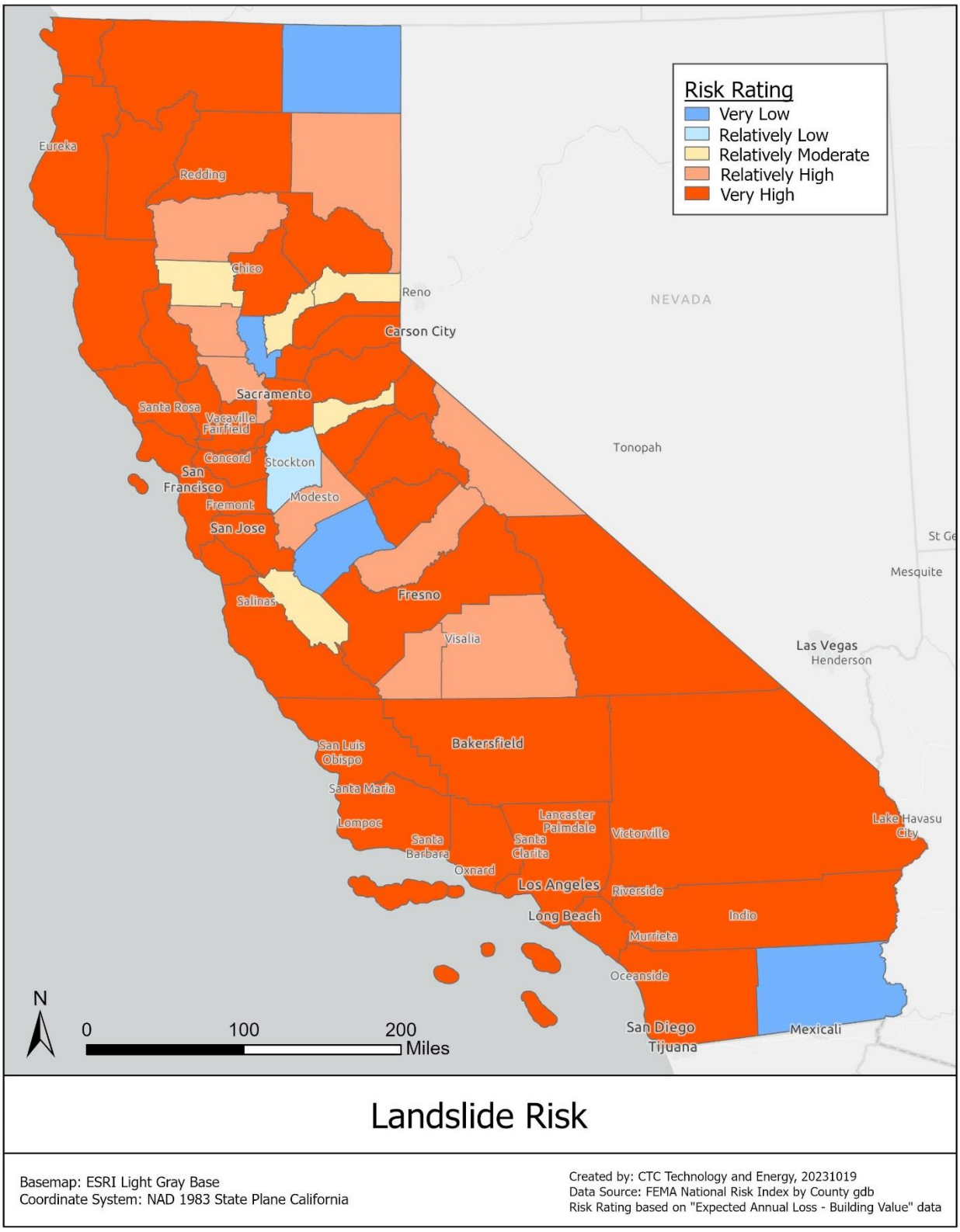
[152] "What is a WERT?" California Department of Conservation, https://www.conservation.ca.gov/cgs/bwg/wert.

Figure 6: Landslide risk in California



12.2.1.3 VOLCANOES

Although volcanoes are not a climate hazard, they present a risk to broadband assets in specific areas of California. Volcanic eruptions occur in the State about as frequently as the largest San Andreas Fault Zone earthquakes; at least ten eruptions have occurred in California in the last 1,000 years and the likelihood of renewed volcanism in the State is on the order of 1 in a few 100 to 1 in a few thousand annually.

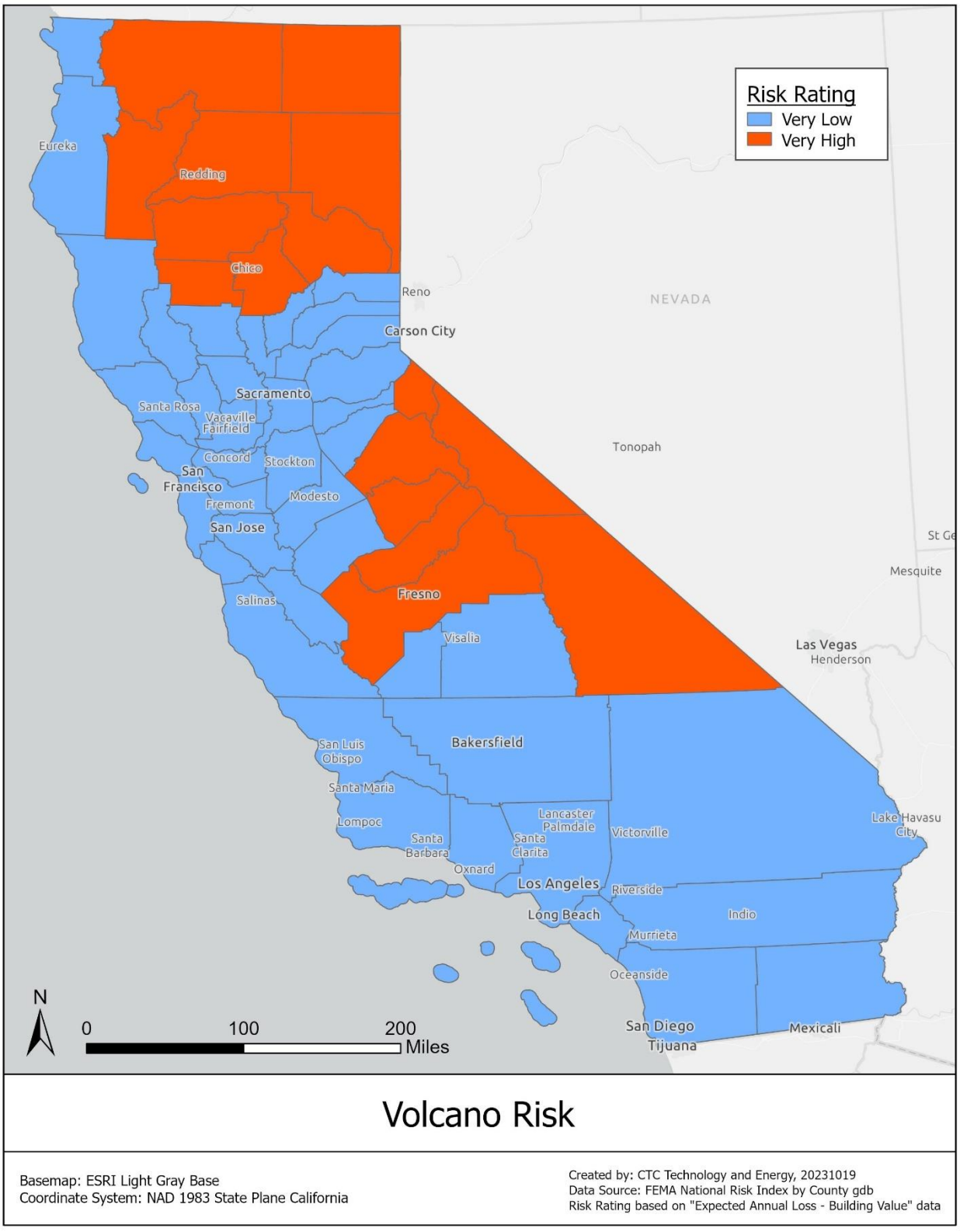
Timely warnings reduce the risk of fatalities, but depending on hazard type, the effects can extend many tens of miles from the volcano. In addition, some hazards endure well beyond the timescale of the eruption. Post eruption hazards—rain remobilized lahars, re-suspended ash, and seeping volcanic gas—may disrupt human activities or cause annoyances for years, even decades after an eruption has stopped. Other hazards include pyroclastic flows (sudden eruption of hot, gas-pressurized flows of ash and lava fragments, at temperatures of 400°F to 1300°F, that rush outward from the volcano with great force at ground speeds greater than 50 miles per hour), lava, lahars (slurry-like floods of volcanic ash, rock, and water that look like wet concrete), and the ballistic ejection of fragments of lava from the volcanic vent. The most recent eruption in California occurred at Lassen Peak in Lassen Volcanic National Park over 100 years ago, from 1914 to 1917.

Volcanic hazard zone maps are dynamic—as geologic research progresses, maps of vulnerable areas are updated and new maps are created.

Robust volcano monitoring networks and effective warning schemes are essential to saving lives and reducing property losses. A no-cost, email-based Volcano Notification Service (VNS) is available to agencies, businesses, and the public by registering online at: http://volcanoes.usgs.gov/vns/help.php.

As shown in the map below, some California counties are at Very High risk of volcanoes, while the remaining counties are at Very Low risk.

Figure 7: Volcano risk in California



12.2.2 Flood hazards

Flooding is one of the three primary hazards in California (along with earthquake and wildfire). Its potential damage to broadband infrastructure is well-understood and BEAD-funded broadband deployments will need to utilize industry best practices.

California's geographic diversity represents a difficult challenge to planning for flood mitigation. California has a 1,100-mile-long coastline; prominent coastal and inland mountain ranges, including the Sierra Nevada; a large riverine Central Valley; the Sacramento and San Joaquin Delta; and extensive and highly varied deserts. These geographical factors combine to create various types of floods, specifically defined in the SHMP as:

- Riverine—flooding that occurs along river and stream channels and that can range from slow-rise gradual inundation to flash floods from high velocity flows.
- Alluvial fan—flows of shallow depths and high velocities often containing sediment and rocks along uncertain flow paths on the surface and at the toes of alluvial fans.
- Coastal—inundation of locations normally above high tide, often caused by storm surge occurring with high tide and exacerbated over time with climate change-induced sea level rise. Increased coastal erosion can also result from these conditions.
- Engineered structure failure—flooding resulting from dam or levee failure.
- Tsunami—high-speed seismic ocean waves triggered by earthquakes and underwater landslides.

Several California agencies have relevant programs. The California Department of Water Resources (DWR) leads the statewide flood management program.[153] DWR is updating the California Water Plan, with public comment completed on October 19, 2023, and a final plan expected by the end of the year.[154] The California Data Exchange Center (CDEC) collects and shares flood data.[155]

12.2.2.1 RIVERINE FLOODING

Floods represent the second most destructive source of hazard, vulnerability, and risk, both in terms of recent State history and the probability of future destruction at greater magnitudes than previously recorded. Flooding in California is widespread and the second most frequent disaster

[153] "Flood Planning and Studies," DWR, https://water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies.

[154] "California Water Plan," DWR, https://water.ca.gov/programs/california-water-plan.

[155] "Flood Data," CDEC, https://water.ca.gov/Programs/Flood-Management/Flood-Data.

source. Since 1950, floods have accounted for the second highest combined losses and the largest number of deaths.

California's ten hydrologic regions present disparate flood mitigation planning challenges, which are detailed in the SHMP. The standard references for establishing the location of flood hazards are the Flood Insurance Rate Map (FIRM) floodplains, part of a national insurance system maintained under the National Flood Insurance Program (NFIP).

An important source of local perceptions regarding vulnerability to flood threats is found in the collection of FEMA-approved and adopted Local Hazard Mitigation Plans (LHMPs) adopted by cities, counties, and special districts.

An additional resource, the Silver Jackets focus on reducing flood risk through non-structural measures and agency coordination. Goals of the Silver Jackets are to increase inter-agency cooperation in flood risk mitigation, promote flood hazard risk education and information sharing, identify and eliminate flood risk management barriers, and build on existing efforts for potential future actions. The Silver Jackets joint mission is the protection of life and property by building partnerships to work together to identify and plan for flood risk.

As a collaborative program, the California Silver Jackets program is led by DWR[156] and empowered and supported by the U.S. Army Corps of Engineers (USACE). The program also includes Cal OES and local California flood control/mitigation agencies.

Scientists have determined that the largest storms in California are the product of phenomena called atmospheric rivers, and so the Multi-Hazards Demonstration Project storm scenario is called the ARkStorm, for Atmospheric River 1,000 (a measure of the storm's size). The ARkStorm produces precipitation in many places exceeding levels experienced on average every 500 to 1,000 years. Extensive flooding in many cases overwhelms the State's flood protection system, which is at best designed to resist 100-year (1 percent annual chance) and 200-year (0.5 percent annual chance) flows. The ARkStorm report was published in January 2011. To download the ARkStorm report, visit: http://pubs.usgs.gov/of/2010/1312/.

Climate change impacts have already been detected in temperature, precipitation, runoff, and snowpack records. These changes have resulted in altered annual runoff patterns and the subsequent operation of reservoirs for flood protection.

In addition to altering the annual average climate conditions, climate change also increases variance. As a result, regions projected to see an annual reduction in total precipitation may instead experience an increase in the severity and frequency of flood events. The change of snowfall to rainfall may also contribute to an increased number and severity of flood events.

[156] "California Silver Jackets," DWR, https://water.ca.gov/SilverJackets.

As noted in the map below, a majority of California's counties are at Very High risk of riverine flooding.

Figure 8: Risk of riverine flooding in California

12.2.2.2 SEA LEVEL RISE AND COASTAL FLOODING RISK

Coastal erosion is a natural geomorphic process. In California, coastal erosion can be accelerated or exacerbated through a combination of factors, including winter storms, tidal action, wind-generated high surf, wave action, and rising sea levels. High tides may coincide with heavy rain, causing coastal flooding, coastal bluff erosion, and landslides, such as were experienced during the 1998 and 2016 El Niño storms.

It is important to distinguish between sea level rise at the global scale and the regional/local scale and to identify the different contributing factors. Increases in global sea level result from two primary causes: ocean thermal expansion (when water warms, it expands) and the melting of land-based ice, including mountain glaciers, ice caps, and the polar ice sheets of Greenland and Antarctica. Thus far, the largest contributor to sea level rise is thermal expansion, but the rate of ice loss from both the Greenland and Antarctic ice sheets is accelerating.

While global mean sea level is rising, it is relative sea level—the local difference in elevation between the height of the sea surface and the height of the land surface at any particular location—that affects coastal communities and ecosystems at risk from coastal flooding. Future changes in relative sea level will vary along the length of the California coastline.

Generally, sea level rise progressively worsens the impact of high tides and wind-driven waves associated with severe storms. Coupled with increased frequency, severity, and duration of high tide and storm events related to climate change, sea level rise will exacerbate these extreme events along the coast. These events may expose the coast to severe flooding and erosion; damage to coastal structures, real estate, public access, and coastal habitats; and seawater intrusion into delta areas and coastal aquifers. El Niño events exacerbate storms and coastal inundation above that already occurring due to sea level rise and normal coastal weather and tidal patterns.

California's land mass includes more than 1,100 miles of outer coast with features like bluffs, beaches, and wetlands, in addition to bay shorelines and the Delta. The San Francisco Bay shoreline alone is approximately 300 miles, not including the Delta.

California's Sea Level Rise Guidance Document was updated in 2018, in a process led by the California Ocean Protection Council (OPC).[157] The State of California Sea-Level Rise Guidance 2018 Update summarizes recent scientific findings regarding global sea level rise and presents projections for California. Many coastal communities vulnerable to sea level rise along the length of California have analyzed the potential impacts of sea level rise to their communities, infrastructure, critical facilities, economies, environments, and social vulnerabilities. For communities continuing

[157] "State of California Sea-Level Rise Guidance 2018 Update," OPC, https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf; "Updating the State of California Sea-Level Rise Guidance Document," OPC, https://opc.ca.gov/updating-californias-sea-level-rise-guidance/.

the evaluation process, the SHMP includes a list of State and federal resources available to assist with local planning for coastal sea level rise.

Mitigating the impacts of sea level rise requires action at all levels of government. A global effort is needed to reduce greenhouse gas (GHG) emissions that are leading to climate change, but GHG emission reduction will not be able to blunt sea level rise in the near term. In addition, GHG emissions remain in the atmosphere for periods ranging from decades to centuries. As a result, ocean waters will continue to warm and the polar ice caps and continental glaciers will continue to melt even as GHG emission reduction programs occur.

Since sea levels will continue rising, communities must implement a variety of adaptation strategies. Appropriate land use planning and regulation are needed at the federal, State, and local levels. Many statewide guidance documents provide information related to adaptation options.

Often, the first step in developing mitigation strategies is assessing vulnerability, because it is through the vulnerability assessment that areas in need of mitigation are identified. In some cases, specific assessment methods are used to inform mitigation actions and are classified as part of the mitigation strategy. Some mitigation efforts are directed at the State or federal level, and other mitigation efforts are local.

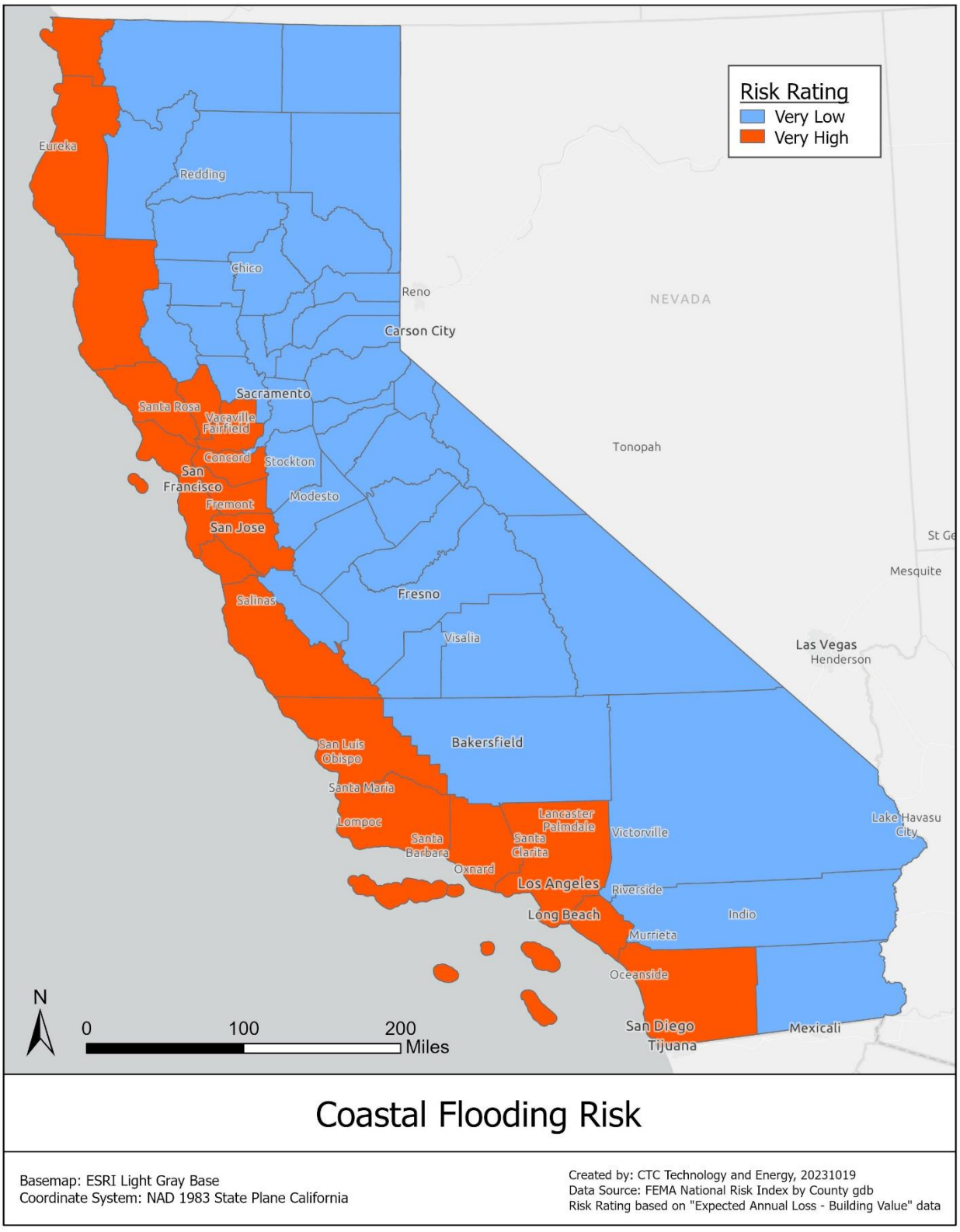
As noted earlier in this section, California completed its Fourth Climate Change Assessment in 2019[158] and is working to complete the Fifth Climate Change Assessment by 2026.[159] Updated sea level projections and analyses of other coastal issues are important components of both assessments. Numerous additional resources and studies are cited in the SHMP.

As shown in the map below, California's coastal counties are at Very High risk of coastal flooding, while the other counties are at Very Low risk.

[158] "California's Fourth Climate Change Assessment: Statewide Summary Report," State of California Energy Commission, 2019, https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. See also, California's Fourth Climate Change Assessment, https://climateassessment.ca.gov/.

[159] "Climate Assessment, Science, and Research: California's Fifth Climate Change Assessment, research priorities, and tools," Governor's Office of Planning and Research, https://opr.ca.gov/climate/icarp/climate-assessment/.

Figure 9: Coastal flooding risk in California



12.2.2.3 TSUNAMI AND SEICHE

Although tsunamis and seiches are rare events, the consequences can be high. A recent study indicated that a large tsunami event originating from the Aleutian Islands could cause coastal flooding that would result in extensive damage and lead to years of recovery.

A tsunami is a wave triggered by any form of land displacement along the edge or bottom of an ocean or lake. Land displacement can be in the form of submarine landslides or submarine dip-slip faults. These types of faults cause ruptures that result in seafloor uplift or down-drop. This mass movement translates to a tsunami or gravity wave within the overlying water at the surface. There are two types of source regions for tsunamis—resulting in local and distant source tsunamis as viewed from the affected shoreline. Local tsunamis are typically more threatening because they afford at-risk populations only a few minutes to find safety. California is vulnerable to, and must consider, both types. The Cascadia Subduction Zone is the most significant local tsunami source for the California coast north of Cape Mendocino. Tsunamis can travel at speeds of over 600 miles per hour in the open ocean and can grow to over 50 feet in height when they approach a shallow shoreline, potentially causing severe damage to coastal development.

Although less common, seiches can also affect coastal and lake shorelines. A seiche is caused by resonances in a body of water that has been disturbed by wind, atmospheric pressure variations, seismic activity, or even tsunamis. The vertical harmonic motion produces an impulse that travels the length of the water basin and reflects off the other end or sides. These reflected waves can then interfere with each other and create amplified standing waves. Seiches can occur in large bays or lakes as well as large, odd-shaped harbors. Natural basins like Lake Tahoe or man-made basins like the Ports of Los Angeles and Long Beach can be locations where seiches occur in California.

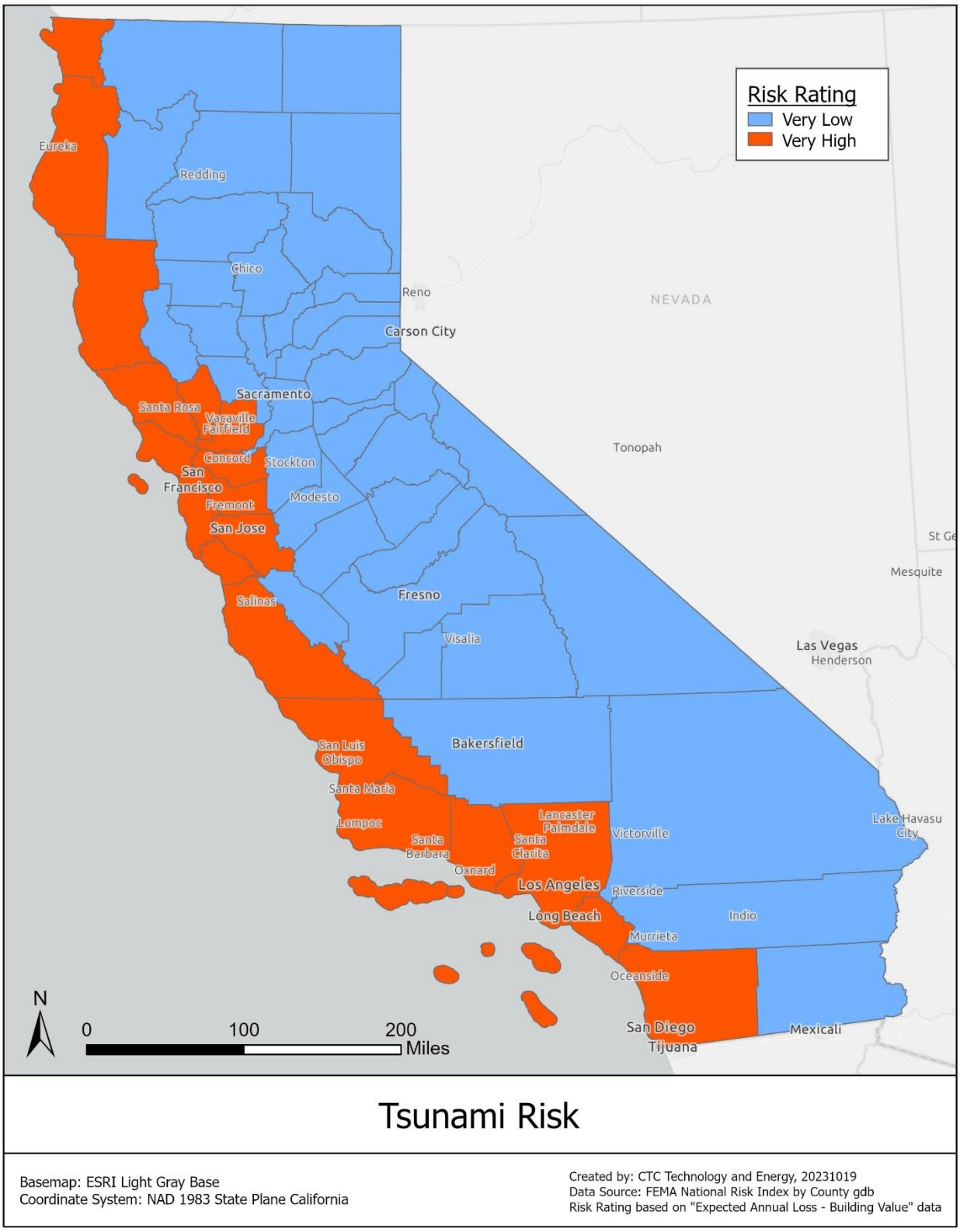
Community exposure to tsunamis in California varies considerably—some communities may experience great losses that reflect only a small part of their community and others may experience relatively small losses that devastate them. Among the 94 incorporated communities and 83 unincorporated areas of the 20 coastal counties, the communities of Alameda, Oakland, Long Beach, Los Angeles, Huntington Beach, and San Diego have the highest number of people and businesses in the tsunami inundation zone. The communities of Belvedere, Alameda, Crescent City, Emeryville, Seal Beach, and Sausalito have the highest percentages of people and businesses in this zone.

The California Tsunami Program (CTP) is a collaboration between the California Geological Survey (CGS) Tsunami Unit, Cal OES, and entities at the local level (counties, cities, community workgroups).[160] Most tsunami hazard preparedness and mitigation planning efforts are conducted through the State Tsunami Program and its Steering Committee. The CTP is working to identify additional tsunami mitigation opportunities. The probability of a tsunami is not expected to rise with

[160] "Tsunamis," CGS, https://www.conservation.ca.gov/cgs/tsunami.

climate change, although sea levels will rise, as discussed in the previous section. As shown in the map below, California's coastal counties are at Very High risk of tsunamis.

Figure 10: Tsunami risk in California



12.2.2.4 LEVEE AND DAM FAILURE

Although they are not directly climate hazards, potential levee and dam failures pose risks to BEAD-funded broadband deployment.

12.2.2.4.1 Levee failure

Millions of people and billions of dollars of assets in California are protected by levees. Levees in California protect land from peak flood levels and/or protect land that is below sea level. The first type of levee is intended to withstand peak flood levels that are caused by intense rainfall or rapid snow melt within the watershed. Examples are the levees along the Russian River or the Sacramento River near Sacramento. The second type of levee is intended to withstand nominal water levels on a continuous basis as well as peak flood levels. Examples are the levees throughout the Sacramento-San Joaquin Delta.

The San Francisco Bay-San Joaquin-Sacramento Delta region (a.k.a. "the Delta" or "the Bay-Delta") contains levees critical for delivering irrigation water to 3 million acres and drinking water to over 23 million people. A failure in one of the Delta levees in 1972 interrupted the State and federal water supply systems and required approximately 500,000 acre-feet of fresh water to restore export water to acceptable quality.

Some levees were originally intended to have land use compatible with agriculture but have subsequently become urban. Some of the levees in California have been augmented in recent years but many remain as originally constructed or have deteriorated. Changes in climate affecting hydrologic patterns in California, as well as sea level rise, are bringing additional loading to levees. With reclaimed floodplains not being replenished with new sediment and the drying out of some of the boggy areas, the land protected by levees began to drop in elevation via subsidence and wind erosion of topsoil. Land behind the levees will continue to drop in elevation with the addition of potential sea level rise exacerbating the situation.

Federal, State, and local agencies have been endeavoring to re-engineer the older levees and to build new levees to more stringent design standards. One of the biggest issues of the existing levee system, particularly in the Bay-Delta, is the quality of the foundation material, as well as the material composition of the levees themselves. The Delta Stewardship Council is charged with developing a more reliable statewide water supply and a healthy and protected ecosystem, both achieved in a manner that protects and enhances the unique characteristics of the Delta as an evolving place.[161] Additionally, DWR is undertaking unprecedented efforts to evaluate and upgrade aging and deteriorating levees along the Sacramento River and San Joaquin River valleys and the Delta. Additional programs are detailed in the SHMP.

[161] "About the Delta Stewardship Council," Delta Stewardship Council, https://deltacouncil.ca.gov/about.

Climate change in California is expected to increase the risk of flooding significantly. Increased flood frequency and magnitude are predicted consequences of climate change and will place additional stress on levee systems.

12.2.2.4.2 Dam failure

Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, adverse geological conditions, lack of maintenance, aging infrastructure, improper operation, poor construction, vandalism, and terrorism can all cause dam failure. Dam failure from overtopping is a specific failure mechanism resulting from inadequate spillway capacity or other spillway issues and seiches.

Dams and reservoirs of jurisdictional size are defined in the California Water Code Sections 6000 through 6008. A jurisdictional dam in California has a height greater than 6six feet while impounding 50 acre-feet or more or a height greater than 25 feet with storage capacity of 15 acre-feet or more. As of early 2018, there are more than 1,537 dams of jurisdictional size in California. Approximately 1,250 of these dams are under jurisdiction of the DWR's Division of Safety of Dams (DSOD).[162] Dams and reservoirs owned by the federal government are not subject to State jurisdiction except as otherwise provided by federal law.

Los Angeles County leads the State with 91 jurisdictional dams, followed by Sonoma County with 64 dams. Del Norte County is the only county in the State that has no dams of jurisdictional size. In the past 50 years, there have been only a small number of dam failures in California. The SHMP contains details of ongoing mapping and mitigation efforts.

12.2.3 Wildfire hazard

Among California's three primary hazards, wildfire, and particularly wildland-urban interface (WUI) fire, has represented the third greatest source of hazard to California, both in terms of recent State history as well as the probability of future destruction of greater magnitudes than previously recorded.

The CPUC is responsible for extensive wildfire mitigation and planning activities[163] and works with the Office of Energy Infrastructure Safety, which was established by the State due to the harmful consequences of fires in the State started by utility equipment. Utilities are required to develop and submit Wildfire Mitigation Plans to the Office for approval; based on compliance assessments by the Office, the CPUC may pursue enforcement actions.

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[162] "Division of Safety of Dams," DWR, https://water.ca.gov/programs/all-programs/division-of-safety-of-dams.

[163] "Wildfire and Wildfire Safety," CPUC, https://www.cpuc.ca.gov/industries-and-topics/wildfires.

The CPUC initiated rulemaking R.08-11-005[164] in 2008 to consider and adopt regulations to protect the public from potential fire hazards associated with overhead powerline facilities and nearby aerial communication facilities.[165] The proceeding was followed by rulemaking R.15-05-006[166] to address unfinished tasks at the close of R.08-11-005, including the creation of a statewide fire hazard map that outlines the boundaries of a high fire threat district (HFTD) where the previously adopted regulations will apply.

The CPUC Fire-Threat Map,[167] adopted in 2018, helps utilities and communications infrastructure providers plan risk reduction activities by classifying a utility's service area according to three levels: Tier 1 areas have an acceptable level of wildfire risk, Tier 2 areas have an elevated risk, and Tier 3 areas have an extreme risk. The HFTD is composed of Tier 2 and Tier 3 areas on the CPUC Fire-Threat Map as well as Tier 1 High Hazard Zones (HHZ) on the U.S. Forest Service-CAL FIRE joint map of Tree Mortality HHZs.

In general, a wildfire is defined as any free-burning vegetative fire that initiates from an unplanned ignition, whether natural (e.g., lightning) or human-caused (e.g., powerlines, mechanical equipment, escaped prescribed fires), where the management objective is full suppression. While wildfires can potentially lead to benefits to an ecosystem if within the range of natural variability for a given ecotype and geographical area, they can also lead to deleterious effects to both the natural and built environment.

The Department of Forestry and Fire Protection (CAL FIRE) provides up-to-date statistics regarding wildfires in California.[168]

Fire science distinguishes between two types of wildfires: "wildland" fires, which burn predominately in undeveloped areas, and "wildland-urban Interface" (WUI) fires. This distinction is important because mitigation, damage, and actions related to the two types may differ significantly.

Wildland fires that burn in natural settings with little or no development are part of a natural ecological cycle and may be beneficial to the landscape if they burn within the historic range of

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[164] R0811005, Order Instituting Rulemaking to Revise and Clarify Commission Regulations Relating to the Safety of Electric Utility and Communications Infrastructure Provider Facilities, https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:R0811005.

[165] "Fire-Threat Maps and Fire-Safety Rulemaking," CPUC, https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking.

[166] R1505006, Order Instituting Rulemaking to Develop and Adopt Fire-Threat Maps and Fire-Safety Regulations, CPUC, May 7, 2015, https://apps.cpuc.ca.gov/apex/f?p=401:56:0::NO:RP,57,RIR:P5_PROCEEDING_SELECT:R1505006.

[167] CPUC High Fire Threat District, https://capuc.maps.arcgis.com/apps/webappviewer/index.html?id=5bdb921d747a46929d9f00dbdb6d0fa2.

[168] "Statistics," CAL FIRE, https://www.fire.ca.gov/our-impact/statistics.

variability for fire size and intensity. Many species are adapted to California's natural fire regimes and flourish after a low or mixed severity burn. These fires also enhance ecosystem function by creating landscapes that have more variation, are more resilient to other disturbances, and are better able to withstand extremes in precipitation. The wildland fire may result in secondary negative impacts in the form of air pollution, soil erosion (resulting in siltation of streams and lakes), or mudslides, though these impacts tend to be far less than would occur following high severity fires in areas of historic fire suppression.

WUI fires represent an increasingly significant concern for the State of California. California has a chronic and destructive WUI fire history with significant losses of life, structures, infrastructure, agriculture, and businesses. Most local governments that have submitted Local Hazard Mitigation Plans (LHMPs) have identified fire and WUI fires as specific hazards. Even relatively small-acreage WUI fires may result in disastrous damage.

Most WUI fires are suppressed before they exceed 10 acres. The remainder usually occur during episodes of hot, windy conditions that exceed initial attack capabilities and, therefore, are more likely to cause heightened losses to the built environment. Many WUI fires occur in areas that have a historical pattern of wildland fires that burn under extreme conditions. The most common extreme fire behavior factor is high, dry, warm foëhn winds, such as Santa Ana or Diablo winds, that occur in a predictable location and seasonable pattern. The pattern of increased damage is directly related to increased urban spread into areas that have historically had wildfire as part of the natural ecosystem.

Climate change has the potential to alter wildfire hazards in frequency, size, and severity beyond the historic range by increasing the length of the fire season, creating drier fuels, decreasing forest health, and altering ignition patterns. The impact of climate change, as a driver for increased wildfire severity, is expected to be greatest in the mixed-conifer forests of the Sierra Nevada and Northern California; less impact is expected for fires in chaparral shrublands, which are expected to be more driven by increases in human-caused ignitions. The SHMP discusses the current status of local hazard mitigation plans (LHMPs), community wildfire protection plans (CWPPs), and other mitigation efforts, including interagency partnerships.

As shown in the map below, all of the State is at Very High or Relatively High risk of wildfires, except for Imperial County, located in the Colorado Desert. BEAD-funded deployments will need to take this into account, including utilizing backup power and providing redundant routes.

Figure 11: Wildfire risk in California

12.2.4 Other hazards

Because this Proposal addresses climate hazards to broadband infrastructure, it will not address all of the Other Hazards listed in the SHMP.

12.2.4.1 AVALANCHES

An avalanche is a mass of snow, ice, and rocks that fall down a mountainside, usually during heavy winter storms. Avalanches occur in the steep mountainous areas of the State that receive significant amounts of snow.

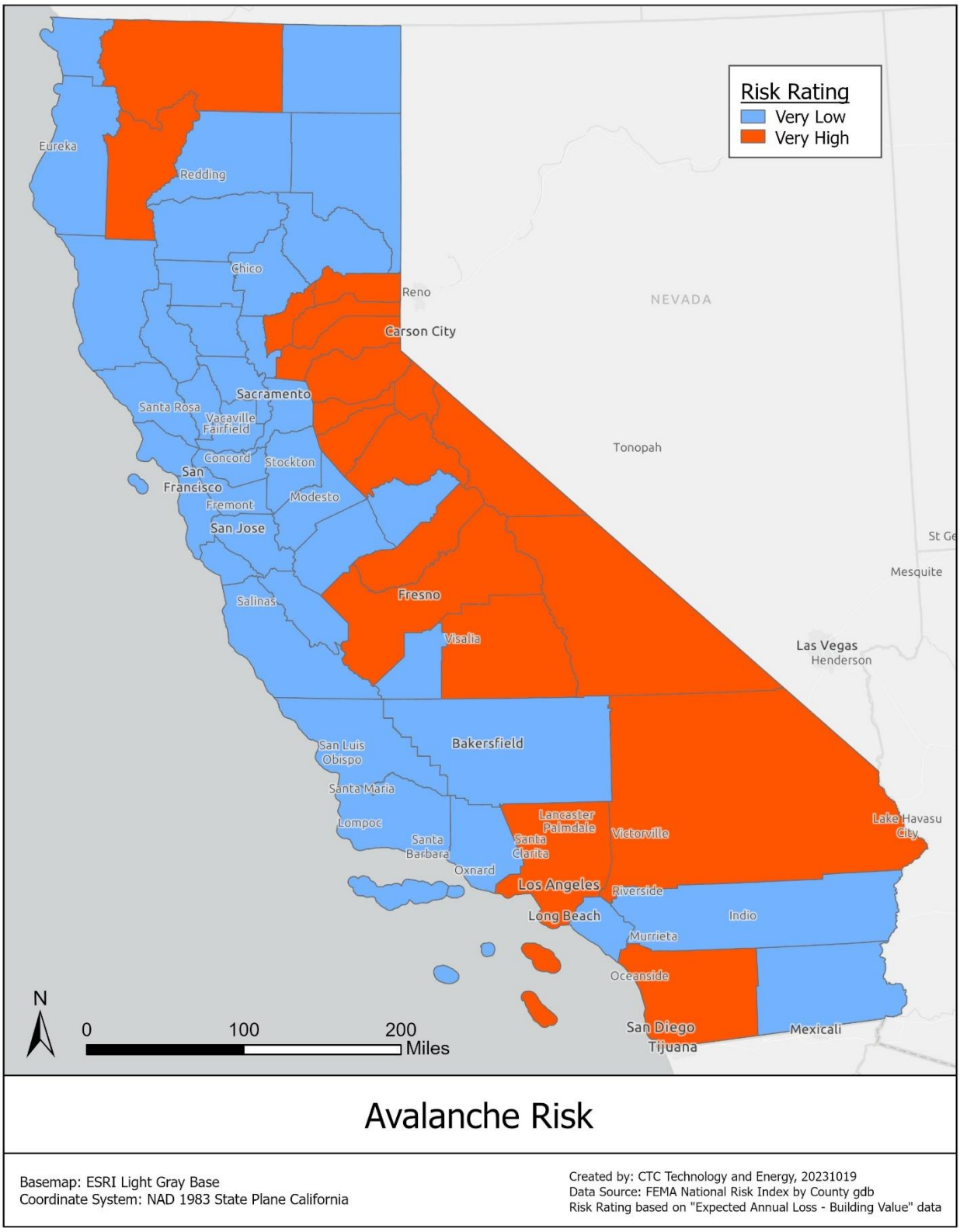
DWR monitors snowfall amounts and water content but does not actively monitor avalanche probability or occurrences. It does, however, provide a website link to the Avalanche Center,[169] a 501(c)(3) nonprofit that posts information on avalanche conditions for the United States. The organization is a partnership between the U.S. Forest Service and the private sector and relies heavily on private contributions and volunteer support. There are three Avalanche Centers operating in California that provide up-to-date information on snow conditions and avalanche danger levels:

- Eastern Sierra Avalanche Center – Inyo National Forest in Mammoth Lakes
- Central Sierra Avalanche Center – Tahoe National Forest in Truckee
- Shasta Avalanche Center - Shasta-Trinity National Forest in Mt. Shasta

As noted in the map below, many counties in California are at Very High risk of avalanches.

[169] Avalanche Center, https://avalanche.org/.

Figure 12: Avalanche risk in California



12.2.4.2 DROUGHT

Drought increases the probability and severity of wildfire. Drought also increases the severity of flash flooding due to soils becoming hydrophobic, repelling or incapable of dissolving in water, resulting in increased runoff and erosion. Subsidence due to groundwater pumping historically has occurred in seven main areas within Central and Southern California, Sacramento Valley, Antelope Valley, Oxnard Plain, greater Los Angeles, the Mojave Desert, Yucaipa and Coachella Valleys, and the San Joaquin Valley.

Drought is monitored nationwide by the National Drought Mitigation Center (NDMC).[170] Indicators are used to describe broad scale drought conditions across the U.S. Indicators correspond to the intensity of drought. NMDC regularly updates its map of conditions for California.[171] As of the writing of this Proposal, drought is not a significant hazard in California. However, climate scientists studying California find that drought conditions are likely to become more frequent and persistent through the 21st century due to climate change.

12.2.4.3 EXTREME HEAT

In most areas of the State, summer temperatures are expected to be warm; during certain periods, however, temperatures can rise much higher, to the point of being considered severe or possibly dangerous. Severe heat conditions are much warmer than average for a particular time and place. Severe heat conditions may also include increased humidity. Three or more consecutive severe heat days is referred to as an extreme heat event or heat wave. This Proposal focuses on the hazard posed to BEAD-funded broadband infrastructure.

Average temperatures are rising around the world and across the United States. The western portion of the U.S, including California, is experiencing more warming than other parts of the country. In addition to overall warming, the U.S is experiencing an increase in extreme heat events, with hotter-than-usual days and nights becoming more common.

Heat can stress the power infrastructure, potentially affecting broadband service. As part of California's 2021 update to California's Climate Adaptation Strategy, the State created an Extreme Heat Action Plan, whose Track C, Goal 1, is to protect critical infrastructure during extreme heat, with a focus on energy infrastructure (and on agriculture and transportation).[172] Additionally, the ISP industry has well-understood best practices regarding potential power problems.

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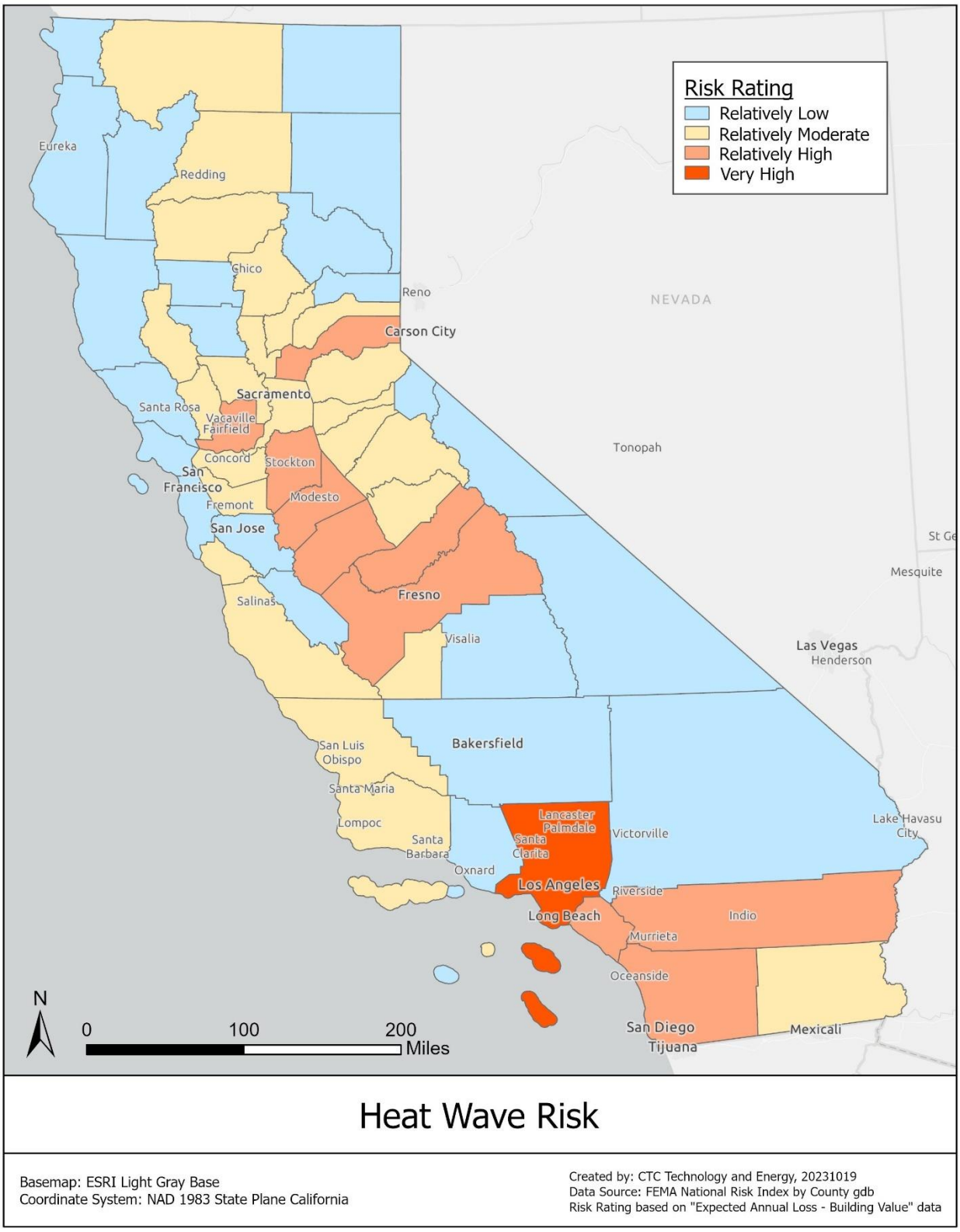
[170] National Drought Mitigation Center, https://drought.unl.edu/.

[171] "California," NMDC, https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA.

[172] "Protecting Californians From Extreme Heat: A State Action Plan to Build Community Resilience," California Natural Resources Agency, April 2022, https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Climate-Resilience/2022-Final-Extreme-Heat-Action-Plan.pdf.

As shown in the map below, Los Angeles County is at Very High risk of heat waves and several other counties are at Relatively High risk.

Figure 13: Heat wave risk in California

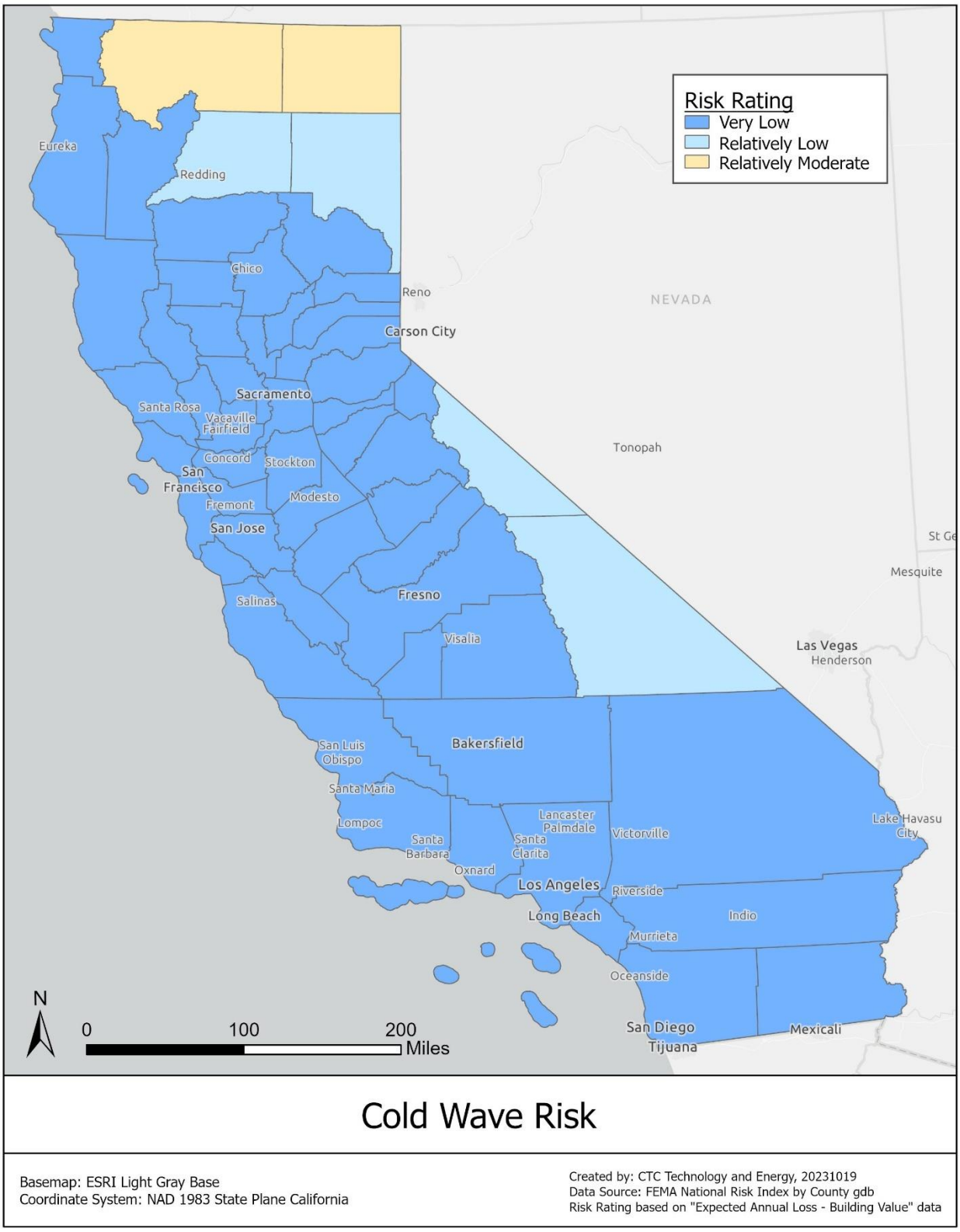


12.2.4.4 WINTER WEATHER

As shown in the maps below, most of California is at relatively low risk from winter weather. Winter weather includes ice storms, hail, and freezing temperatures, all of which can directly affect broadband infrastructure and can also indirectly affect broadband infrastructure by stressing power systems. In California, many local jurisdictions have loss assessments and plans in their local hazard mitigation plans.

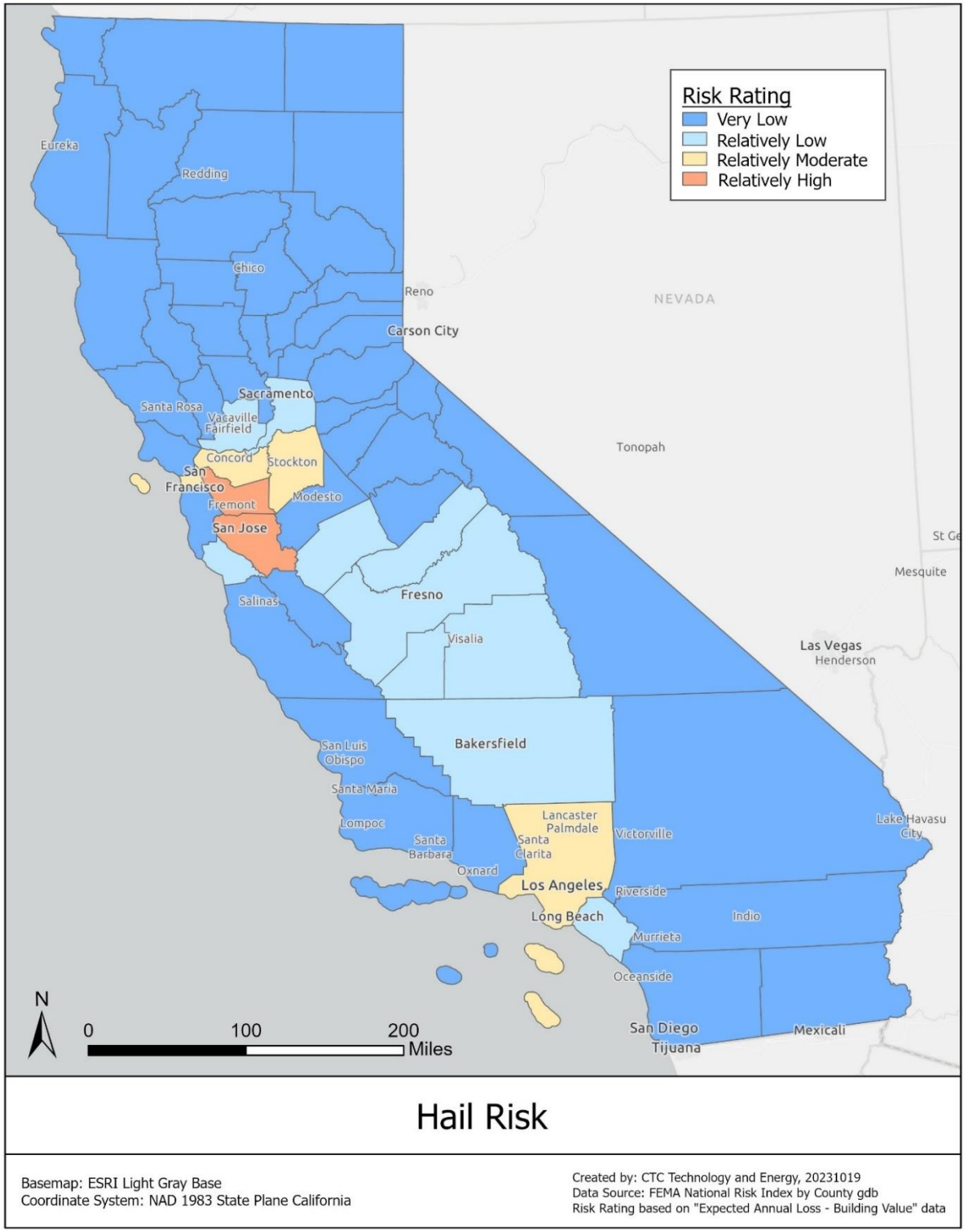
As shown in the map below, most of California is at Very Low Risk of cold waves.

Figure 14: Cold wave risk in California



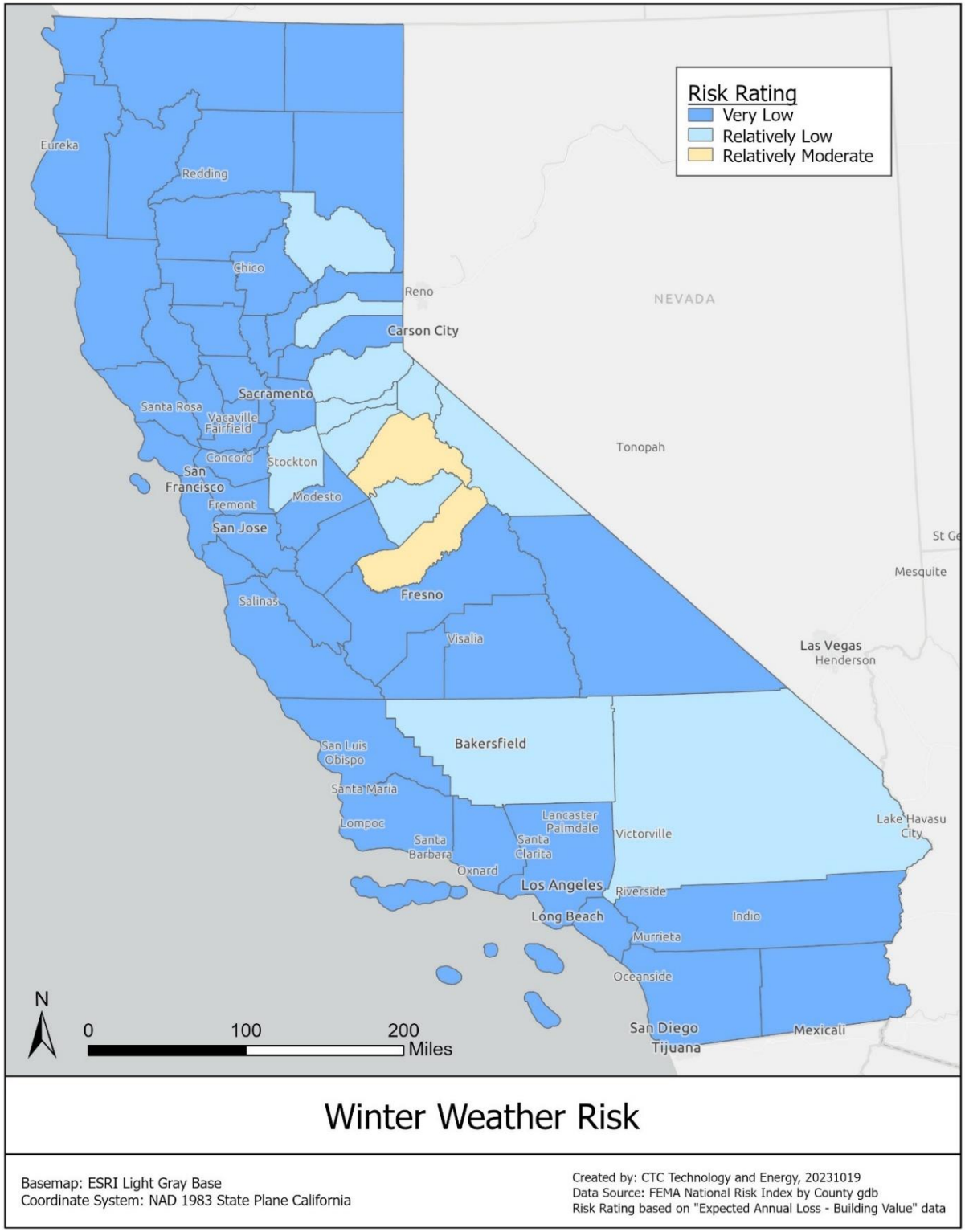
As shown in the map below, Alameda and Santa Clara counties are at Relatively High risk of hail.

Figure 15: Hail risk in California



As shown in the map below, most of the State is at Very Low risk of winter weather.

Figure 16: Winter weather risk in California



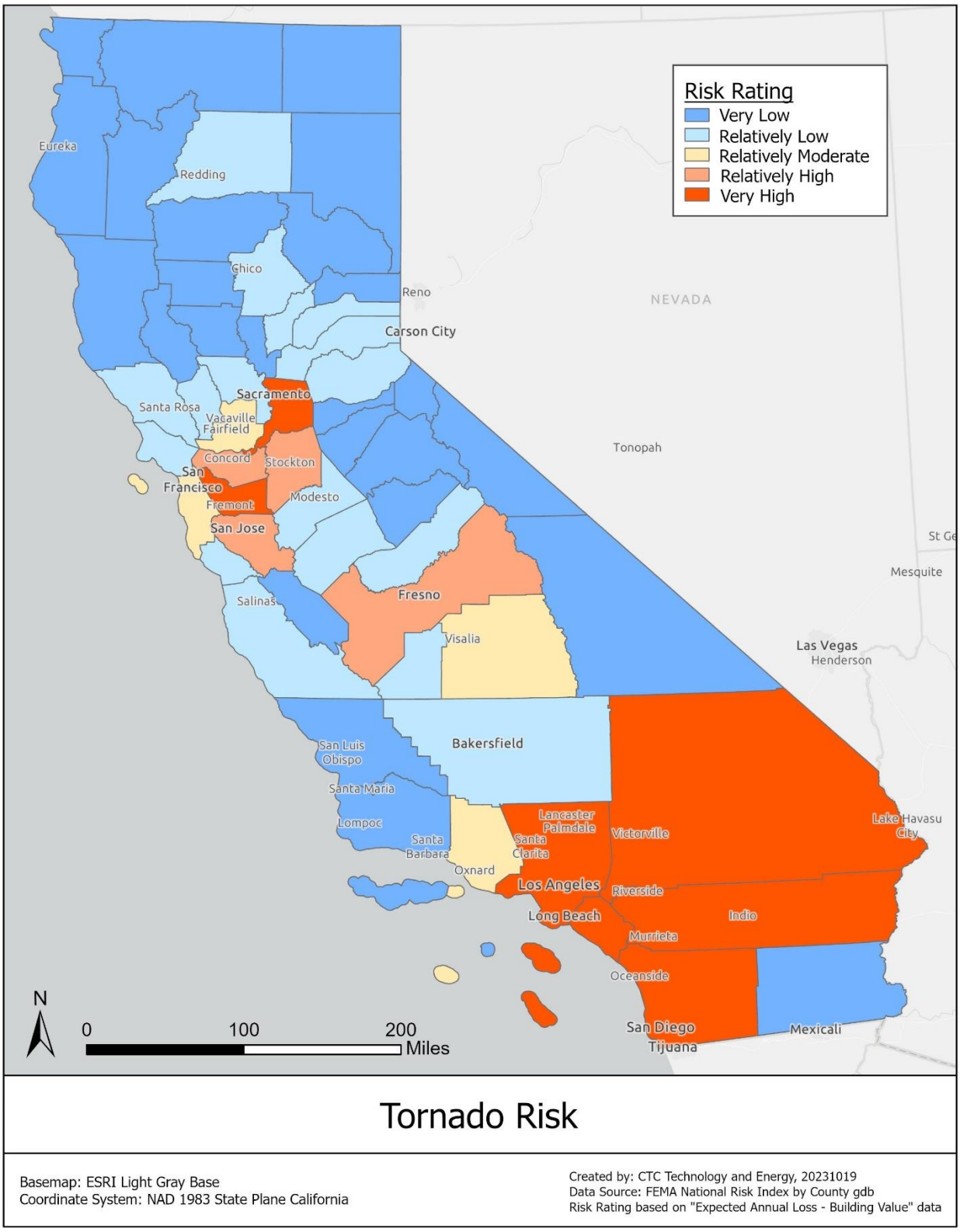
12.2.4.5 SEVERE WEATHER INCLUDING LIGHTNING, TORNADOES, AND HURRICANES

A storm disaster is generally defined as a violent atmospheric disturbance occurring over land and/or water and is distinguished by its strength, characteristics, and the scale of the resulting damage. Storms can represent a major potential threat to the State's population because of their frequency, the size of areas devastated and the population affected, and the scale of the potential resulting damage. Storms in California also have historically caused flooding, mudflows, landslides, electrical outages, and other impacts.

While California has tornadoes, such storms represent a relatively low risk for most areas, compared to states in the Midwestern and Southern United States where risk exposure is severe and many lives and millions of dollars are lost annually due to this hazard.

As shown in the map below, some California counties are at Very High risk of tornadoes.

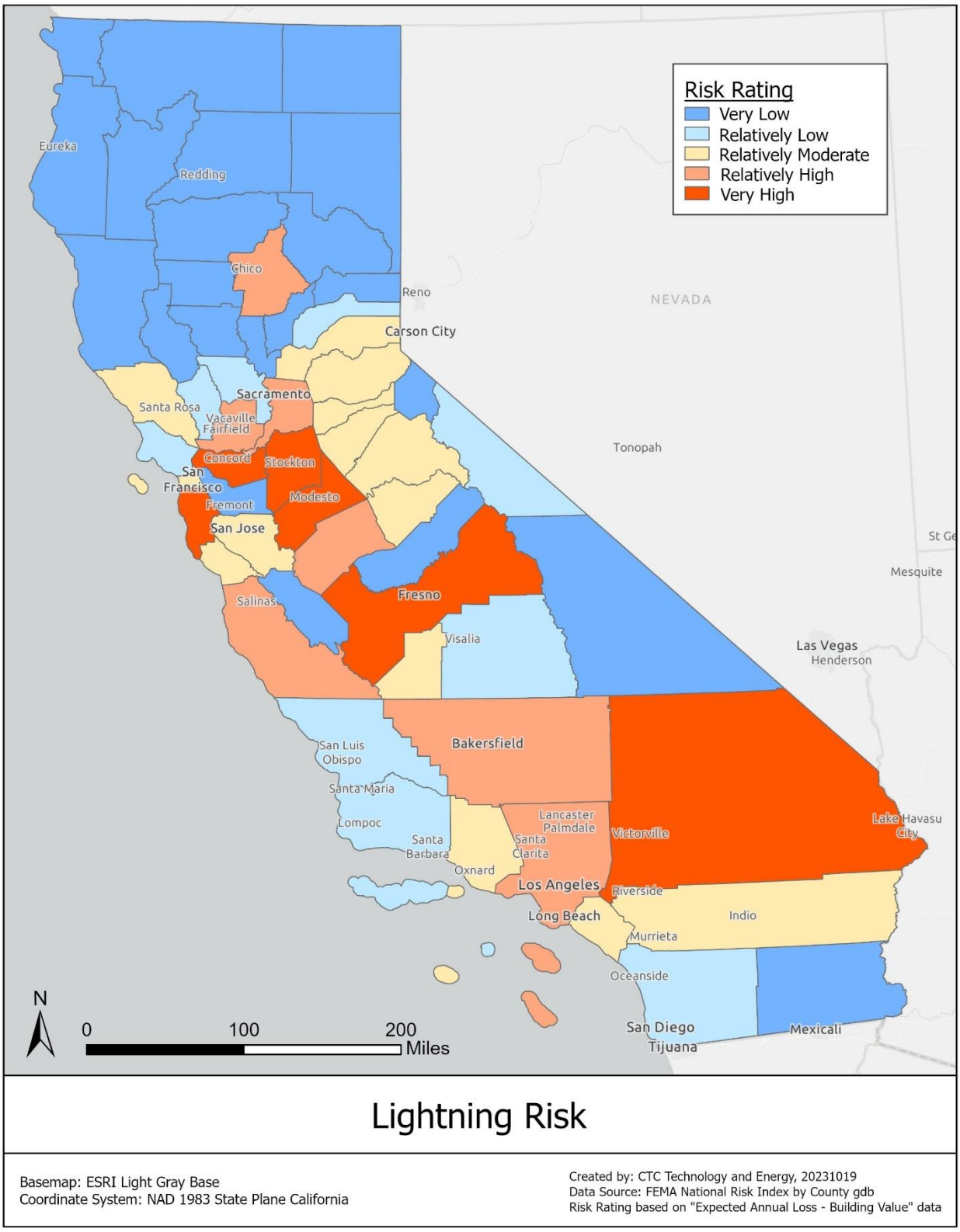
Figure 17: Tornado risk in California



This Proposal highlights lightning as a hazard because it is a danger to BEAD-funded broadband infrastructure, although the industry is aware of the hazard and both internet service providers and equipment manufacturers have well-developed mitigation practices.

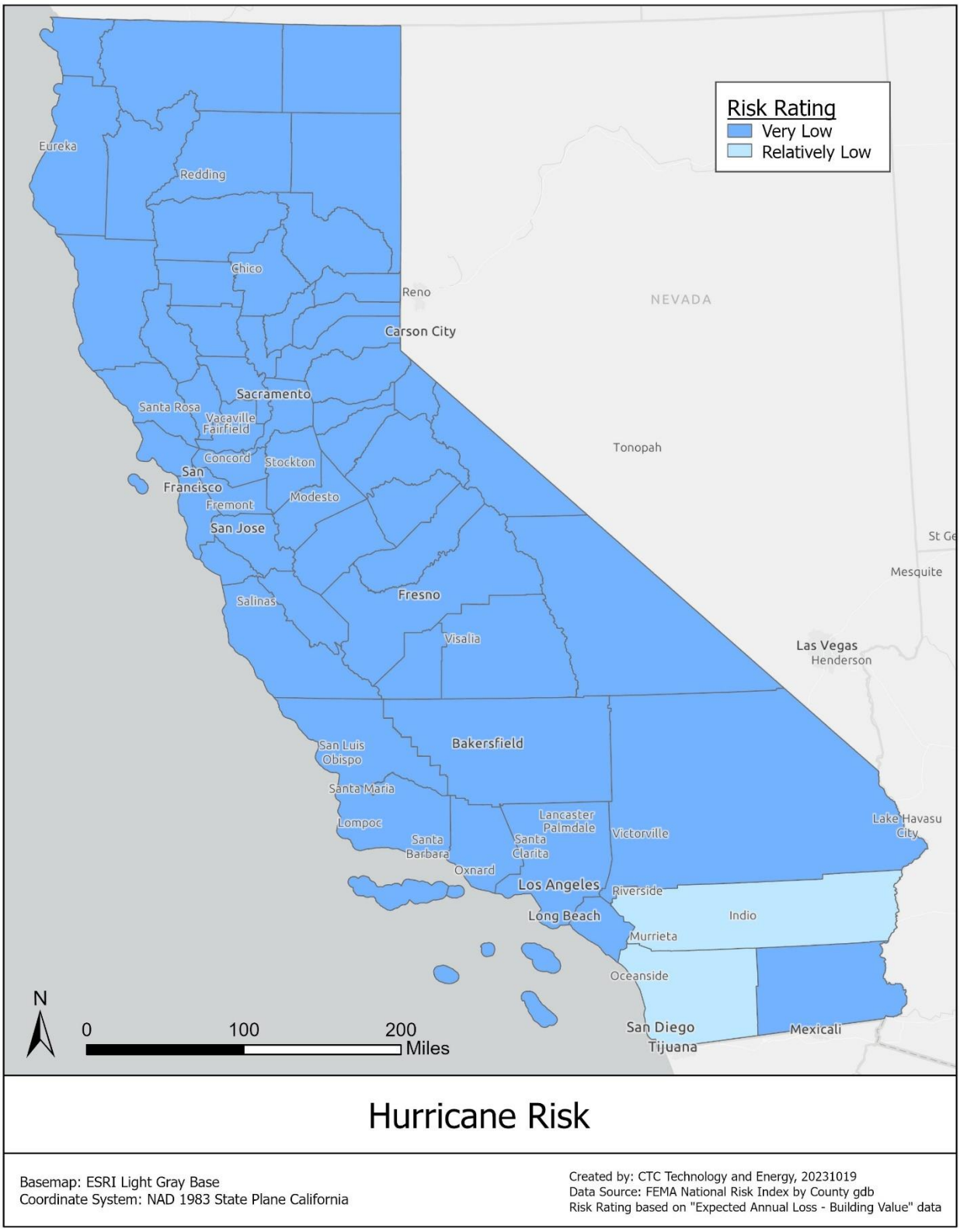
As shown in the map below, counties scattered across California are at Very High risk of lightning.

Figure 18: Lightning risk in California



No hurricanes have hit California in recorded history because tropical storm winds generally blow from east to west. As shown in the map below, California is at Very Low risk from hurricanes, except for Riverside and San Diego counties, which are at Relatively Low risk.

Figure 19: Hurricane risk in California



12.3 Characterizing weather and climate risks to new infrastructure deployed using BEAD program fund for the next 20 years

The top natural hazard risks impact broadband infrastructure in the following ways: through power outages,[173] through equipment damage,[174] and through signal degradation.[175]

Table 41: Threats to infrastructure posed by weather and climate risks

Risks	Potential causes
Power outages	Heat waves, landslides, flooding, wildfires
Equipment damage	Lightning, tornadoes, flooding, tsunamis, wildfires
Signal degradation	Flooding, wildfires

Strong winds, heat, and other hazards can cause power lines to go down or power to be turned off for safety resulting in a break in internet accessibility. Additionally, aerial fiber (and coaxial cable) is frequently over lashed on power lines that run along poles. When falling objects cause power lines to break, the applied force may also damage the over lashed asset. This risk is raised when a technician untrained in internet infrastructure or fiber attempts to fix the downed power lines by cutting through otherwise intact fiber.

Risks such as lightning, tornadoes, flooding, and other hazards can threaten aerial assets of all kinds. Intense winds and debris can damage fiber and even knock down utility poles. Lightning can strike antenna and satellite equipment that is necessary for fixed wireless communications. In either case, the result is severed connectivity.

Extreme temperatures can place stress on power systems, potentially resulting in an interruption of power to broadband infrastructure.

In addition, risks such as floods can cause the signal between fixed wireless transmitters and receivers to be absorbed or scattered, weakening their performance.

[173] "Evaluation of Hurricane Harvey's Effects on the Internet's Edge," University of Southern California ANT Lab, https://ant.isi.edu/outage/ani/harvey/index.html.

[174] "Fiber-Optic Cables Cut: What are the Consequences and How to Fix It," Clooms, March 22, 2021, https://www.clooms.com/fiber-optic-cables-cut/.

[175] "Does Rain Affect WiFi?" WXResearch, May 10, 2023, https://wxresearch.org/does-rain-affect-wifi/.

12.4 Strategies for mitigating climate risks

12.4.1 Hazard mitigation for anticipated BEAD-funded projects in California

BEAD will prioritize fiber optic deployments in California but alternative technologies such as fixed wireless may make up a relatively significant portion of the BEAD deployments, as fixed wireless deployments leverage a lower initial cost and can deploy faster (though they incur higher ongoing maintenance costs and per-subscriber equipment expenses).

Recognizing that Californians rely on their phones and the internet, whether wireline or wireless, to receive emergency communications, the CPUC has led the nation in ensuring that networks are resilient, as the State faces unprecedented climate threats. The CPUC adopted six groups of resiliency strategies for all facilities-based wireless and wireline service providers with facilities located in Tier 2 and Tier 3 high fire threat districts.[176]

Through this work and continuing with its BEAD subgrant deployments, the CPUC will focus on the following:

- Strengthen the ability and preparedness of service providers to maintain a minimum level of communication services and coverage during a disaster or commercial power grid outage events/incidents
- Strengthen service providers' ability to recover from or adjust to adversity or change through an array of strategies
- Ensure the existence of resilient and dependable communications networks aiding first responders
- Ensure the existence of timely and reliable access to essential communication services for the public
- Ensure the capability to assess and identify the weaknesses in service providers' resiliency planning and implementation so that we may develop solutions that will increase safety[177]

[176] See CPUC Resiliency Strategies, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/service-quality-and-etc/communications-network-resiliency. See also CPUC Decisions D.21-02-029 (February 11, 2021), D.20-07-011 (July 1, 2020), and R.18-03-011 (July 16, 2020).

[177] See Id.

12.4.2 Adopted risk mitigation processes

Two decisions in the CPUC's proceeding R.18-03-011,[178] initiated in 2018 to adopt an emergency disaster relief program for customers of utilities under the Commission's jurisdiction, require wireline[179] and wireless[180] communications providers in the State to develop comprehensive resiliency strategies to prepare for disasters and power outages. Providers are required to provide 72 hours of backup power for their facilities in Tier 2 and Tier 3 high fire threat districts in order to maintain minimum service during disasters or electric grid outages.[181]

Providers are also required to file Communications Resiliency Plans with the Commission that detail their ability to maintain a minimum level of service and coverage during a disaster or a commercial power grid outage, and submit annual emergency operations plans that generally require collaboration with the CPUC and the California Governor's Office of Emergency Services during these events.

The CPUC will ask all subgrantee applicants to have a business continuity plan which includes their natural hazard risk mitigation to broadband deployment and ask applicants whose project area includes identified high-risk areas to provide specific responses to how they will incorporate mitigation measures into their deployment planning. Additionally, the CPUC will outline the following among the possible strategies grant participants can engage in to address natural hazard risks:

1. Favoring buried fiber compared to aerial to largely eliminate the above risks in many cases.
2. Retrofitting and hardening existing network assets that are deemed critical to BEAD expansion projects.
3. Favoring redundancy in network designs to reduce single points of failure.
4. Considering average down time and emergency response time in applicant selection.
5. Encouraging the use of backup generator power systems where applicable.

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[178] R.18-03-011, Order Instituting Rulemaking Regarding Emergency Disaster Relief Program, https://apps.cpuc.ca.gov/apex/f?p=401:56::::::.

[179] Decision 21-02-029, Decision Adopting Wireline Provider Resiliency Strategies, issued February 18, 2021, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M366/K625/366625041.PDF.

[180] Decision 20-07-011, Decision Adopting Wireless Provider Resiliency Strategies, issued July 20, 2020, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M344/K021/344021480.PDF.

[181] Wireline providers were mandated to implement this requirement within 18 months of the effective date of the decision (February 11, 2021) for all facilities in Tiers 2 and 3 high fire threat districts, with an earlier timeline for certain facilities (e.g., critical facilities, those providing service to wireless networks, and those in areas without sufficient wireless service coverage.) Wireless providers were required to implement the backup power requirement within 12 months from the effective date of the corresponding decision (July 16, 2020). See D. 21-02-029 and D. 20-07-011.

12.5 Processes to ensure that evolving risks are continuously understood, characterized, and addressed

The State is updating the SHMP as of the writing of this Proposal.

The 2018 SHMP is just under 1,100 pages, and the 2023 SHMP, in its current form, is almost 2,000 pages. While the SHMP is an important document with wide applications across the State, its length and its complex or technical content may deter potential stakeholders from utilizing the SHMP to support their efforts.

To address this, the 2023 SHMP includes several strategies to increase the usability of, accessibility of, and ability to socialize the Plan. Such strategies include but are not limited to writing in plain language, using visualizations, separating highly technical information into appendices, and including a detailed glossary. Additionally, the 2023 SHMP is split into two volumes. The first volume is the core plan that provides crucial information utilizing plain language that emphasizes readability. The second volume consists of multiple technical appendices, data tables, and a glossary that support and expand upon the information in the first.[182]

[182] "2023 State Hazard Mitigation Plan Update: Face Sheet and FAQs," Cal OES, https://osfm.fire.ca.gov/media/gkcjexiq/2023-shmp-update_fact-sheet-and-faqs.pdf.

13 Low-cost broadband service option (Requirement 16)

This section describes the CPUC's plans to ensure that all residents will have access to affordable broadband service options.

Affordable broadband service, while not the primary barrier to internet adoption in California, nevertheless presents a meaningful challenge to connectivity for many California residents. In the State of California, low-income individuals are 14 percentage points less likely than higher-income individuals to have a home internet subscription of any kind[183]—highlighting the connection between affordability and internet adoption.

The American Community Survey reports that 94 percent of California residents have a home internet subscription of any kind which—while outperforming the national rate by roughly 2 percentage points[184]—still indicates that a sizable number of California households are disconnected from the internet at home. Accordingly, among California households that do not subscribe to internet service of any kind, an estimated 13 percent report that a primary reason they do not subscribe to an internet service at home is an inability to afford service.[185]

The CPUC has developed a solid foundation to incorporate broad considerations of affordability into its policies and regulations, including this BEAD program design, through its Rulemaking to Establish a Framework and Processes for Assessing the Affordability of Utility Service (R.18-07-006).[186] This proceeding provides the CPUC with tools to address affordability with a long-term

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[183] U.S. Census Bureau, American Community Survey Public Use Microdata, 2022, 1-year estimate (accessed October 24, 2023).

[184] U.S. Census Bureau, American Community Survey, 2022, 1-year estimate (accessed October 24, 2023).

[185] U.S. Census Bureau, Current Population Survey Public Use Microdata, November 2021 (accessed October 24, 2023).

[186] R.18-07-006, initiated by "Order Instituting Rulemaking to Develop Methods to Assess The Affordability Impacts Of Utility Rate Requests And Commission Proceedings" issued July 23, 2018, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M218/K186/218186836.PDF. Phase 1 of the proceeding concluded with Decision 20-07-032, "Decision Adopting Metrics and Methodologies for Assessing the Relative Affordability of Utility Service," issued July 22, 2020, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M344/K049/344049206.PDF. Phase 2 concluded with Decision 22-08-023, "Decision Implementing the Affordability Metrics," issued August 9, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M496/K428/496428621.PDF. Phase 3 focuses on energy and strategies to mitigate future rate increases; see, "Assigned Commissioner's Ruling Amending Ruling of May 20, 2022 and Further Updating Proceeding Schedule for Phase 3 of Proceeding," issued June 9, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M483/K864/483864886.PDF.

perspective and to monitor and adjust its policies as the economic landscape and communications marketplace both change over time.

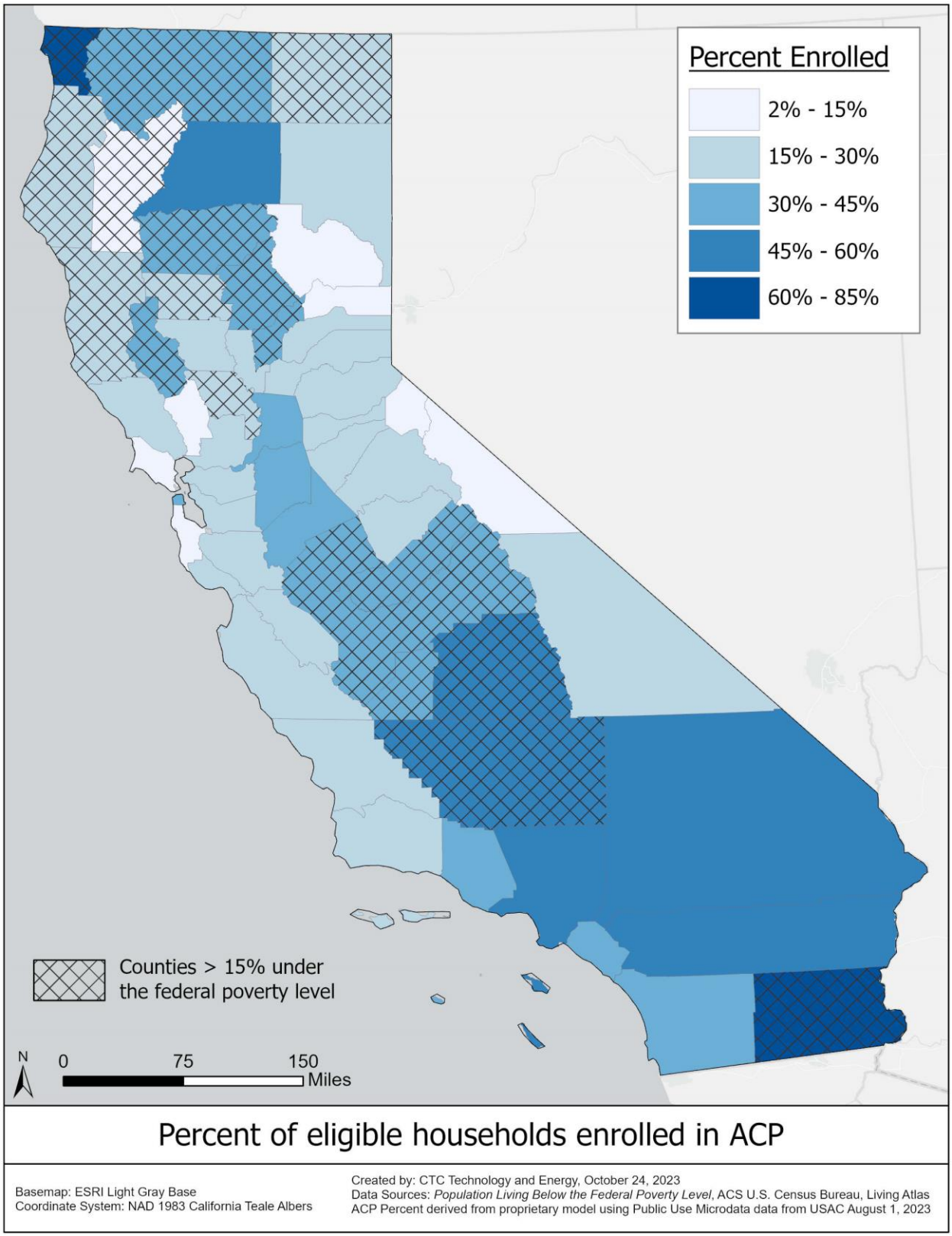
The Affordability rulemaking declares that consumers need affordable utility services, including communications services, to ensure health, safety, and participation in society; and examines the impact of service charges for essential services on residential households at various socioeconomic levels. It adopts minimum standards defining communications "essential service" and a mechanism for updating the standards as consumer needs and technology advances. It also develops a framework for monitoring the affordability of communications essential service, including analysis of the CPUC's communications public purpose programs that support affordability and adoption and applying adopted affordability metrics to measure the effectiveness of the programs.

13.1 Low-cost broadband service options that must be offered and why the options best serve the needs of California residents

Perhaps the most widely recognized intervention to lower the cost of internet service is the FCC's Affordable Connectivity Program (ACP), which subsidizes up to $30 per month (or $75 for Tribal applicants) for broadband for qualifying households and may include a one-time subsidy toward buying a laptop or tablet. Nevertheless, despite the benefit of the subsidy, the ACP is known to be greatly underutilized nationwide. In California, about 40 percent of eligible households had enrolled in the ACP as of August 2023[187]—slightly above the national rate of 36 percent but representing a significant number of households that had not enrolled. Figure 20 shows the percentage of households by county enrolled in the program.

[187] Estimate accurate as of August 1, 2023, the most recent date for which county-level data were available. Enrollment counts from USAC's ACP Enrollment and Claims Tracker, https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/; estimates of eligible households based on proprietary model that uses American Community Survey Public Use Microdata to estimate number of households qualifying for ACP via several of its eligibility criteria.

Figure 20: ACP enrollment by county in California



The CPUC, CDT, CETF, and other Broadband Council members are driving and tracking enrollment in the ACP through the Get Connected CA! statewide mobilization effort.

In addition, 15 State and local entities have received almost $6 million in FCC ACP outreach grants to raise awareness, conduct direct notification, and provide enrollment assistance in the ACP program. CDT, CETF, and numerous local entities are grant recipients. The nonprofit EducationSuperHighway also partnered with the San Francisco Mayor's Office of Housing and Community Development (MOHCD) and over two dozen community organizations to launch a local ACP enrollment initiative ("Connect San Francisco") in May 2023.[188]

Additionally, there are many ISPs operating in California that offer plans at low to no cost for eligible subscribers who enroll in the ACP. Some of these ISPs include Comcast,[189] Verizon,[190] Cox Communications,[191] Spectrum/Charter,[192] AT&T,[193] Frontier Communications,[194] Mediacom LLC,[195] and City Communications Inc./Tone Communications. [196]

Beyond the ACP, including planning for a scenario where ACP may sunset, the CPUC is incorporating affordability benchmarks and discounts on high-speed services through existing State grant programs it administers including the California Advanced Services Fund (CASF)[197] and Federal Funding Account (FFA).[198]

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[188] "Mayor's Office of Housing and Community Development Launches Citywide Initiative to Increase Affordable Connectivity Adoption Program," City of San Francisco news release, May 11, 2023, https://sf.gov/news/mayors-office-housing-and-community-development-launches-citywide-initiative-increase.

[189] Application for Internet Essentials plan, https://apply.internetessentials.com/; "Internet Essentials," Comcast, https://www.xfinity.com/learn/internet-service/internet-essentials.

[190] "Free Internet with the Verizon Forward Program and ACP," Verizon, https://www.verizon.com/home/free-verizon-internet/.

[191] "Get Low-Cost Internet Options as Low as Free," Cox Communications, https://www.cox.com/residential/internet/low-cost-internet-plans.html.

[192] "Spectrum Internet Assist," Spectrum, https://www.spectrum.com/internet/spectrum-internet-assist.

[193] "Access from AT&T," AT&T, https://www.att.com/internet/access/.

[194] "Fundamental Internet," Frontier Communications, https://frontier.com/fundamental-internet.

[195] "Mediacom is proud to participate in the Affordable Connectivity Program (ACP) and help more people connect with high-speed internet," Mediacom Cable, https://mediacomcable.com/acp/.

[196] "Home," City Communications, Inc., https://citycom.co/.

[197] For more details, see the CPUC's website, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/california-advanced-services-fund.

[198] For more details, see the CPUC's website, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/last-mile-federal-funding-account/ffa-application-resources-page.

People in California can also apply for the California LifeLine Program, which provides a maximum monthly subsidy of $17.90 to low-income qualified participants for wireline or mobile voice and broadband services.[199] The program works in tandem with the federal Lifeline program, which provides a monthly subsidy of up to $9.25 for telephone and broadband services and is administered by the Federal Communications Commission. The CPUC makes information about these programs readily available on its website[200] and on a website for the program.[201]

Two LifeLine pilot programs launched in June 2023—one for wireline broadband services and one for wireless broadband services—that enable service providers to combine the California LifeLine and federal ACP subsidies.[202] Pilot participants may access up to $57.15 (and up to $127.15 on Tribal lands) of combined federal and State support for standalone broadband service or bundled broadband and voice service plans.

The State of California is committed to providing residents with the opportunity to receive low-cost broadband service, while simultaneously recognizing that ISPs have a variety of different plans and may be unable to alter their pricing structure on a large scale. Based on previous experience, it is highly unlikely that ISPs would implement different pricing structures for BEAD-funded areas only, while maintaining other pricing in areas that are not BEAD-funded. That said, the rules adopted by the CPUC for the Federal Funding Account grant program encourage applicants to offer a "generally available low-cost broadband plan" that must cost no more than $40 per month,[203] resulting in a cost of $10 with the use of the $30 ACP subsidy. Due to the critical importance of affordability in achieving the goals of the BEAD program, California will require a Low-Cost Broadband Service Option that results in no cost to ACP-eligible customers, who are among the most vulnerable and highest priority customers for addressing the digital divide.

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[199] Notice of Specific Support Calculation for 2023, CPUC administrative letter, November 9, 2022, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/lifeline/notices-for-carriers/admin-letters/ssa/ssaadministrativeletter2023.pdf.

[200] "California LifeLine Program," CPUC, https://www.cpuc.ca.gov/consumer-support/financial-assistance-savings-and-discounts/lifeline.

[201] California LifeLine, https://www.californialifeline.com/en.

[202] "CPUC Advances Broadband Affordability and Access in California," CPUC news release, June 8, 2023, https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-advances-broadband-affordability-and-access-in-california-2023.

[203] Adopted by the CPUC in Decision 22-04-055 in Rulemaking 20-09-001, "Decision Adopting Federal Funding Account Rules," issued April 22, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M470/K543/470543650.PDF. In the decision, the CPUC declined to adopt a definition for "affordability" that is different from the Commission Rulemaking to Establish a Framework and Processes for Assessing the Affordability of Utility Service (R.18-07-006); see, Decision 22-04-055, p. 66.

The CPUC thus proposes to require all subgrantees to offer a service option that meets, at a minimum, the following criteria:

- Will be available to all households that meet the eligibility requirements of the federal Affordable Connectivity Program
- Cost of $30 per month or less ($75 per month or less on Tribal lands), inclusive of all government taxes and fees, with application of an annual inflation factor based on the Producer Price Index for the State of California
- Available to households with income equal to or below 200 percent of the federal poverty line
- Allows the end user to apply the ACP subsidy to the cost of service and encourages ISPs to ensure that prospective customers are aware of their participation in the ACP
- Meets performance requirements as established by the BEAD program, with download speeds of at least 100 Mbps and upload speeds of at least 20 Mbps
- Delivers typical latency of no more than 100 milliseconds
- Is not subject to data caps, surcharges, or usage-based throttling, and is subject only to the same acceptable use policies to which subscribers to all other broadband internet access service plans offered to home subscribers by the participating subgrantee must adhere
- Allows subscribers to upgrade at no cost in the event the provider later offers a low-cost plan with higher speeds (downstream or upstream)
- Does not charge a fee for installation or setup
- Provides a free modem or router
- Does not require a minimum term of service

Subgrantees should offer a low-cost plan subject to these requirements for the life of the infrastructure, but may submit a request to the CPUC to waive or modify these requirements in the future should the need arise. The Commission will update these requirements as needed.

Additionally, due to the uncertainty surrounding the continued availability of funding for the ACP, the CPUC will require subgrantees to offer the Low-Cost Broadband Service Option at a price of $15 per month for all income-qualified customers if ACP funding is expended and no successor program guaranteeing an equivalent subsidized price of service for eligible customers is established.

13.2 Certification

The CPUC hereby certifies that:

☑ All subgrantees will be required to participate in the Affordable Connectivity Program or any successor program

14 Middle-class affordability plans

This section describes the CPUC's middle-class affordability plan designed to ensure that a BEAD-funded network's service area provides high-quality broadband service to all middle-class households at reasonable prices.

The CPUC will continue to monitor the affordability of available service options within the State and encourage providers to offer a range of options that support broadband adoption by residents regardless of income level and reduce the burden on lower-income subscribers.

As discussed above, the CPUC's Rulemaking to Establish a Framework and Processes for Assessing the Affordability of Utility Service (R.18-07-006), initiated in July 2018 and active as of the submission of this Proposal,[204] has established a framework for assessing the affordability of utility services in California, including broadband services.[205]

The Commission defines affordability as the degree to which a representative household is able to pay for an essential utility service charge, given its socioeconomic status. The proceeding establishes minimum essential service levels (25 Mbps downstream and 3 Mbps upstream in the case of broadband), metrics to evaluate affordability as defined by the Commission over time, and how the CPUC will apply the framework in its analysis and proceedings.[206]

Established thresholds for the affordability of other essential utilities have traditionally been set as a percentage of household income based on measures of housing affordability by the Department of Housing and Urban Development (HUD).[207] As noted by the National Academy of Public

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[204] R.18-07-006, https://apps.cpuc.ca.gov/apex/f?p=401:56::::RP,57,RIR:P5_PROCEEDING_SELECT:R1807006 (accessed October 24, 2023).

[205] "Assigned Commissioner's Amended Scoping Memo And Ruling," filed on November 8, 2019, confirms that communications services including broadband internet access are a proper subject of the Commission's affordability analysis, finding that Pub. Util. Code Sections 709, 280, 281, 275.6, and the Moore Universal Telephone Service Act (Section 871) all demonstrate that the Legislature contemplated a significant role for the Commission in closing the digital divide in California and this proceeding may assist in that goal. See, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M319/K288/319288252.PDF, p. 3.

[206] "Affordability," CPUC, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability.

[207] HUD includes essential utilities (defined as electricity, gas, heating fuel, water, and sewerage services) within its definition of housing cost. Since 1981, public policy has conventionally set the threshold for an affordable housing cost at 30 percent of a household's income; the affordability of individual utility bills is then understood as a subset of that cost. See, Schwartz, Mary and Wilson, Ellen, "Who Can Afford To Live in a Home?: A look at data from the 2006 American Community Survey," U.S. Census Bureau, https://cdn2.hubspot.net/hubfs/4408380/PDF/General-Housing-Homelessness/who-can-afford.pdf.

Administration,[208] the United States Conference of Mayors,[209] and the American Water Works Association,[210] however, considering affordability as a simple percentage of income can disregard differential burdens placed on low-income households. The CPUC finds that "ultimately, the ability to pay for a utility service is determined by the numerous financial variables that comprise a household's socioeconomic status."[211] In measuring affordability, it will work to monitor the impact of broadband costs on communities at the highest risk of disconnection.

Addressing middle-class affordability also requires a definition of middle class. Multiple frameworks exist within established research[212] to accommodate the complexity of the concept, which contains the overlap of factors including income, education, occupation, and geographic location.

California classifies low-income households according to the federal poverty guidelines published by the U.S. Department of Health and Human Services,[213] but does not have an official definition of middle class. Median household income can serve as a useful benchmark for the State: according to data from the U.S. Census Bureau, the median household income in California was $84,097 in 2021.[214]

However, as recognized by the CPUC's framework, affordability is more than merely the concern of whether residents can afford service. Rather, affordability in the context of middle-income homes is also inclusive of residents who can afford service, in theory, but nonetheless struggle with the financial burden. According to the U.S. Census Bureau's 2021 Current U.S. Population Survey, approximately 3 percent of California residents that do not subscribe to internet service at home reported that the primary reason is that internet service is "not worth the cost."[215] This figure, while not high, highlights the still notable number of California residents that are held back by financial concerns beyond simply being able to afford the service at face value. As such, the broader notion

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[208] See, https://napawash.org/uploads/Academy_Studies/NAPA_EPA_FINAL_REPORT_110117.pdf.

[209] See, https://www.awwa.org/Portals/0/AWWA/ETS/Resources/AffordabilityAssessmentTool.pdf.

[210] See, https://www.awwa.org/Portals/0/AWWA/Government/ImprovingtheEvaluationofHouseholdLevelAffordabilityinSDWARulemakingNewApproaches.pdf.

[211] CPUC Decision 20-07-032, issued July 22, 2020, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M344/K049/344049206.PDF, p. 9.

[212] See, for example, the Pew Charitable Trust Index; https://www.pewtrusts.org/en/research-and-analysis/articles/2023/08/30/is-broadband-affordable-for-middle-class-families.

[213] These guidelines determine eligibility for a variety of federal and state assistance programs, including Medicaid, the Supplemental Nutrition Assistance Program (SNAP), and the Low Income Home Energy Assistance Program (LIHEAP). See: "HHS Poverty Guidelines for 2023," https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.

[214] "QuickFacts: California," U.S. Census Bureau, https://www.census.gov/quickfacts/fact/table/CA/PST045222.

[215] U.S. Census Bureau, Current Population Survey Public Use Microdata, November 2021 (accessed August 29, 2023).

of affordability fundamentally demonstrates the manner in which middle-income households are frequently disincentivized from participating in the digital economy.

The CPUC will encourage providers to offer price points that accommodate subscribers' ability and desire to pay for reliable, high-speed service through a range of solutions, including but not limited to making publicly available to consumers and monitoring benchmarks for affordability through the publication of its Annual Affordability Report;[216] providing subsidies for broadband service; encouraging providers to extend low-cost service options to all subscribers; and promoting structural competition through regulations.

As discussed in Section 5.3, the CPUC will also weight affordability criteria in the scoring of its BEAD grant program. Applicants will receive up to 40 points for a clear and unambiguous commitment to offer a symmetrical 1 Gbps service at $50 per month to BEAD-funded locations through Priority Broadband Projects, or 100/20 Mbps at $30 per month to BEAD-funded locations through other last-mile projects.[217]

To support increased adoption of broadband, the State must ensure residents have access to reliable service. To that end, the CPUC seeks to effectively address affordability for middle-class subscribers without restricting providers' participation in BEAD—which could lead to higher-cost awards and fewer residents that are served Priority Broadband.

Accordingly, the CPUC plans to manage middle-class affordability within the context of the BEAD program by addressing the following areas of risk:

- **Small, local providers propose low requested BEAD support but set high subscription costs:** The CPUC will encourage ISPs participating in the State BEAD grant program to offer their best price to areas they serve with grant funding for analogous products they offer in other areas, in alignment with the gigabit best offered pricing requirement in the BEAD program rules. (ISPs should include current pricing through the subgrantee selection process, and a rigorous financial proficiency test will be built into the letter of credit and subgrantee selection process.)
- **Providers shift drop and installation costs to the consumer to recover capital costs:** Grant participation rules will make clear that drops and network equipment are eligible BEAD costs and should be built into grant proposals to avoid inflated subscriber prices. The CPUC expects this risk to be somewhat mitigated by expanding competition in rural areas from 5G home internet and LEO satellite options.

[216] "2021 and 2022 Annual Affordability Refresh," CPUC, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability/2021-and-2022-annual-affordability-refresh.

[217] Costs must be inclusive of all fees.

- **Providers refuse to provide service to expensive locations:** The CPUC will monitor and ensure that awardees make good on their BEAD service commitments, including not assessing additional fees beyond standard installation fees.
- **Differential pricing between urban and new project areas:** The gigabit best pricing policy mandated in the BEAD program scoring matrix sets requirements around geographic non-discrimination.

The State of California is committed to establishing policies that would ultimately lead to more widespread affordability among middle-income residents. This holistic commitment to expanding the adoption of broadband throughout California necessitates the accommodation and partnership of subgrantees. In doing so, the State increases the likelihood of ISP participation and, in effect, will provide middle-income California residents a genuine opportunity to be fully engaged in the digital world.

15 Use of 20 percent of funding (Requirement 17)

The purpose of this section is to identify whether the Eligible Entity intends to access Initial Proposal funding and describe how the Eligible Entity intends to use the funding allocation that is made available upon approval of the Initial Proposal, contingent on specific guidelines outlined in the BEAD NOFO.

15.1 Planned use of funds requested

California requests that NTIA obligate 100 percent of the funds remaining of its BEAD allocation, with 2 percent of funds available immediately for administrative and programmatic costs. The CPUC, working closely with its partners from Tribal and local governments, industry and community organizations, and other stakeholders, will use the funding to begin closing the digital divide as quickly as possible. With 100 percent of the funding obligated, these partners will have the assurance they need to invest appropriate time and resources to participate fully in the CPUC's grant processes. These assurances will allow the CPUC and its partners to move to broadband deployment more efficiently.

The CPUC provides that the State may budget its BEAD allocation in four expense categories: Deployment, Non-Deployment, Administrative and Programmatic. Accordingly, the CPUC requests 100 percent of its remaining BEAD allocation as follows:

Table 42: Planned use of funds requested

Category	Details	Budget percent
Deployment Costs	Sample Subgrantee costs for deployment	96%
Programmatic Expenses	BEAD Planning, Challenge Process, IT Systems to run Challenge and Grant Applications, Subgrantee Selection Process Development and Management	2%
Administrative Expenses	Staffing, travel, day-to-day monitoring and oversight of subgrantees, training staff, subgrantees and public, ongoing stakeholder communications	2%
Non-Deployment Expenses	Workforce program, digital opportunity program supplementation, training and capacity building	0%

Given that California anticipates its BEAD allocation will not cover broadband deployment expenses to reach to all unserved, underserved, and CAIs, it will not initially request funds for non-

deployment activities. However, if the CPUC has remaining funds after running a competitive grant process, it will amend its budget as part of its final proposal.

15.2 Amount of Initial Proposal funding request

California requests 100 percent of the funds remaining of its BEAD allocation of $1,864,136,508.93.

15.3 Certification

The CPUC hereby certifies that:

☑ The CPUC will adhere to BEAD program requirements regarding Initial Proposal funds usage.

16 The CPUC's regulatory approach (Requirement 18)

California does not restrict public sector providers from providing broadband services and will not limit such providers' participation in the subgrant process or impose specific requirements and limitations on public sector entities. Therefore, a waiver of State law is not applicable.

17 Certification of compliance with BEAD requirements (Requirement 19)

17.1 Certification of compliance

The CPUC hereby certifies that it will:

☑ Comply with all applicable requirements of the BEAD program, including the reporting requirements

The CPUC would like to avail subgrantees of the Part 200 exceptions and adjustments NTIA applies in the BEAD program. Should any revisions to this Initial Proposal be needed to accomplish this, the CPUC would like an opportunity to make those revisions.

17.2 Subgrantee accountability procedures

17.2.1 Overview

In creating the BEAD program through the Infrastructure Investment and Jobs Act (IIJA), Congress made a once in a lifetime investment in connectivity and digital equity/opportunity. The State is committed to ensuring that everyone has access to broadband and the ability to use it meaningfully. The CPUC, in executing the BEAD program, will work diligently to ensure the success of all its recipients' projects.

The CPUC has a long history of issuing and overseeing broadband deployment grants. It has always taken its role as a steward of federal funding seriously and will continue to do so for subgrants issued under BEAD. The CPUC has robust programmatic monitoring, including effective risk-based assessments and active interventions to make sure its subgrantees meet BEAD and the State's goals. The CPUC will actively protect this investment, at a minimum, using the following criteria: risk-based oversight and engagement, distribution of funding on a reimbursement basis, appropriate provisions to claw back funds from subgrantees if needed, timely reporting requirements and robust subgrantee monitoring.

17.2.2 Risk-based monitoring

The CPUC will establish a manageable approach to its risk-based management that is pragmatic, yet effective. It is in the best interest of the State for subgrantees to successfully complete their projects and offer broadband service to those who need it most. To that end, the CPUC will review the organizational, financial, and technical strengths of each subgrantee. Then, it will assign a risk

category and appropriate monitoring and technical assistance resources. The CPUC will monitor individual grants, but it will also monitor the portfolio using program-wide data to ensure early intervention when it finds overarching issues.

17.2.3 Fraud, waste, and abuse

In California, the Attorney General's Corporate Fraud Section investigates and prosecutes cases involving fraud and other financial wrongdoing perpetrated against the State.[218] The CPUC also operates a whistleblower hotline.[219] The CPUC will also utilize federal reporting mechanisms such as the U.S. Department of Commerce's Inspector General hotline.[220]

17.2.4 Distribution of funds on a reimbursement basis

Although most federal grants allow grantees and subgrantees to obtain an advanced payment to cover grant-related expenses, the CPUC will indicate clearly in its guidance and through its award documentation that its BEAD subgrants will be issued on a reimbursement-only basis. The CPUC will require the following from subgrantees before dispersing BEAD funds:

- Reaching grant milestones
    - The CPUC will require the timely reporting of the completion of grant milestones, according to the plan outlined in Section 5 (Requirement 8).
- Providing compliant documentation
    - The CPUC will require subgrantees to support a request for reimbursement through a certification and a submittal of as-builts and GIS location data, which will be verified according to procedures outlined in the contracting documents. The CPUC will ensure that it has a right to access documents and physical assets in a manner similar to that employed by the federal government in broadband grant programs.
- Payment Schedule
    - Reimbursement will occur using a milestone process (based on percentage of completion
    - Reports are required with invoices and other proof of expenses prior to payment

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[218] "False Claims Unit," Office of the Attorney General, California Department of Justice, https://oag.ca.gov/cfs/falseclaims.

[219] "Whistleblower Complaint," CPUC, https://www.cpuc.ca.gov/consumer-support/file-a-complaint/whistleblower-complaint.

[220] "Report Fraud, Waste, Abuse, & Whistleblower Reprisal," Office of the Inspector General, U.S. Department of Commerce, https://www.oig.doc.gov/Pages/Hotline.aspx.

  - The CPUC may conduct a financial audit at any time within 3 years of completion of project

- Execution and performance
  - The CPUC may withhold grant payments or terminate the award with 10 days' notice if the awardee does not follow the project plan, including commencement of work within six months or completion of project within 24 months

17.2.5 Claw back provisions

The CPUC will work with its legal advisors to ensure its grant awards contain claw back provisions. In other words, if the subgrantee fails to meet its obligations under the award, including those provided in the application, the CPUC can deny a reimbursement request, require partial or full forfeiture of BEAD funds, or issue financial penalties for fraud, misconduct, or non-performance. For these purposes, the CPUC considers performance to include effective, timely broadband deployment, continuing to offer low-cost service options for the useful life of the assets, meeting reporting deadlines, providing accurate deployment data, and fulfilling all additional BEAD requirements such as broadband speeds.

17.2.6 Timely reporting requirements

CPUC will require subgrantees to report on their awards on a timely basis to identify and mitigate risks to ensure both the CPUC's and subgrantees' compliance with statutory and BEAD requirements. These reports include:

- Regular check-ins with the CPUC to discuss the project progress
- Periodic reporting on project progress and fiscal performance
- Responses to intermittent requests from CPUC about the project
- On-site inspections

17.2.7 Robust subgrantee monitoring

The CPUC will use various monitoring activities that produce data about subgrantee performance and progress to assess individual and portfolio risks and inform CPUC decisions about targeting technical assistance, corrective action or enforcement actions as needed. Such activities include:

- Desk reviews – periodic review of subgrantees' progress and financial reports designed to ensure that CPUC 's own reports to NTIA contain timely information.
- Field engineering reviews or audits – engineering teams evaluate constructed segments and full projects against as-built reporting and application requirements.

- Site visits – periodic visits using a standardized agenda to capture first-hand observations of recipient performance along various dimensions, including subgrantee capacity, performance validation, safety practices, and employment practices.

In reviewing its portfolio, the CPUC will establish and update monitoring levels for its projects based on factors including performance reporting, desk reviews, and CPUC interactions.

17.3 Certification of nondiscrimination and civil rights

The CPUC certifies that it will, in its selection of subgrantees, account for:

☑ Parts II and III of Executive Order 11246, Equal Employment Opportunity

☑ Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency

☑ Executive Order 13798, Promoting Free Speech and Religious Liberty

Additionally, prior to distributing any BEAD funding to a subgrantee, the CPUC will require the subgrantee to agree, by contract or other binding commitment (to be determined by counsel), to abide by the non-discrimination requirements set forth in the following legal authorities, to the extent applicable, and to acknowledge that failure to do so may result in cancellation of any award and/or recoupment of funds already disbursed:

☑ Title VI of the Civil Rights Act

☑ Title IX of the Education Amendments of 1972

☑ The Americans with Disabilities Act of 1990

☑ Section 504 of the Rehabilitation Act of 1973

☑ The Age Discrimination Act of 1975

☑ Any other applicable non-discrimination law(s)

17.4 Certification of cybersecurity and supply chain risk management

The CPUC certifies that it will ensure subgrantee compliance with the cybersecurity requirements of the BEAD NOFO to require prospective subgrantees to attest that:

☑ The prospective subgrantee has a cybersecurity risk management plan (hereafter in this list, "the plan") in place that is either: (a) operational, if the prospective subgrantee is providing service prior to the award of the grant; or (b) ready to be operationalized upon providing service, if the prospective subgrantee is not yet providing service prior to the grant award.

☑ The plan reflects the latest version of the National Institute of Standards and Technology (NIST) Framework for Improving Critical Infrastructure Cybersecurity (currently Version 1.1) and the standards and controls set forth in Executive Order 14028 and specifies the security and privacy controls being implemented.

☑ The plan will be reevaluated and updated on a periodic basis and as events warrant.

☑ The plan will be submitted to CPUC prior to the allocation of funds. If the subgrantee makes any substantive changes to the plan, a new version will be submitted to CPUC within 30 days.

The CPUC further certifies that it will ensure subgrantee compliance with the supply chain risk management (SCRM) requirements of the BEAD NOFO to require prospective subgrantees to attest that:

☑ The prospective subgrantee has a SCRM plan (hereafter in this list, "the plan") in place that is either: (a) operational, if the prospective subgrantee is already providing service at the time of the grant; or (b) ready to be operationalized, if the prospective subgrantee is not yet providing service at the time of grant award.

☑ The plan is based upon the key practices discussed in the NIST publication NISTIR 8276, Key Practices in Cyber Supply Chain Risk Management: Observations from Industry and related SCRM guidance from NIST, including NIST 800-161, Cybersecurity Supply Chain Risk Management Practices for Systems and Organizations and specifies the supply chain risk management controls being implemented.

☑ The plan will be reevaluated and updated on a periodic basis and as events warrant.

☑ The plan will be submitted to CPUC prior to the allocation of funds. If the subgrantee makes any substantive changes to the plan, a new version will be submitted to the CPUC within 30 days. The CPUC will provide a subgrantee's plan to NTIA upon NTIA's request.

The CPUC will ensure that, to the extent a BEAD subgrantee relies in whole or in part on network facilities owned or operated by a third party, it will obtain the above attestations from its network provider with respect to cybersecurity practices and supply chain risk management practices.

California's computer security operations are led by Cal OES' California Cybersecurity Integration Center (Cal-CSIC).[221] Its primary mission is to reduce the likelihood and severity of cyber incidents that could damage California's economy, its critical infrastructure, or public and private sector computer networks in California.

[221] "California Cybersecurity Integration Center," Cal OES, https://www.caloes.ca.gov/office-of-the-director/operations/homeland-security/california-cybersecurity-integration-center/.

The State of California has some of the best logistics infrastructure in the world.[222] California is home to the most productive system of ports in the country. This includes three of the country's largest container ports and a diverse system of specialty ports. In 2017, railroads handled 162.3 million tons of freight that originated in, terminated in, or moved through California by rail. Freight rail is a safe, affordable, and environmentally friendly way to ship cargo. The 2018 California State Rail Plan establishes a long-term vision for prioritizing State investment in an efficient freight rail system. The size of the Southern and Northern California markets makes the State a good fit for major air cargo hub locations.

In summary, California's freight network is a vital economic force that connects the State to the rest of the country and the world. California has one of the country's most extensive, complex, and interconnected freight systems in the nation.

[222] See, "Supply Chain," Governor's Office of Business and Economic Development (GO-Biz), https://business.ca.gov/advantages/supply-chain/.

Appendix A: Local coordination tracker tool

This tracker follows NTIA's template (https://broadbandusa.ntia.doc.gov/assistance/local-coordination). See Section 4 for more details.

Appendix B: Schedule of public engagements

This appendix contains the schedule of public engagements the CPUC facilitated to conduct stakeholder outreach and engagement during the development of the Five-Year Action Plan and this Initial Proposal Volume II.

Table 43: Schedule of public engagements

Date	Region	Location	CPUC and CDT's organizing partners
Apr 14, 2023	North San Joaquin Valley	Merced College 3600 M Street, Merced	San Joaquin Valley Regional Broadband Consortium (SJVRBC), Central Valley Higher Education Consortium (CVHEC)
Apr 15, 2023	Central and South San Joaquin Valley	Fresno City College 1101 E University Avenue, Fresno	San Joaquin Valley Regional Broadband Consortium (SJVRBC)
Apr 21, 2023	Southern Border	San Diego Central Library 330 Park Blvd, San Diego	San Diego Association of Governments (SANDAG), Imperial Valley Economic Development Corporation (IVEDC), Imperial County Transportation Commission (ICTC), Southern Border Broadband Consortium (SBBC)
Apr 27, 2023	Northeastern - Upstate	Chico Masonic Family Center 1110 W East Avenue, Chico	North State Planning and Development Collective, CSU Chico, Northeastern and Upstate Regional Broadband Consortiums
Apr 28, 2023	North Bay North Coast	Santa Rosa Veterans Building 1351 Maple Ave, Santa Rosa	North Bay North Coast Broadband Consortium, consisting of Marin County, Mendocino County, Napa County, and Sonoma County
May 3, 2023	Redwood Coast	Jefferson Community Center 1000 B St., Eureka	Redwood Coast Connect Consortium, Redwood Coast Economic Development Commission, Access Humboldt

Date	Region	Location	CPUC and CDT's organizing partners
May 5, 2023	San José/Santa Clara County	Santa Clara County Office of Education 1290 Ridder Park Dr, San José	City of San José (City), County of Santa Clara (County), Santa Clara County Office of Education (SCCOE), Joint Venture Silicon Valley (JVSV)
May 11, 2023	Capital Area/ Sacramento	Sacramento Central Library 828 I Street, Sacramento	Valley Vision, Capital Region Coalition for Digital Inclusion (CRCDI), Connected Capital Area Broadband Consortium (CCABC), consisting of Sacramento County, Sutter County, Yolo County, and Yuba County
May 12, 2023	Gold Country	Grass Valley Veterans Memorial Building 255 S Auburn St, Grass Valley	Sierra Business Council, Gold Country Broadband Consortium, consisting of El Dorado County, Nevada County, Placer County, and Sierra County
May 16, 2023	Inland Empire (San Bernardino/ Riverside)	CSU San Bernardino 5500 University Pkwy, San Bernardino	Inland Empire Regional Broadband Consortium (IERBC), the County of San Bernardino (CSB), the County of Riverside
May 19, 2023	Los Angeles	LA Trade Tech Campus 400 W Washington Boulevard, Los Angeles	Los Angeles Digital Equity Action League (LA DEAL)
May 20, 2023	Los Angeles (Long Beach)	Veterans Park Social Hall 101 East 28th Street, Long Beach	Southern California Association of Governments (SCAG)
May 24, 2023	Orange County	Orange County Administration South Building 601 North Ross Street, Santa Ana	County of Orange and Orange County Business Council (OCBC)
May 30, 2023	Central Sierra	Tuolumne County Resiliency Center 18241 Bay Avenue, Tuolumne	Central Sierra Broadband Utility Zone, consisting of Alpine County, Amador County, Calaveras County, Mariposa County, and Tuolumne County
Jun 1, 2023	Pacific Coast	Hancock College 800 S College Drive, Santa Maria	Economic Development Collaborative (EDC), Santa Barbara Foundation (SBF)

Date	Region	Location	CPUC and CDT's organizing partners
Jun 2, 2023	Central Coast	CSU Monterey Bay 4314 6th Avenue, Seaside	Monterey Bay Economic Partnership (MBEP), The Central Coast Broadband Consortium (CCBC), consisting of Monterey County, San Benito County, and Santa Cruz County
Jun 8, 2023	Bay Area	Oakstop – The Broadway Event Hall 2323 Broadway Avenue, Oakland	#OaklandUndivided, the East Bay Economic Development Alliance (EBEDA), Tech Exchange, City of San Francisco Digital Equity, San Francisco Tech Council

CPUC – CDT BEAD workshops flyer

CPUC and CDT Announce Broadband for All, Digital Equity, and BEAD Regional Planning Workshops

The internet is now an essential part of everyday life. Yet one out of five Californians lack access to affordable, reliable broadband service, devices, and the skills to use them.

Millions in our state are unable to access essential government services and realize other social and economic benefits that most others enjoy due to the impact of digital equity barriers. This gap is referred to as the "digital divide," and most affects those in low-income households, seniors, the disabled, veterans, incarcerated individuals, members of racial and ethnic minority groups, those with language barriers and low levels of literacy, tribal communities, and rural residents.

Broadband for All is the state's overarching program to close the digital divide and foster digital equity in our communities. The state has invested billions of dollars to achieve Broadband for All and ensure that every resident has access to economical and dependable internet, devices, and skills training. However, more needs to be done.

The State Digital Equity team led by the California Department of Technology (CDT), the California Public Utilities Commission (CPUC), and other state agencies and local partners are hosting 20 Broadband for All, Digital Equity, and Broadband Equity, Access, and Deployment (BEAD) Regional Planning Workshops across the state.

At each workshop, community members and local organizations are invited to take part in the development of the State's Digital Equity and BEAD Five-Year Action Plans that will determine how future federal dollars are allocated to address digital inequities in each community.

Protecting California since 1911

The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies.

@CaliforniaPUC

Attend a workshop near you

All events are free and open to the public. Register for a workshop in your area and do your part to close the digital divide today. As timing for individual workshops may change, please visit this website for the most up-to-date information.

Date	Location	Registration Link
April 14	**Merced** (Merced College - Library)	**Register**
April 15	**Fresno** (Fresno City College, Old Administration Building – Cafeteria)	**Register**
April 21	**San Diego** (San Diego Central Library)	**Register**
April 27	**Chico** (Chico Masonic Family Center)	**Register**
April 28	**Santa Rosa** (Santa Rosa Veterans Memorial Building)	**Register**
May 3	**Eureka** (Jefferson Community Center)	**Register**
May 5	**San Jose** (Santa Clara County Office of Education, Ridder Park Site)	**Register**
May 11	**Sacramento** (Sacramento Central Library)	**Register**
May 12	**Grass Valley** (Grass Valley Veterans Memorial Building)	**Register**
May 16	**Inland Empire** (CSU San Bernardino)	**Register**
May 19	**Los Angeles** (LA Trade Tech Campus)	**Register**
May 20	**Long Beach** (Veterans Park Social Hall)	**Register**
May 24	**Santa Ana** (Orange County Administration South Building)	**Register**
May 30	**Tuolumne** (Tuolumne County Resiliency Center)	**Register**
June 1	**Santa Maria** (Allan Hancock College)	**Register**
June 2	**Seaside** (CSU Monterey Bay Student Center)	**Register**

For additional events in your area, visit BroadbandforAll.cdt.ca.gov/events.

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The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies.

@CaliforniaPUC

Regional-Local Workshop example 1

Friday, April 14

Broadband for All, Digital Equity, and BEAD Planning Workshop - Merced

Part of the Digital Equity and BEAD Planning Workshops collection

North San Joaquin Valley Broadband for All, Digital Equity, and BEAD Planning Workshop

By Department of Technology
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When and where

Date and time
Friday, April 14 · 8:30am - 1:30pm PDT

Location
Merced College - Library/Learning Resource Center (2nd Floor) 3600 M Street Merced, CA 95348
Show map

Regional-Local Workshop example 2

Friday, May 12

Broadband for All, Digital Equity, & BEAD Planning Workshop Northern Sierra

Part of the Digital Equity and BEAD Planning Workshops collection

Gold County - Broadband for All, Digital Equity, and BEAD Planning Workshop

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When and where

Date and time
Friday, May 12 · 10am - 3pm PDT

Location
Grass Valley Veterans Memorial Building 255 South Auburn Street Grass Valley, CA 95945

Show map

Regional-Local Workshop example 3

Tuesday, May 16

Broadband for All, Digital Equity and BEAD Planning Workshop- Inland Empire

Part of the Digital Equity and BEAD Planning Workshops collection

Inland Empire (San Bernadino/ Riverside) - Broadband for All, Digital Equity, and BEAD Planning Workshop

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When and where

Date and time
Tuesday, May 16 · 2 - 6pm PDT

Location
CSU San Bernardino 5500 University Pkwy San Bernardino, CA 92407

Show map

Appendix C: Summary of Tribal consultations

This appendix contains the schedule of Tribal consultations the CPUC facilitated to conduct stakeholder outreach and engagement during the development of this Plan.

Table 44: Schedule of Tribal consultations

Date	Region	Location
June 20, 2023	Northern California Tribes	Redding Library Community Room 1100 Parkview Avenue, Redding
June 22, 2023	Central California Tribes	Eagle Mountain Casino 1850 West St., Porterville
June 27, 2023	Southern California Tribes	Kumeyaay Community College 910 Willow Glen Drive, El Cajon
July 12, 2023	Virtual Statewide Tribal Consultation	Held from 1:00 pm to 3:00 pm Registration link: Broadband for All, BEAD & Digital Equity Tribal Consultation - Virtual Tickets, Wed, Jul 12, 2023 at 1:00 PM | Eventbrite.

Tribal consultation example 1

Tuesday, June 20

Broadband for All, BEAD & Digital Equity Tribal Consultation - Northern CA

Part of the Digital Equity and BEAD Planning Workshops collection

Tribal Consultation between Northern California Tribes, CPUC, and CDT regarding broadband and digital equity.

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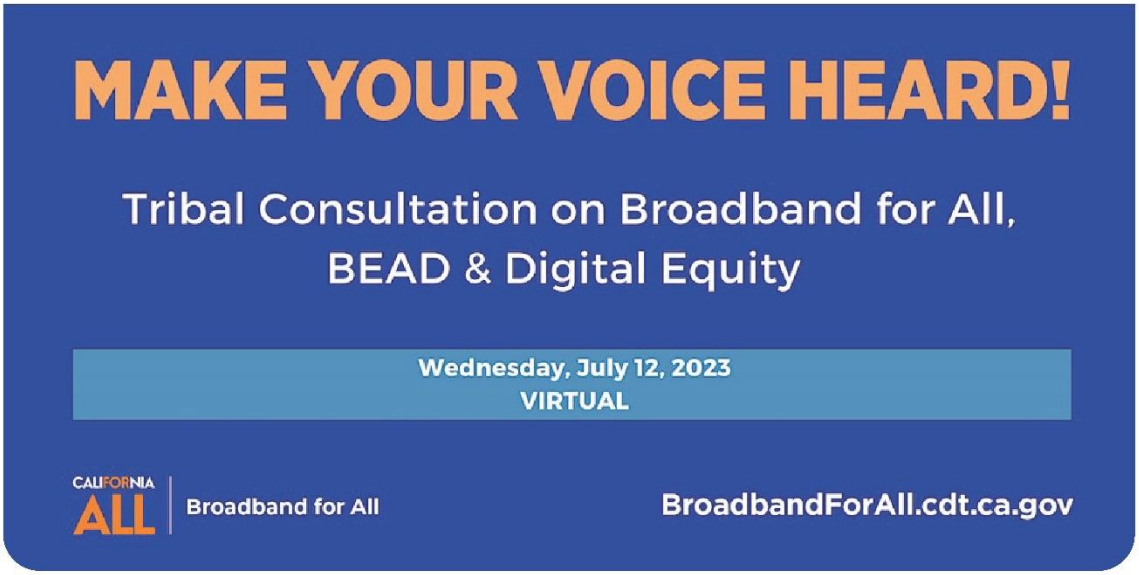
When and where

Date and time
Tuesday, June 20 · 11:30am - 4pm PDT

Location
Redding Library Community Room 1100 Parkview Avenue Redding, CA 96001
Show map

Tribal consultation example 2



Wednesday, July 12

Broadband for All, BEAD & Digital Equity Tribal Consultation - Virtual

Part of the Digital Equity and BEAD Planning Workshops collection

Virtual Tribal Consultation between California Tribes, CPUC, and CDT regarding broadband and digital equity.

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Appendix D: Summary of subgrantee selection process

The following table organizes the documents required from the CPUC and from the subgrantee at different points in the subgrantee selection process (see Deployment subgrantee selection (Requirement 8)Deployment subgrantee selection (Requirement 8)). The table is an organized visualization of the process, not a full accounting of the details of each required document.

Table 45: Summary of subgrantee selection process documents and milestones

Phase	The CPUC provides	Subgrantee provides	
		Brief description	Section of this Initial Proposal
NTIA Approval of IPv2			
Completion of Challenge Process			
Preparatory	Grant Area Determination Process		
NTIA Challenge Process Validation			
	Grant application materials (Application, Program Guide, FAQ documents, model letter of credit, sample engineer certification, list of required licenses and certifications)		
	Project Areas (if applicable)		
	Template for detailing other public funding		
	Template for budget narrative, proposed budget, and business case analysis		
	Technical Specifications Template, Project Timeline Template		
	Information about EHCPLT		
	Website information (also directing to third-party resources)		

Phase	The CPUC provides	Subgrantee provides	
		Brief description	Section of this Initial Proposal
	Online application workshop and workshop materials		
	Continual updates to FAQ document as questions are received and answered		
	Broadband Internet Caseworker program to provide training and support to public, nonprofit, and Tribal projects		
Grant submission window opens			
Application	Dedicated email address for questions and technical assistance	Unqualified audited financial statements from the last three years	5.1.5 5.9.1
	Continual updates to FAQ document as questions are received and answered	Certification by officer or director: that it has financial resources to and qualifications to successfully complete program requirements and complete the specific project with reimbursement model; that it has financial resources to provide pledged matching funding; that it has financial resources to support all costs of the specific project, even if it exceeds the grant award and matching funds	5.1.5 5.9.1
	Updates and reminders on milestones, deadlines, or technical resources as they come up	Resumes of management staff, CTO, contractor oversight team, and other key personnel; and description of their expected roles in a BEAD-funded project	5.1.5 5.9.2
		Certifications and licenses of the organization, the	5.1.5 5.9.2

Phase	The CPUC provides	Subgrantee provides	
		Brief description	Section of this Initial Proposal
		officer or director, management staff, contractor oversight team, and key technical personnel; and certification of processes and resources to employ continued skilled, credentialed workforce	5.9.3
		Description of planned contractors and consultants, and certification that any future contracted resources will have the relevant and necessary skills	5.1.5 5.9.2
		Descriptions of managerial capability connected to unique needs of specific proposed project	5.9.2
		List of job categories, titles, and descriptions to complete the specific project; certifications or licenses necessary for the specific project; demonstration of completion of requirements to be qualified for the project	5.9.3
		Organizational chart and narrative description of applicants' processes and structure	5.1.5 5.9.2
		Narrative description of the applicant entity's experience, resources, and readiness in managing and carrying out this broadband project, referencing key personnel	5.9.2 5.9.3

Phase	The CPUC provides	Subgrantee provides	
		Brief description	**Section of this Initial Proposal**
		Certification of history of providing telecommunications or electric service	5.1.5 5.9.5
		Certification of FCC Form 477s and Broadband DATA Act submissions **OR** Qualified operating or financial reports and certification that submission is accurate	5.1.5 5.9.5
		Legal opinion from legal counsel attesting to preparation for compliance to all applicable laws for BEAD-funded projects	5.1.5 5.9.4
		Narrative description of processes in place to conduct funding activities in compliance with federal and State law, including procurement practices	5.9.4
		Ownership information, including ownership structure, corporate entity type, and other information, referencing and corresponding to other information provided	5.1.5 5.9.2
		Certification of history of compliance and of intention to comply with environmental and historic preservation requirements and BABA	5.1.5 5.4 5.9.4
		Certifications: of cybersecurity risk management plan; that the plan reflects NIST framework and EO 14028; and that the plan will be	5.1.5

Phase	The CPUC provides	Subgrantee provides	
		Brief description	Section of this Initial Proposal
		updated periodically; and that the plan will be submitted to the CPUC	
		Certifications: of supply chain risk management plan; that supply chain plan reflects NISTIR 8276 and other guidance including NIST 800-161 and specifying the controls being implemented; and that the plan will be updated periodically; and that the plan will be submitted to the CPUC	5.1.5
		List of present or planned applications to federal or State broadband funding, and of every broadband deployment project the applicant is undertaking or will undertake, with details on each project, using the CPUC template	5.1.5 5.9.7
		Materials on Fair Labor Practices and compliance (including certification of compliance with labor and employment laws; yearly recertification of labor and employment practices; discussions of workforce plans, commitments, and development; compliance with workplace safety and processes to monitor and support future compliance)	5.1.5 5.9.4 8.1
		Documentation of communications with and outreach to workers and worker representative labor organizations	5.9.4

Phase	The CPUC provides	Subgrantee provides	
		Brief description	**Section of this Initial Proposal**
		Certification of worker-led health and safety committees	5.1.5 5.9.4
		Detailed description of specific proposed project, including network design, descriptions of location and community, descriptions of technical specifications, timelines and milestones, and documentation of costs	5.9.3
		Information about proposed project for each area, including percentage of eligible locations it will serve, total requested grant funds, and average cost per location it will serve, as well as mapping data.	5.1.3
		Budget narrative and proposed budget using the CPUC templates, specifying expenses, team responsible for each expense, and relation to project objective	5.9.1
		Business case analysis using the CPUC template, involving take rates, churn, revenue, cash flow, expenditures	5.9.1
		Certification of the project by independent professional engineer	5.9.3
		Certifications: of awareness of letter of credit obligations; of qualifications and resources to obtain letter of commitment and letter of credit from financial	5.9.1

Phase	The CPUC provides	Subgrantee provides	
		Brief description	**Section of this Initial Proposal**
		institution for no less than 25% of award	
		Letter of commitment from qualified financial institution describing the institution, stating that they stand ready to issue a letter of credit for the proposed project and specified amount, and stating that it has reviewed the model letter and is prepared to comply with terms	5.9.1
Grant submission window closes			
	Scoring, according to guidelines in 5.1.5		
	Reasonable curing, as necessary		
Negotiation	Counteroffers to negotiate pricing and proposal area boundaries, if needed	Written support from Tribal governments for projects on Tribal lands	5.7
	If necessary, second phase grant window for remaining needs		
	Curing, as necessary		
Negotiation Phase closes			
Provisional Award	Announcement of provisional determinations, subject to NTIA approval	Irrevocable standby letter of credit from financial institution	5.9.1
	Submission of Final Proposal to NTIA	Bankruptcy opinion letter from legal counsel confirming proceeds from letter of credit are not "property"	5.9.1
Completion of BEAD subgrantee selection process			

Appendix E: Proposed scoring rubric

The final proposed scoring rubric will be included in this appendix in the version of this Initial Proposal that is submitted to NTIA. See Section 5.3 for more details.

(END ATTACHMENT B)