California Department of Technology

Broadband Access Point Investment Acceleration Study

May 2024

Contents

1 Executive summary 1

1.1 Efforts undertaken in the development of this study 1

1.2 Summary of key insights developed from stakeholder engagement 2

1.3 Summary of key findings regarding barriers and potential opportunities 6

2 The broadband deployment ecosystem in California 6

2.1 Entities in the ecosystem 8

2.1.1 Broadband consumers 8

2.1.2 Broadband service providers 8

2.1.3 Permitting authorities 8

2.1.4 Investor-owned and municipal utilities 9

2.1.5 Private landowners 9

2.2 Interactions and dependencies between the entities 9

3 Existing efforts to accelerate broadband access point deployment 11

3.1 The California Broadband Council (CBC) 11

3.2 California Advanced Services Fund (CASF) Programs 11

3.3 Executive Order N-73-20 11

3.4 Broadband for All Action Plan 12

3.5 Senate Bill 156 (SB 156) 13

3.6 Get Connected! California mobilization 13

3.7 Infrastructure Investment and Jobs Act (IIJA) broadband programs 14

3.8 Digital Equity Bill of Rights 15

4 Reported barriers specified by SB 717 16

4.1 The processes for and cost of obtaining electric service to broadband access points 16

4.1.1 Reported barrier: Long timeline for obtaining electric service to communications facilities 16

4.1.1.1 Existing programs and efforts: AB 50 and SB 410 18

4.1.1.2 Potential opportunities 19

4.1.1.2.1 Monitor and evaluate the impact of the CPUC's rules under new legislation and include electric service benchmarks and timelines in a Last-Mile Broadband Dashboard Project 19

4.1.2 Reported Barrier: Lack of power to communities and homes in isolated areas 19

4.1.2.1 Existing programs and efforts: Microgrid and electrification programs 20

4.1.2.2 Potential opportunity: Coordinate power and broadband installation if areas are unserved by power and broadband 20

4.2 The processes for obtaining state, county, or local permits to deploy broadband access points 20

4.2.1 Reported barrier: Delays in permitting by some state agencies, particularly where staffing resources are insufficient 21

4.2.1.1 Existing programs and efforts: Streamlined permitting processes and programmatic, consolidated reviews for the Middle-Mile Broadband Initiative 21

4.2.1.2 Potential opportunities 22
4.2.1.2.1 Provide additional resources for permitting staff to review applications and perform inspections for last-mile projects 22
4.2.1.2.2 Consider developing a public-facing state website with comprehensive permitting resources to facilitate communication and planning 23
4.2.1.2.3 Provide resources to develop a Last-Mile Broadband Dashboard Project 23
4.2.2 Reported barrier: Lack of clarity around availability of state property for broadband leasing 24
4.2.2.1 Existing programs and efforts: Department of General Services' inventory of state property 25
4.2.2.2 Potential opportunity: Enhance the DGS asset lease program 25
4.2.3 Reported barrier: Local permitting inefficiencies, high costs, and lack of sufficient resources 26
4.2.3.1 Existing programs and efforts 27
4.2.3.1.1 Efforts by counties and municipalities to streamline permitting and facilitate broadband deployment 27
4.2.3.1.2 "State of California Local Permitting Playbook" and best practices manual 28
4.2.3.1.3 Batch permitting statute (AB 965) 28
4.2.3.1.4 Federal shot clock requirements for placement of wireless facilities 29
4.2.3.2 Potential opportunities 30
4.2.3.2.1 Provide technical assistance to localities to improve policies and procedures 30
4.2.3.2.2 Require or encourage inclusion of broadband elements in local jurisdictions' general plans 31
4.2.3.2.3 Develop funding capacity to enable localities to expand staffing and expertise for permitting within under-resourced and low-income communities 33
4.2.3.2.4 Monitor and evaluate implementation of the batch permitting statute over the next few years 33
4.2.3.2.5 Provide best practices to local governments on modifications that can qualify for streamlined administrative approval 33
4.3 Regulatory and legal obstacles in deploying fiber to transport broadband traffic from broadband access points 33
4.3.1 Reported barrier: High cost of underground construction in local rights-of-way 33
4.3.1.1 Existing programs and efforts: State microtrenching statute (SB 378) 34
4.3.1.2 Potential opportunities 35
4.3.1.2.1 Monitor and evaluate the impact and use of the microtrenching statutory requirements 36
4.3.1.2.2 Develop technical assistance materials for local entities to craft microtrenching and restoration standards 36
4.3.1.2.3 Provide recommended practices on reasonable levels of restoration after broadband construction 36
4.3.2 Reported barrier: High cost of underground construction in Caltrans rights-of-way 37
4.3.2.1 Existing programs and efforts: Trenching and microtrenching in some settings 37
4.3.2.2 Potential opportunity: Caltrans could consider developing microtrenching policies and surface restoration requirements for all districts 37
4.3.3 Reported barrier: Variations in permitting standards and processes within state agencies 38
4.3.3.1 Existing programs and efforts 38
4.3.3.2 Potential opportunity: Consider requiring state agencies to take steps to make standards and processes consistent 38
4.3.4 Reported barrier: Access to utility poles (both publicly owned and those owned by electric utilities and/or telephone companies) 39
4.3.4.1 Existing programs and efforts 40
4.3.4.1.1 Pole databased required by the CPUC's rights-of-way and pole attachment rules 40

4.3.4.1.2 State law governing lease costs and terms for pole attachment 41
4.3.4.1.3 The CPUC's One-Touch-Make-Ready decision 42
4.3.4.2 Potential opportunities 44
4.3.4.2.1 Monitor the impact of one-touch-make-ready and pole database requirements 44
4.3.4.2.2 Annually gather and publish pole lease rate information 45
4.3.4.2.3 Review progress on pole information databases 45
4.3.5 Reported barrier: Challenges and delays getting access to state and local rights-of-way where Dig Smart policies do not coincide with deployment schedules 46
4.3.5.1 Existing programs and efforts: Dig Smart programs run by both Caltrans and localities 46
4.3.5.2 Potential opportunities 47
4.3.5.2.1 Implement Dig Smart moratorium improvements based on best practices 48
4.3.5.2.2 Develop technical assistance materials for Dig Smart policies 48
4.3.5.2.3 Maintain a centralized website for notice of all pending local and state Dig Smart opportunities 49

4.4 The lack of legal limitations on the price for leasing private or public property to deploy broadband access points on public and private property and buildings 49
4.4.1 Reported barrier: High cost and effort to access public assets other than rights-of-way, such as building rooftops 49
4.4.2 Existing programs and efforts 50
4.4.3 Potential opportunities 50
4.4.3.1 Provide resources and direction to localities to assemble inventories of public assets available for placement of broadband infrastructure 50
4.4.3.2 Provide information to localities regarding the value, with respect to broadband expansion and competition, of making public assets available at reasonable cost 51

4.5 The cost of leasing access to middle-mile broadband networks 51
4.5.1 Reported barrier: Challenges and high costs associated with current middle-mile services 52
4.5.2 Existing programs and efforts 52
4.5.2.1 Middle-Mile Broadband Initiative 53
4.5.2.2 Open access for BEAD-funded middle-mile facilities 53
4.5.3 Potential opportunities 53
4.5.3.1 Continue to develop the Middle-Mile Broadband Network as a long-term, self-sustaining enterprise 53
4.5.3.2 Continue to emphasize open access as a scoring factor or requirement of middle-mile grants where possible 54
4.5.3.3 Develop a database for the publication of information on private middle-mile facilities and lease rates where possible 55

4.6 California Coastal Commission permitting policies 55
4.6.1 Reported barrier: None 56
4.6.2 Existing programs and efforts 56
4.6.3 Potential opportunity: Work with relevant state and local agencies to develop a consolidated, programmatic California Coastal Commission permit and environmental review process for last-mile projects in coastal zones 57

4.7 Local coastal plans that use California Coastal Commission policies 58
4.7.1 Reported barrier: Difficulty navigating local coastal permitting requirements and standards that are not specific to broadband deployment 58
4.7.2 Existing programs and efforts 59
4.7.2.1 Consolidated permitting process for the Middle-Mile Broadband Initiative 59

4.7.2.2 Technical assistance for last-mile broadband permitting by local entities 59
4.7.3 Potential opportunities 59
4.7.3.1 Explore opportunities to implement a consolidated permit process for regional last-mile broadband deployment within the coastal zone 59
4.7.3.2 Provide best practices and technical assistance to local coastal agencies on broadband deployment and possible revisions to local coastal programs to incorporate broadband-specific provisions 60

4.8 The permitting policies and processes to deploy on property governed by port authorities 60
4.8.1 Reported barrier: None 60
4.8.2 Existing programs and efforts 60
4.8.3 Potential opportunity 60

4.9 Air quality management district permitting requirements 61
4.9.1 Reported barrier: State and local restrictions on emergency generators 61
4.9.2 Existing programs and efforts: Portable Equipment Registration Program 62
4.9.3 Potential opportunities 62
4.9.3.1 Identify, clean and zero emissions technology to meet the needs of low-income and environmentally sensitive areas 62
4.9.3.2 Seek to ensure that regulations are specifically adapted to emergency situations 62

4.10 Noise abatement regulations that result in delay or block investment in, and deployment of, broadband access points 62
4.10.1 Reported barrier: Local and state requirements to abate noise created by construction machinery and generators 62
4.10.2 Existing programs and efforts 63
4.10.3 Potential opportunity: Develop best practices that accommodate temporary and permanent equipment and meet the needs of low-income and environmental/wildlife-sensitive areas 63

4.11 The income of households in the area and the economic feasibility for internet service providers to deploy 64
4.11.1 Reported barrier: Economic feasibility of broadband projects given high capital costs and relatively modest revenue opportunity in low-income and low-density areas 64
4.11.2 Existing programs and efforts 65
4.11.2.1 State subsidies for low-income customers and community institutions 65
4.11.2.2 State investment in last-mile broadband infrastructure 66
4.11.2.3 Strategic planning to promote affordable broadband access 67
4.11.3 Potential opportunities 67
4.11.3.1 Expansion of the state's subsidy program to make up for low-income residents' loss of the federal government's ACP subsidy 67
4.11.3.2 Expand existing broadband infrastructure programs to include subsidy of operational costs 68

5 Additional reported barriers 69

5.1 Reported barrier: Lack of access to data and associated broadband mapping challenges 69
5.1.1 Existing programs and efforts 70
5.1.1.1 State legislation (AB 286) 70
5.1.1.2 The CPUC's BEAD Program challenge process 70
5.1.2 Potential opportunity: Consider a state challenge process modeled after the CPUC's BEAD Challenge Process 71

5.2 Reported barrier: Costs associated with risk assurance 72

5.2.1 Existing programs and efforts: Provisions in CPUC grant programs 72
5.2.2 Potential opportunity: Develop a state backstop for grant-funded project risk 73

5.3 Reported barrier: Lack of local resources to plan and develop networks, particularly on the part of localities and tribal governments 74
5.3.1 Existing programs and efforts 75
5.3.1.1 Local Agency Technical Assistance Program (LATA) and Tribal Technical Assistance Grant Program 75
5.3.1.2 Loan Loss Reserve Program 75
5.3.1.3 CPUC Broadband Internet Caseworkers Program 76
5.3.1.4 CDT technical assistance and outreach to local governments 76
5.3.2 Potential opportunities 76
5.3.2.1 Expand technical assistance for localities and tribal entities 76
5.3.2.2 Expand worker training to support local hiring and a trained/skilled workforce 77
5.3.2.3 Create awareness of training opportunities and careers in broadband 77

5.4 Reported barriers created by federal policy 78
5.4.1 Reported barrier: Federal preference for fiber over fixed wireless 78
5.4.2 Reported barrier: Federal requirements for verification of financial soundness of grant awardees 79
5.4.3 Reported barrier: Federal limitations on use of E-rate-funded infrastructure for non-educational purposes 80
5.4.4 Reported barrier: Likely sunsetting of the federal Affordable Connectivity Program 80

5.5 Reported barriers associated with CEQA 82
5.5.1 Existing programs and efforts 83
5.5.1.1 CEQA exemptions 83
5.5.1.2 Statutory exemption for the Middle-Mile Broadband Initiative 84
5.5.1.3 Designation of the CPUC as “lead agency” authority 84
5.5.2 Potential opportunities 85
5.5.2.1 Consider possible application of a streamlined CEQA process for grant-funded projects 85
5.5.2.2 Expand coordination between state and federal agencies for environmental review procedures for last-mile projects 85

Appendix A: Legislative background 87

Appendix B: List of outreach sessions and attendees 88

Appendix C: Survey instrument 94

1 Executive summary

Pursuant to California Senate Bill (SB) 717 [2022], the Broadband Access Point Investment Acceleration Study Act,[1] this study identifies 1) barriers to, and opportunities for, the investment in and efficient building of broadband access points on private and government-owned structures and property, private and public lands and buildings, and public rights of way, and 2) barriers to, and opportunities for, access to mobile and fixed broadband internet service infrastructure by low-income, tribal, urban, and rural customers, and to underserved communities.

The California Department of Technology (CDT) researched and prepared this study in late 2023 and early 2024. It evaluated the extent to which 11 factors act as barriers to investment in or deployment of last-mile broadband infrastructure.[2]

The study provides recommendations on how to accelerate the deployment of broadband access points to serve tribes, low-income customers, and disadvantaged or underserved communities. It also describes the significant, ongoing efforts of the Legislature, state agencies, regional and local stakeholders, and the state's wireline and wireless service providers—some of the work originating more than two decades ago—to enable deployment of broadband access points to achieve the state's goal of ensuring Broadband for All.

1.1 Efforts undertaken in the development of this study

SB 717 requires CDT to inform this study with input from relevant state agencies and stakeholders identified in the statute that may be engaged in or impacted by broadband deployment. CDT included the full spectrum of stakeholders and agencies identified in the statute; as part of this process, CDT also made it a priority to engage other entities beyond those specified in the statute, such as representatives of public housing providers and ports, that would provide valuable feedback.

CDT organized the required state agencies and stakeholders into the following groups (based on the domain expertise of each entity and their roles in the broadband deployment process) facilitated 44 listening sessions and engaged with more than 280 stakeholders:

- State agency partners
- Tribes
- County governments and county associations
- Municipal governments and associations
- Internet service providers (ISP) – incumbent telecommunication providers, cable providers, wireless cellular providers
- ISPs – competitive wireline providers, satellite providers, fixed wireless providers
- Publicly owned utilities
- Investor-owned utilities
- Ports
- Organized labor
- Manufacturing associations

[1] Senate Bill 717 (Chapter 813, Statutes of 2022), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB717.
[2] Senate Bill 717. See Appendix A for list of factors.

- Consumer and ratepayer advocacy organizations
- Technology associations
- California Middle-Mile Broadband Initiative
- Broadband consortia groups
- Public housing
- Public safety

The multi-pronged outreach effort comprised stakeholder sessions, follow-up sessions, and surveys. CDT reached out to stakeholders for engagement in listening sessions where attendees were presented with an overview of the legislation and asked a series of questions that pertained to their role in the process of broadband access point deployment. Follow-up virtual "listening session" meetings were held with groups as well as individual entities from October 2023 to March 2024 to dive deeper into specific components of the legislation. Finally, ongoing engagement occurred through an online survey to capture information from interested parties who could not attend the listening sessions. Comments were collected via email and direct outreach.

Appendix B lists the outreach sessions and attending organizations. The survey instrument is included in Appendix C.

1.2 Summary of key insights developed from stakeholder engagement

The analysis conducted for this study suggests the following key considerations:

1. **The state's extensive, ongoing efforts to achieve Broadband for All—including the establishment of strategic priorities, the development of emerging public policy interventions, and unprecedented investment—will address many of the factors identified in SB 717 over the coming years.**[3]

   The Broadband for All initiative is the state's comprehensive, multi-billion-dollar program to close the digital divide. It reflects the work of the California Broadband Council (CBC) and its members, Executive Order N-73-20, the Broadband for All Action Plan (2020), Senate Bill 156 (SB 156) [2021]), and a statewide mobilization effort to address affordability and increase broadband adoption rates. The state's open-access Middle-Mile Broadband Initiative will connect regions of the state to the global internet. Last-mile infrastructure projects funded by California Public Utilities Commission (CPUC) grants will bring service to people's homes.

   It is important to give these initiatives and policies time to work, and then to track, measure, and evaluate their impacts. Rigorous analysis of impacts will inform potential future action with respect to identified barriers.

[3] In general, strategies to overcome these barriers align with Goal 1 of the state's Broadband for All Action Plan: "All Californians have high-performance broadband available at home, schools, libraries, and businesses." See: "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, at p. 22. The report notes where existing efforts and potential opportunities align with specific action items in the Broadband for All Action Plan; several of the efforts and strategies discussed are guided by the action under Goal 1 to "simplify processes and leverage existing assets and construction" (p. 25).

Some of these efforts, such as the state's policies around microtrenching, will directly affect barriers reported by stakeholders. Recent legislative action has created policies and priorities that will be implemented by state agencies over time. (See Section 4.3.1.1.)

As part of implementation of the Broadband for All Action Plan, for example, The California Department of Transportation (Caltrans) developed a Dig Smart policy (Action Item 4) and enhanced permitting processes (Action Item 5), while CDT has worked with other state agencies to enhance permitting processes at all levels of government (Action Item 6) and developed a local jurisdiction permitting playbook for last-mile deployment.[4]

Broadly, the state has committed public spending on the broadband ecosystem, including through SB 156 [2021] (e.g., the Middle-Mile Broadband Initiative and the CPUC's last-mile grants), the California Advanced Services Fund (CASF) programs, and the state's planned implementation of the Broadband Equity, Access, and Deployment (BEAD) grant program.

In total, California will have invested well over $8 billion of federal and state funds into broadband in a matter of a few years, which is exponentially more than California has invested in the past—and exponentially more than the proportional investment has been in any other state relative to population or square mileage.

Given the state's commitment to broadband, and the significant public investments underway, the goal of many of the potential opportunities described in this document—as well as the considerable existing state efforts—is to make the deployment of broadband access points by responsible agencies and grant awardees as efficient and effective as possible.

While some of the state's efforts have already produced quantifiable results, other programs will demonstrate their efficacy over time. (See Section 3 for more details.)

2. **Some of the barriers identified by stakeholders are based on federal mandates.**

   Most notable among these identified barriers is the preference, in federal government grant programs, for fiber over fixed wireless technology where fiber is affordable. The concern among some wireless industry stakeholders about the fiber preference is not confined to California; the U.S. Department of Commerce's Inspector General released a report noting similar challenges related to the BEAD Program's fiber preference identified by stakeholders nationwide.[5]

   These stakeholders are understandably concerned, but the fiber policy is rooted in fiber's technological advantages and has consistently been put in place by the Federal Communications Commission (FCC), National Telecommunications and Information Administration (NTIA), the U.S. Department of Agriculture's Rural Utilities Service (USDA RUS), and most states' grant programs, because fiber is universally understood to be a prudent long-term investment.

[4] See the Broadband for All Action Plan Tracker, https://broadbandforall.cdt.ca.gov/progress-tracker/.
[5] "Management Alert: Challenges Industry Stakeholders Face with Broadband Deployment," U.S. Department of Commerce, Office of Inspector General, February 29 2024, https://www.oig.doc.gov/OIGPublications/Management%20Alert%20Broadband%20Deployment%20Challenges%20Report.pdf.

Other reported barriers that are a function of federal, rather than state, policy include the freezing of funding and uncertainty regarding additional funding for the federal Affordable Connectivity Program (ACP), which provided a subsidy for low-income households to purchase broadband services. (As of the writing of this report, Congress is considering whether to allocate additional funding to the ACP, which is administered by the FCC.)

Another reported barrier relates to some of the costly federal requirements attached to some state broadband grants—such as the requirement to secure a letter of credit or performance bond—which create challenges for smaller and start-up ISPs seeking to deploy broadband. (This type of issue is in the purview of the federal agency that administers the grant program.)

Access to federal data is also a challenge, particularly in light of data challenges with respect to broadband mapping and validation at the federal level. A range of stakeholders, including broadband advocacy organizations and local governments, report challenges with data regarding existing broadband service availability and infrastructure—including concerns that some existing data may overstate or incorrectly assess the true availability of broadband. This is due in part to the fact that federal and state mapping efforts ask ISPs to report their service details, but there are limited legal or regulatory mechanisms for requiring companies to report the location of their infrastructure; unless the ISPs' infrastructure is grant-funded, local government generally will not have those data.

3. **Some challenges reported by stakeholders as barriers are a function of a federal system, and of the state's respect for local communities and local decision-making.**

   Some stakeholders report challenges and frustrations associated with certain broadband access deployment by local permitting requirements or a lack of inexpensive access to public assets that could serve to host wireless antennas. These reported barriers may reflect local government decisions to not make certain assets available (such as public safety facilities or school buildings) because the locality believes such uses might compromise the core mission of those assets. Traditionally these issues have been a matter of local decision-making.

4. **Considerable challenges to broadband access point deployment are a function of the challenging economics of broadband.**

   As the many unserved and underserved locations throughout California illustrate, it is very challenging to make a business case for broadband deployment in some areas, particularly where costs are high and revenue opportunity is low. This is consistent with the challenges faced throughout the nation with broadband—and consistent with economic challenges associated with other types of infrastructure.

   Given this, many stakeholders face challenges associated with some of the costs of operating a broadband network, as well as the limited revenues. These can be addressed in part by the extraordinary investment of public funding that will shortly provide capital grants to build broadband in unserved and underserved areas, but some of these costs simply represent typical costs of doing business in the broadband industry.

   While these may be costs that stakeholders would prefer not to pay, there may not be a reasonable public policy intervention that would address the stakeholders' concerns.

For example, some ISP stakeholders raise concerns about the cost of accessing private property to deploy broadband access points. While these concerns are understandable because the cost of broadband deployment and operations can be high—and disproportionate to the ISP's revenue opportunity in low-population-density areas or low-income communities—the concerns speak at their core to the challenging economics of deploying new broadband infrastructure in some locations.

Public policy interventions in this regard may be challenging given the rights of private property owners to determine the costs and terms under which they will make their property available for lease (if at all).

Stakeholders are reasonable in pointing out these economic challenges—and California can rightly be proud of the programs the state has implemented (backed by billions of dollars in allocations over many years) that aim to ameliorate the challenges for the sake of achieving Broadband for All in California.

5. **Workforce capacity is a factor that was not identified in SB 717, but is being closely tracked by the industry, as well as by CDT and the CPUC.**

   Taking into consideration the state's planned American Rescue Plan Act (ARPA) and BEAD funding, as well as the private sector investment in areas that present a strong business case, the need for skilled labor in the broadband space is at a level that has never been experienced before.

   The potential nationwide workforce shortages created by the massive scale of upcoming spending on broadband access point deployment is a critical area of concern that has been highlighted in the CPUC's BEAD Five-Year Action Plan[6] and BEAD Initial Proposal,[7] and in CDT's State Digital Equity Plan.[8]

   The CPUC, for example, "is coordinating with unions and other workforce stakeholders to ensure that a diverse and highly skilled workforce will be available to subgrantees, to ensure the employment of a unionized workforce where possible, to ensure the delivery of training programs that serve all workers, and to promote sector-based partnerships."[9]

[6] "State of California Five-Year Action Plan: Broadband Equity, Access, and Deployment (BEAD) Program," California Public Utilities Commission, August 28, 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/bead/california-bead-five-year-action-plan---final-draft---20230828.pdf, at p. 9.

[7] State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program, December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf.

[8] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf.

[9] State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program, December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at p. 70.

> In collaboration with the CPUC, CDT intends "to promote workforce development efforts and encourage the equitable hiring and training of employees as part of [State Digital Equity Plan] and BEAD-funded projects."[10]

1.3 Summary of key findings regarding barriers and potential opportunities

The stakeholder engagement and analysis found that while some factors are experienced as widespread barriers to broadband access point deployment, the factors are more frequently experienced as occasional challenges—and some factors were not identified as barriers at all.

CDT developed a range of potential opportunities that could be considered to address the barriers reported by stakeholders. These opportunities reflect the input from relevant stakeholders and state agencies, CDT's experience (including on the Middle-Mile Broadband Initiative), and an evaluation of the steps already taken by the state. The opportunities would seek to accelerate the deployment of broadband access points to serve tribes, low-income customers, disadvantaged communities, and communities unserved and underserved by broadband.

This analysis is described in detail in the text of this report and is summarized in the following table:

[10] "California Digital Equity Plan [Draft]," California Department of Technology, December 11, 2023, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2023/12/Draft-SDEP_For-Public-Comment_12.11.23.pdf, at p. 79.

Table 1: Summary of findings (SB 717 factors)

SB 717 factor	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
The processes for and cost of obtaining electric service to broadband access points	Lengthy delays getting electric service extended to new communications facilities.	Assembly Bill 50 (AB 50) [2023] and Senate Bill 410 (SB 410) [2023], the Powering Up Californians Act, address the long cycle of electricity provisioning by investor-owned utilities.	Monitor and study the impact of the legislation's implementation and report electric service benchmarks and timelines to a proposed Last-Mile Broadband Dashboard Project.
Processes for obtaining state, county, or local permits to deploy broadband access points	Local permitting inefficiencies, high costs, and lack of sufficient resources.	Assembly Bill 965 (AB 965) [2023], the Broadband Permit Efficiency and Local Government Staff Solution Best Practices Act of 2023; State of California Local Permitting Playbook; federal shot clock requirements for wireless facilities.	Provide technical assistance to localities; require or encourage inclusion of broadband in local general plans; develop funding capacity for under-resourced and low-income communities; monitor and study implementation of batch permitting statute; provide best practices for streamlined approval.
	Delays in permitting by some state and local agencies.	Streamlined permitting processes and consolidated, programmatic review for the Middle-Mile Broadband Initiative.	Provide additional resources for permitting staff with associated requirements; require state agencies to maintain broadband permitting webpages; provide resources to develop a Last-Mile Broadband Dashboard Project; make standards and processes consistent across state agency districts.
	Lack of clarity around availability of state property for broadband leasing.	Department of General Services (DGS) property inventory and statutory authority to lease at less than fair market value for "public benefit" projects.	Publicize the inventory of suitable properties and the departments with jurisdiction over those properties and the process for requesting a lease.

SB 717 factor	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
Regulatory and legal obstacles in deploying fiber to transport broadband traffic from broadband access points	High cost of underground construction in local rights-of-way.	Senate Bill 378 (SB 378) [2021], the Broadband Deployment Acceleration Best Practices Act of 2021.	Monitor and report on implementation of statute; develop technical assistance for local entities to craft microtrenching standards.
	High cost of underground construction in Caltrans rights-of-way.	Caltrans developed guidelines and FAQs related to broadband installation within Caltrans rights-of-way.	The state may choose to consider requiring Caltrans to refine its standards for all districts.
	Access to utility poles.	State law and the CPUC's rules regarding pole attachments, including one-touch make-ready and pole database requirements.	Monitor the impact of one-touch-make-ready and pole database requirements; annually publish pole lease rate information; monitor progress of pole information database; research pole attachment costs and timelines to recommend changes.
	Challenges and delays accessing local and Caltrans rights-of-way under strict construction moratoria after a Dig Smart opportunity.	Dig Smart policies by Caltrans (which allows limited exemptions) and local agencies.	Implement Dig Smart moratoria improvements; develop technical assistance for local Dig Smart policies; maintain a central website of Dig Smart opportunities.
The lack of legal limitations on the price for leasing private or public property to deploy broadband access points on public and private property and buildings	High cost and effort to access public assets other than rights-of-way.	None.	Provide resources and direction to localities to assemble inventories of public assets they are willing to make available for this use, including terms and rates; provide technical assistance to localities regarding the value, benefits, and best practices for making public assets available at reasonable cost.

SB 717 factor	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
The cost of leasing access to middle-mile broadband networks	High costs associated with currently available middle-mile services and challenges accessing middle-mile networks.	Middle-Mile Broadband Initiative, including its requirements for open access and regular interconnection points to enable service to last-mile providers; open access mandate for BEAD-funded middle-mile facilities.	Continue to develop the Middle-Mile Broadband Network as a long-term, self-sustaining enterprise; continue to emphasize open access as a scoring factor or requirement of middle-mile grants; develop a public database of information on private middle-mile facilities and lease rates.
California Coastal Commission permitting policies	None reported by stakeholders during CDT outreach for this report.	The California Coastal Commission developed broadband-specific permitting guidance for coastal zone areas and employed consolidated permitting process for the Middle-Mile Broadband Initiative.	Work with relevant state and local agencies to implement a consolidated, programmatic California Coastal Commission permit and environmental review process for last-mile projects in coastal zones where feasible.
Local coastal plans that use California Coastal Commission policies	Difficulty navigating local coastal permitting requirements and standards that are not specific to broadband deployment.	Consolidated permitting process for the Middle-Mile Broadband Initiative; technical assistance for last-mile broadband permitting by local entities.	Explore opportunities to implement consolidated permitting process for last-mile projects; provide local coastal agencies with best practices and technical assistance; work with local coastal agencies on possible revisions to Local Coastal Programs to incorporate broadband-specific provisions; continue to provide resources for California Coastal Commission efforts to support broadband implementation in Local Coastal Programs.
The permitting policies and processes to deploy on property governed by port authorities	None reported by stakeholders during CDT outreach for this report.	None.	None.

SB 717 factor	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
Air quality management district permitting requirements	Local and state restrictions on emergency generators that ISPs seek to use.	The California Air Resources Board's Portable Equipment Registration Program.	Develop best practices for efforts to meet the needs of low-income and environmentally sensitive areas while accommodating emergency use.
Noise abatement regulations that result in delay or block investment in, and deployment of, broadband access points	Local and state requirements to abate noise caused by construction machinery and generators.	None.	Develop best practices to meet the needs of low-income and environmentally sensitive areas and accommodate temporary and permanent equipment.
The income of households in the area and the economic feasibility for internet service providers to deploy in areas	Economic challenges related to the feasibility of broadband projects given high capital cost and relatively modest revenue opportunity in low-income and low-density areas.	State subsidies for low-income households and organizations that serve low-income areas.	Consider expansion of the state's subsidy program to make up for loss of the federal Affordable Connectivity Program (ACP) subsidy.

This study also evaluates additional factors not specifically identified in SB 717 that were reported by stakeholders during preparation of this study. These are summarized in the following table:

Table 2: Summary of findings (additional factors)

Additional factors identified	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
Reported barriers associated with broadband data and mapping	Lack of access to data regarding existing infrastructure and services, incorrect data, and associated broadband mapping challenges.	Assembly Bill 286 (AB 286) [2023][11] requires that the CPUC's state broadband map identify service providers and maximum service speeds available at each address in the state. The CPUC challenged the FCC's National Broadband Map.	Monitor the outcome of BEAD challenge process and evaluate effectiveness, to enable adoption of effective challenge strategies for broadband mapping and future broadband funding programs.

[11] Assembly Bill 286 [2023], https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB286.

Additional factors identified	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
		Though the addition of new BSLs is not permitted by NTIA, CPUC's BEAD Program challenge process will afford localities, tribes, and nonprofits opportunities to ensure unserved and underserved locations are included in the BEAD funding map.	
Reported barriers faced by small and start-up entities	Costs associated with risk assurance that are mandatory requirements of grant programs that use federal funding.	Provisions for risk assurance requirements in CPUC grant programs.	Consider state backstop for risk to reduce the costs for small, public, tribal, and other grant applicants.
	Lack of local resources to plan and develop networks, particularly by localities and tribal entities.	Local Agency Technical Assistance Program, Tribal Technical Assistance Grant Program, Loan Loss Reserve Program, Broadband Internet Caseworkers, and CDT technical assistance to localities.	Expand local and tribal technical assistance; support local hiring and a skilled/trained workforce, and awareness of careers in broadband.
Reported barriers created by federal policy	Federal preference for fiber over fixed wireless.	As matters of federal policy, these reported barriers are outside the authority of state or local government.	The state can advocate to federal policymakers for changes but cannot address these reported barriers solely through state action.
	Federal requirements for verifying financial soundness of grant awardees.		
	Federal limitations on non-educational uses of infrastructure funded by E-Rate.		
	Likely sunsetting of the federal Affordable Connectivity Program.		
Reported barriers associated with California	Uncertainty around CEQA obligations, including identification of a lead agency and appropriate exemptions for last-mile projects.	Limited CEQA exemptions; CEQA statutory exemption for the Middle-Mile Broadband Initiative; designation of the CPUC as "lead	Consider possible application of a streamlined CEQA process for grant-funded projects; expand coordination between state and federal agencies for

Additional factors identified	Barriers reported	Existing state programs and efforts	Potential opportunities the state may choose to consider
Environmental Quality Act (CEQA)		agency" for CEQA reviews for grant-funded projects where the CPUC has the greatest responsibility for supervising or approving the project as a whole.	environmental review procedures for last-mile projects.

2 The broadband deployment ecosystem in California

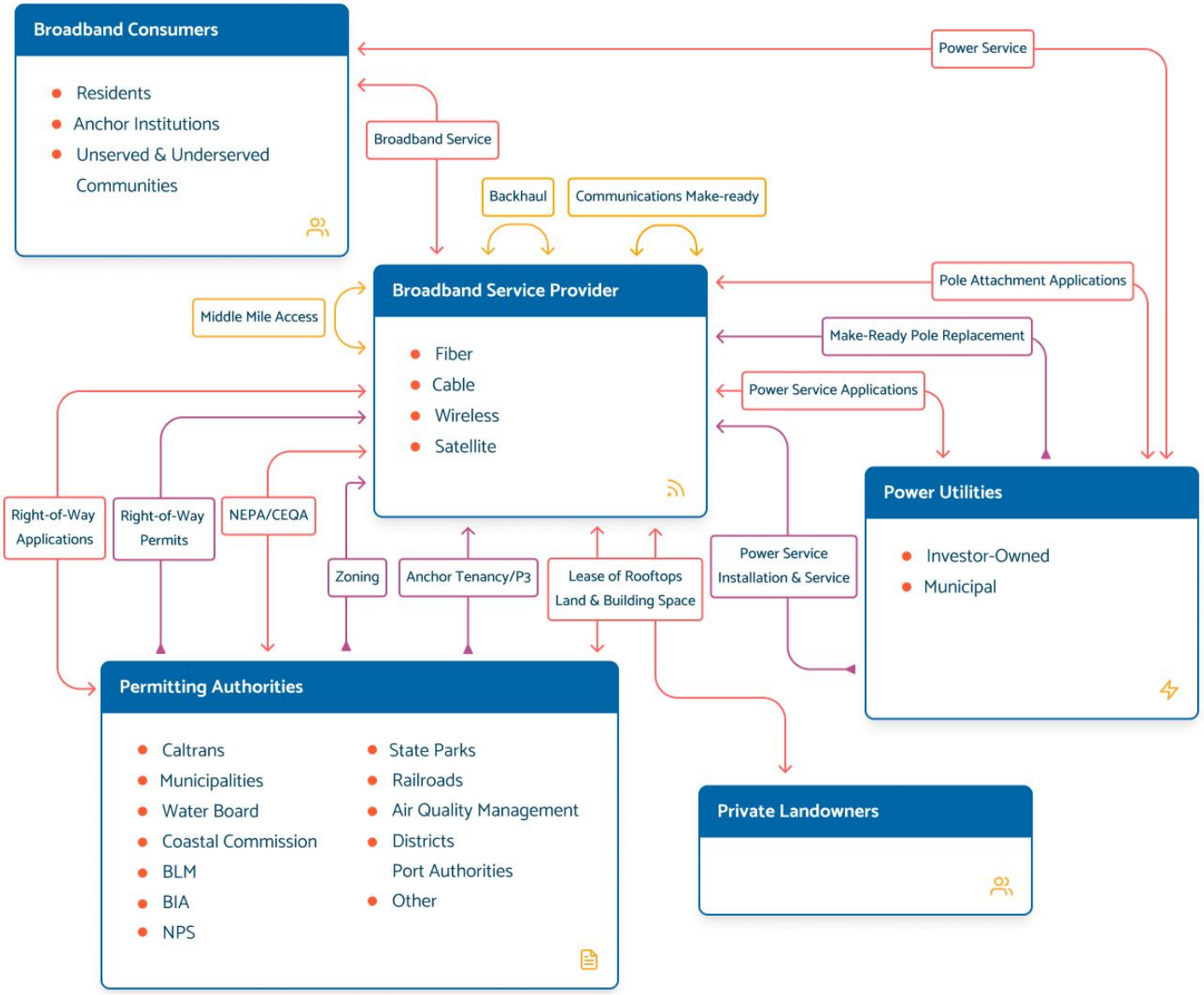
The broadband deployment ecosystem in California includes these major types of entities:

- Broadband consumers, including residents, businesses, community anchor institutions, and unserved and underserved communities.
- Broadband service providers, including public, private, and nonprofit entities.
- Power utilities (investor-owned and municipality-owned).
- Permitting authorities (local, state, federal).
- Private landowners.

These entities interact with each other in many ways; while they are generally cooperative, in some instances there are elements of competition or conflict. Successful deployment and operation of broadband services can most efficiently occur when the three elements are optimized and work well together.

The ecosystem model depicted in Figure 1 (below) illustrates the challenges that exist in building and operating broadband access points.

Figure 1: Overview of the broadband deployment ecosystem



2.1 Entities in the ecosystem

2.1.1 Broadband consumers

Consumers receive last-mile broadband services. These include residents receiving service at their homes or while traveling, businesses connected at their premises and to remote locations (such as work-at-home, fleet vehicles, and agricultural field connections), and anchor institutions such as schools, libraries, medical facilities, government facilities, and community centers (all of which can be connected for institutional business purposes and to serve residents at the institution).

Consumers also include unserved and underserved communities. The broadband access points for these communities are the same as described above, but serving the unserved and underserved communities effectively may require additional actions, such as making the service more affordable, providing access to devices, providing digital education, deployment of last-mile connections to remote areas, and focusing on service to affordable housing.

2.1.2 Broadband service providers

Broadband access point deployment requires a broadband service provider (also referred to as an internet service provider, or ISP) to construct a broadband network and provide service to customers in homes and businesses.

The ISP may be a cable operator, fiber provider, mobile (cellular) operator, fixed wireless operator, satellite company, long-haul fiber provider, or middle-mile fiber provider. The ISP can be a for-profit company, but it can also be operated by a municipality or a tribal government or a public-private partnership. It can be a large, national operation or a small, local business.

The ISP may own and operate the infrastructure it deploys, as in the case of this illustration, or it may deliver service over another company's infrastructure. (Various business models exist—so the entity that deploys the infrastructure may not be the same entity that operates it and delivers last-mile service to residents.)

Depending on a range of circumstances, the broadband infrastructure might be installed underground (typically in a trench or a hole bored in the public right-of-way) or the cables might be attached to existing utility poles. Both approaches have unique costs and benefits. In the case of underground construction, the ISP will need to apply for permits from the appropriate local, state, and federal entities that have authority over the project area. In the case of aerial construction, the ISP will need to coordinate the "make-ready" process to make space for its attachment on each pole along the construction route. The ISP may own and operate the utility poles—which reduces some of the complexity of deploying—or it may install equipment on another entity's poles.

The ISP may be in a competitive environment, or it may effectively operate as a monopoly. It may sell retail services to residential subscribers and/or commercial customers, or it may sell wholesale services to other ISPs.

2.1.3 Permitting authorities

When an ISP seeks to build a broadband access point, it may need to apply for a permit from a federal, state, local, or quasi-governmental entity for access to public property and permission to build.

Examples of permitting authorities in California include Caltrans, the California State Water Resources Control Board, the California Coastal Commission, the 35 local air quality management and air pollution control districts, California's ports, the U.S. Department of the Interior's Bureau of Land Management and Bureau of Indian Affairs (BIA), the National Park Service, state parks, railroads, and municipalities.

The permitting authority generally is the entity that owns or controls land, right-of-way, or infrastructure (e.g., rooftops, cable pathways, roads). The permitting authority has rules to protect its resources, ensure public safety, and govern the distribution and use of its resources (i.e., limited space).

Permitting procedures generally involve applications, reviews, inspections, fees, and restoration of the construction area. Permitting costs, procedures, and timelines may be governed by regulations or may be fully determined by the permitting authority.

2.1.4 Investor-owned and municipal utilities

Investor-owned utilities (e.g., Pacific Gas and Electric, Southern California Edison) and municipal utilities (e.g., Los Angeles Department of Water and Power) are key entities in the broadband deployment ecosystem because they own utility poles and conduit (which ISPs in this model need to access to deploy their infrastructure) and because they deliver the electricity required to operate many elements of the broadband networks.

Some broadband technologies are more dependent on distributed outdoor power than others; these include cable broadband, copper lines, and wireless services.

2.1.5 Private landowners

Private landowners are a key part of the broadband ecosystem. In urban, suburban, and rural areas, private land is sometimes the only option for placing buildings, towers, utility poles, fiber, cabinets, and pedestals necessary for broadband service. In general, the provider needs to approach the landowner, negotiate access, and pay for the access.

2.2 Interactions and dependencies between the entities

As Figure 1 illustrates, the three primary types of entities in the broadband deployment ecosystem interact in many ways:

- Broadband consumers engage with broadband service providers for broadband service.
- Broadband consumers engage with power utilities for power service.
- Broadband service providers engage with permitting authorities for:
    - Right-of-way permits.
    - Environmental review and permits, including the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).
    - Lease of rooftops, land, and building space.
    - Compliance with zoning requirements.
    - Anchor tenancy / public-private partnerships.
- Broadband service providers engage with utilities for power and access:

    - Broadband providers apply for power service.
    - Power utilities install and provide service.
    - Broadband providers need to attach to utility poles.
        - Providers apply for space on the poles.
        - Utilities perform make-ready and pole replacement if there is no space.
- Broadband providers engage with private landowners to place infrastructure:
    - Broadband providers examine available options for infrastructure placement.
    - Broadband providers negotiate with landowners for placement of infrastructure on land or on buildings.
    - Broadband providers pay the landowners and obtain access according to the negotiated terms.
- Broadband service providers engage with each other:
    - Middle-mile providers connect last-mile providers to the internet backbone.
    - Long-haul providers connect core internet locations between metro areas.
    - Communications providers perform make-ready to make space for new communications (broadband) attachments on utility poles.
    - ISPs move their attachments on utility poles to make space for other providers.
    - Wireline providers offer backhaul broadband connections from wireless antenna sites to the internet backbone.

3 Existing efforts to accelerate broadband access point deployment

This section of the study summarizes the state's ongoing efforts to accelerate deployment of broadband access points—particularly to serve tribes, low-income customers, and disadvantaged or underserved communities.

An analysis of the challenges associated with deployment of broadband access points must necessarily take into account existing efforts to ameliorate these challenges. In sheer scale and level of commitment, the state of California has undertaken a greater set of efforts to mitigate broadband deployment barriers, with more associated funding, than any other state, even when viewed proportionally to population or land mass.

Commitments at both the state and local level have led to a singular moment, in which dozens of critical initiatives and extensive public funds are at work to address the barriers to broadband deployment statewide. These many efforts are discussed in the sections of this report below and are further summarized here.

As documented in California's State Digital Equity Plan (which was reviewed and approved by the NTIA under the terms of a Digital Equity Planning Grant),[12] the state's existing efforts include the following initiatives.

3.1 The California Broadband Council (CBC)

The CBC was established in 2010 by Senate Bill 1462 (SB 1462) [2010] to promote broadband deployment in unserved and underserved areas of the state (as defined by the CPUC) and broadband adoption. CDT currently chairs the CBC, and is supported by the Office of Broadband and Digital Literacy within CDT, which manages the statewide ecosystem of individuals and organizations dedicated to closing the digital divide.

3.2 California Advanced Services Fund (CASF) Programs

CPUC administers the CASF program, which consists of six accounts/programs that support broadband deployment, adoption, and technical assistance. Since its inception in 2008, $348 million has been awarded to support 108 projects, with the potential to benefit 327,957 households across 43 counties.[13] CASF programs are funded via surcharges collected by telecommunications providers; the programs are ongoing and may collect applications on a rolling basis.[14]

3.3 Executive Order N-73-20

In August 2020, in response to the COVID-19 pandemic, Governor Newsom signed Executive Order N-73-20[15] to improve digital connectivity across the state. The Executive Order directed state agencies to

[12] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf.

[13] CPUC Five Year Plan, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/bead/california-bead-five-year-action-plan---final-draft---20230828.pdf, at p. 12.

[14] CPUC Five Year Plan, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/bead/california-bead-five-year-action-plan---final-draft---20230828.pdf.

[15] Executive Order N-73-20, https://www.gov.ca.gov/wp-content/uploads/2020/08/8.14.20-EO-N-73-20.pdf.

undertake specific actions to improve digital equity, and it directed the CBC to develop a statewide Broadband Action Plan by December 31, 2020. The CBC released its Broadband for All Action Plan in December 2020 with input from 700 entities.

3.4 Broadband for All Action Plan

The Broadband for All Action Plan acknowledges that broadband access, affordability, and adoption are critical components of digital equity. The State Digital Equity Plan aligns with and builds on foundational digital equity efforts established in the Broadband for All Action Plan. Both Plans focus on achieving three long-term goals:

Goal 1: All Californians have high-performance broadband available at home, schools, libraries, and businesses.

Goal 2: All Californians have access to affordable broadband and necessary devices.

Goal 3: All Californians can access training and support to enable digital inclusion.

To achieve these goals, the CBC leverages the state's full range of tools, including policies, programs, funding, partnerships, and collaborations with federal, municipal, and tribal governments.

The Broadband for All Action Plan (Action Plan) lays out key actions:[16]

- Modernize broadband speed and performance standards.
- Simplify processes and leverage existing assets and construction.
- Set reliability standards.
- Increase access to affordable broadband services and devices.
- Promote affordable broadband services and devices.
- Encourage broadband competition.
- Strengthen partnerships and coordinate initiatives.
- Improve broadband data and mapping transparency and usability.
- Develop technical assistance and support.
- Bolster partnerships.

The Action Plan assigned 24 action items to state entities. These include specific actions relevant to the factors identified in this report:

- Action 4: Implement a Dig Smart policy to install conduit as part of any appropriate and feasible state-funded transportation project in strategic corridors.
- Action 5: Improve state encroachment permitting processes and rights-of-way management, as needs or opportunities are identified, to accelerate broadband deployment.
- Action 6: Explore various actions to enhance permitting processes at all levels of government through meaningful partnerships.

[16] "Broadband for All Action Plan," https://broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final.pdf. "Broadband for All Action Plan," https://broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final.pdf, page 3.

- Action 7: Identify state property for possible use for broadband infrastructure.

CDT oversees the implementation of the Action Plan, working in close collaboration with state agencies to track the progress and report to the CBC. The Action Plan is reviewed and updated annually.

Significant progress has been made on many of the Action Plan items. Details may be found on the Broadband for All Action Plan Tracker.[17]

3.5 Senate Bill 156 (SB 156)

In July 2021, Governor Newsom signed Senate Bill 156 (SB 156) [2021] to accelerate the state's commitment to bridging the digital divide by increasing equitable, affordable access to high-speed internet service across California. SB 156 allocated a $6 billion multi-year investment to provide more Californians with broadband access.

- **Middle-Mile Broadband Initiative (MMBI):** $3.87 billion was allocated to CDT to oversee the development, construction, maintenance, and operation of a statewide open-access middle-mile network through the Middle-Mile Broadband Initiative. Significant progress has been made on the 10,000-mile plus MMBI project, which includes contracts for building, leasing, and purchasing segments of the network, as well as procurement of thousands of miles of conduit and fiber to mitigate potential supply chain risks.
- **Last-Mile Programs:** $2.75 billion was allocated to the CPUC for last-mile grants programming for Local Agency Technical Assistance, the Federal Funding Account, and the Loan-Loss Reserve Fund.

These programs were funded with a combination of federal and state dollars and must be completed by December 2026.

3.6 Get Connected! California mobilization

The Action Plan directed state agencies to develop partnerships to promote and track enrollment in low-cost programs to increase the state's broadband adoption rates. These efforts began during the pandemic with the promotion of the Emergency Broadband Benefit program and continued with the promotion of the FCC's ACP.

In 2022, the CBC established the goal of connecting 90 percent of the state's eligible population to the ACP. Led by CBC members, state agencies, and regional partners, this effort has built a statewide cohort of entities that coordinates efforts to raise awareness of ACP through direction notifications and assists eligible individuals to enroll in the program through onsite enrollment events. This expanding cohort consists of state agencies, internet service providers, regional and local governments and departments, broadband consortia, and community-based organizations.

CDT and CBC member entities (including the CPUC and CETF), and this host of statewide, regional, and local ecosystem partners, led a statewide mobilization to enroll residents in the ACP. CDT has actively promoted ACP on the Broadband for All Portal,[18] and in partnership with the California Emerging Technology Fund (CETF) and California State University, Chico, CDT developed a number of tools to

[17] Broadband for All Action Plan Tracker, https://broadbandforall.cdt.ca.gov/progress-tracker/.
[18] Broadband for All portal, https://broadbandforall.cdt.ca.gov/.

support these efforts, including a low-cost offer finder (with EveryoneOn),[19] an ACP resource page,[20] and an ACP enrollment tracker[21] by county and zip codes. As a result, California led the nation with 2,945,281 ACP enrollments as of February 7, 2024.

In further support of these efforts, 15 California entities, including CDT, were awarded a combined total of $6 million in ACP Outreach grants from the FCC. These funds were granted to enable a statewide outreach and awareness campaign through direct notifications and localized ACP enrollment events.

At the time of this writing, the ACP program is frozen and has begun winding down pending further funding allocation from Congress, which is uncertain.

3.7 Infrastructure Investment and Jobs Act (IIJA) broadband programs

The IIJA included a $65 billion investment to further broadband and digital equity efforts in states and communities across the nation. Programs funded through the IIJA and other federal programs include the ACP, Digital Equity grants (Planning, Capacity, and Competitive), the BEAD Program, the Enabling Middle-Mile Infrastructure Program, the Tribal Broadband Connectivity Program, and the ReConnect Program— which are providing critical funding for the Broadband for All program.

Digital Equity Act: The Digital Equity Act established three sequential grant programs to be administered by the NTIA including the State Digital Equity Planning Grant Program, the State Digital Equity Capacity Grant Program, and the State Digital Equity Competitive Grant. CDT received a $4 million NTIA State Digital Equity Planning grant that has funded the production of the State Digital Equity Plan. The state intends to apply for its allocation of Digital Equity Capacity Grants to implement the plan and to support entities within the state to apply for Digital Equity Competitive Grants and other sources of funding.

Broadband Equity, Access, and Deployment (BEAD) Program: The CPUC is the state's administering entity for the BEAD program. It developed its initial Five-Year Action Plan in close coordination with CDT. California received a BEAD allocation of $1.86 billion. The Five-Year Action Plan augments and expands the state's existing efforts to ensure that every Californian is served by affordable and reliable broadband.[22] As noted in the state's BEAD Five-Year Action Plan, the CPUC is implementing a data-driven broadband strategy, leveraging state and federal funding, creating a holistic approach to funding, and providing technical assistance to tribes, local governments, and other entities.[23]

[19] "Affordable service programs," Broadband for All, https://broadbandforall.cdt.ca.gov/affordable-service-programs/.
[20] "Affordable Connectivity Program," Broadband for All, https://broadbandforall.cdt.ca.gov/affordable-connectivity-program/.
[21] "Affordable Connectivity Program Enrollment Tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/affordable-connectivity-program/.
[22] State of California Five-Year Action Plan: Broadband Equity, Access, and Deployment (BEAD) Program, August 28, 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/bead/california-bead-five-year-action-plan---final-draft---20230828.pdf, at p. 9.
[23] Ibid.

Enabling Middle-Mile Infrastructure Program:[24] In 2023, CDT received $73 million from this grant program to fund spurs of the MMBI network to extend the state's network to unserved communities.

Tribal Broadband Connectivity Program:[25] Since 2022, 28 tribal entities received grants totaling $157 million to be used for broadband deployment on tribal lands, as well as for telehealth, distance learning, broadband affordability, and digital inclusion.

ReConnect Program (USDA Rural Utilities Service):[26] Since 2019, almost $91 million in grants have been received by California entities through the ReConnect Loan and Grant Program to provide funding for the cost of construction, improvement, or acquisition of facilities and equipment needed to provide broadband service in eligible rural areas.

Connecting Minority Communities Pilot Program: In 2022, more than $24 million was awarded to nine institutions of higher education in California to provide funding for "the purchase of broadband internet access service and eligible equipment or to hire and train information technology personnel."[27]

3.8 Digital Equity Bill of Rights

Signed by Governor Newson on October 8, 2023, Assembly Bill 414 [2023] states, "…that it is the principle of the state, to ensure digital equity for all residents of the state, that residents shall have access to broadband that meets specific requirements, … to the extent technically feasible, broadband internet subscribers benefit from equal access to broadband internet service within the service area of a broadband provider…."[28]

[24] "Enabling Middle Mile Broadband Infrastructure Program," National Telecommunications and Information Administration (NTIA), https://broadbandusa.ntia.doc.gov/funding-programs/enabling-middle-mile-broadband-infrastructure-program.
[25] "Tribal Broadband Connectivity Program," NTIA, https://broadbandusa.ntia.doc.gov/resources/grant-programs/tribal-broadband-connectivity-program.
[26] "ReConnect Loan and Grant Program," U.S. Department of Agriculture, https://www.usda.gov/reconnect.
[27] "Connecting Minority Communities Program," NTIA, https://broadbandusa.ntia.doc.gov/funding-programs/connecting-minority-communities.
[28] Assembly Bill 414 (Chapter 436, October 8, 2023), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB414.

4 Reported barriers specified by SB 717

As directed by SB 717, CDT considered the following 11 factors in identifying potential barriers to investment in or deployment of broadband infrastructure. This section of the study summarizes the factors listed in SB 717 reported by stakeholders as impacting broadband deployment. It also describes current state efforts to address these challenges and potential additional measures that can be considered.

4.1 The processes for and cost of obtaining electric service to broadband access points

ISPs[29] require reliable electrical power for the launch of newly built infrastructure and ongoing operation of their networks. The power requirements and the complexity of power line installation for a particular deployment scenario depend on factors such as the location of the equipment and the amount of power the equipment will draw.

Broadband network construction scenarios typically include network hub facilities that serve as traffic aggregation points and house electronic equipment for the operation of the network. The power consumption of hub locations varies by the type and number of installed equipment elements needed to serve the customer base. In some situations, the electrical service providers may be required to augment the grid capacity and upgrade electrical transport elements to accommodate the new hub site.

Depending on the network design, broadband providers may also need access to electrical power at numerous locations in the field to operate remote network nodes such as distributed wireless access points (small and micro cells), power supplies for hybrid fiber coaxial cable broadband networks, or cabinets housing network equipment.

Customer premises equipment (modems, antennas), as well as user devices such as laptops and smartphones, require power. Tribal representatives report many homes on tribal land are off the power grid and rely on solar power or generators, which limits broadband options to equipment that minimizes power consumption.

4.1.1 Reported barrier: Long timeline for obtaining electric service to communications facilities

Stakeholders report lengthy delays getting electric service extended to new communications facilities, including vertical wireless facilities and field facilities for placement of broadband equipment. They also report delays in power design approval. Stakeholders did not report barriers to deployment or impacts to the overall cost of a project related to the cost of obtaining electric service for broadband access points.

The service providers interviewed for this report indicated that the timeline from accepted submission of electric access requests to the installation of the electrical meter for new communications facilities can involve a lengthy timeline of up to three years. Several incumbent internet service providers, wireless providers, and small local exchange carriers (LEC) indicated these barriers have at times been significant enough to cause delays in deployments.

[29] This report uses the term internet service provider (ISP) to encompass the types of entities that seek to engage in “the investment in and efficient building of broadband access points,” both wired and wireless, per the language of SB 717. “ISP” therefore refers to entities that deliver last-mile service to residences, businesses, and institutions, as well as other broadband infrastructure companies.

However, while this issue was frequently raised among ISPs, the utilities and ISPs also note some instances in which they have developed and maintained ongoing good working relationships with each other. The stakeholders do not consider the process or cost of obtaining electric service to be a barrier to broadband deployment.

Wireline and wireless service providers report incurring significant costs for design, engineering, construction, and inspection of electric service extensions. Additionally, while cable service providers characterized their power needs as routine and simple (during a panel discussion on the topic), written comments from cable and wireless providers discussed inconsistent application of design standards and construction requirements among different California utilities, as well as between projects within a single utility—which created confusion and delays, resulting in the service providers incurring additional costs for these projects.

Cable providers further note that delays in electricity provisioning have resulted in downstream delays because municipalities may not accept certain permit applications without a power design approved by the electric utilities or evidence of existing power to the proposed site.

Electric utilities state they can generally provide electric service on a shorter timeframe than the broadband service providers report. Municipal and special district utilities indicate they can construct a simple service line extension within 15 to 30 days from the receipt of a completed and approved application to provide broadband facilities with service. However, these utilities also report the process to extend electric service can require more time when a project has a larger scope, includes multiple meter placements (e.g., because of distance from the utilities' facilities), or requires a complex extension due to the project's topography or rural location.

Investor-owned utilities report significantly longer time estimates, in part because the investor-owned utilities have larger service territories with diverse terrains and geographies. These larger utilities also receive a larger number of applications for complex projects to extend service, driving up the average timeline.

During a February 2, 2024, workshop sponsored by the CPUC, the investor-owned utilities presented their timelines and processes for line extensions and new service connections to end-user locations. Investor-owned utilities provided estimates of 12 months for new service connections to commercial customers with larger or complex projects.[30] (The investor-owned utilities acknowledged that projects can take longer than these estimates, up to 14 months, if the project is more complicated or requires significant permitting or environmental review, or if there are any unexpected or unintended delays at any stage of the project.) The investor-owned utilities presented shorter timelines of four to nine months for smaller projects. The estimates include time to design, permit, and construct the utility project as needed to fulfill the project's specific requirements.

[30] CPUC Administrative Law Judge's Ruling Admitting the February 2, 2024, Workshop Slides into the Record, (R.24-01-018), February 14, 2024, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M525/K362/525362069.PDF (provides a link to the workshop presentations of each investor owned utility on energization timelines and processes).

Because the electric service timelines can be unpredictable on a case-by-case basis, ISPs report they must plan well in advance or risk being unable to operate their newly constructed fiber plant or newly installed wireless antennas when they are ready to begin operations.

In some situations where the power turn-up lagged significantly behind a fiber construction schedule, ISPs report they have sought to pursue makeshift power connections with existing utility customers through private use arrangements to meet their low wattage requirements. Other utilities report relying on temporary solar installations or backup battery capabilities to power equipment in broadband cabinets while waiting more than a year for electric service.

Such lags can increase the ISPs' deployment costs, and also delay generation of revenue—which may have an impact on the ISP's decisions about moving forward with a project.

4.1.1.1 Existing programs and efforts: AB 50 and SB 410

The state has taken a key step toward addressing this barrier. Assembly Bill 50 (AB 50) [2023][31] and Senate Bill 410 (SB 410) [2023],[32] which address the long cycle of electricity provisioning by investor-owned utilities, became law in October 2023.

AB 50 and SB 410 create a framework for the state to address the concern raised by broadband providers that delays in investor-owned utilities' provisioning of electric service to their network facilities are a barrier to deployment of service to many communities. (This effort does not address the electric service provisioning timelines of municipal and publicly owned electric utilities—which operate under a variety of different regulatory structures and are not governed by a centralized authority that oversees electric service operations).

One goal of AB 50 is to bring about an improved planning process by the investor-owned utilities, including better communication with local and state jurisdictions and critical community stakeholders. A related goal of SB 410 is to make it a state policy that customers of investor-owned utilities shall be "promptly" connected to electrical service and shall not experience a delay "caused by a failure of the electrical corporation to implement" a service extension project.[33]

AB 50 and SB 410 require the CPUC, by September 30, 2024, to determine the criteria for timely delivery of electric service by investor-owned utilities and establish reasonable average and maximum target time periods to complete work and initiate electric service; establish a procedure for customers to report delays to the CPUC; establish metrics and annual reporting requirements for public posting on utilities' websites; and convene an annual workshop with community leaders and key stakeholders to monitor and update metrics. SB 410 allows utilities to recover reasonable costs associated with these efforts.

The pieces of legislation also require investor-owned utilities to address the current backlog of service requests. Under AB 50, investor-owned utilities that had completed fewer than 35 percent of pending service requests received as of January 31, 2023, are required to report to the CPUC that they have

[31] Assembly Bill 50 (Chapter 317, October 7, 2023), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB50.
[32] Senate Bill 410 (Chapter 394, October 7, 2023), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB410.
[33] SB 410, codified as Cal. Pub. Util Comm §933(c), (d).

completed at least 80 percent of those service requests by December 1, 2024. Under SB 410, the CPUC is directed to develop detailed annual reporting requirements, as well as short-term reports that demonstrate improvement in the resolution of backlogs of customers currently waiting for electricity service.

On January 30, 2024, the CPUC issued its Order Instituting Rulemaking to implement AB 50 and SB 410.[34] It set a schedule to meet the legislative deadline to determine the criteria for timely completion of new and upgraded service connections; to adopt reasonable average and maximum target service delivery time periods; and to establish annual reporting and workshop requirements. The rulemaking includes an informational workshop with presentations from utilities and large-user customers as well as multiple rounds of comments from parties to the rulemaking.

4.1.1.2 Potential opportunities

4.1.1.2.1 Monitor and evaluate the impact of the CPUC's rules under new legislation and include electric service benchmarks and timelines in a Last-Mile Broadband Dashboard Project

The CPUC is required to create the criteria, timelines, and a regulatory framework to operationalize and monitor progress toward the Legislature's goals as stated in AB 50 and SB 410. To track the timelines specific to electrification of broadband access points, the CPUC could create a reporting structure that allows it to evaluate requests by customer and service types, including ISPs, to ensure that the Legislature's policy goals are aligned with the goals of tracking progress in reducing electrification delays for ISPs.

If reporting is broken down by category of company or service, it would be possible to monitor and study the impact of the implementation of AB 50 and SB 410 as applied to broadband deployment projects, including the effectiveness of criteria adopted to define the timely installation of meters and delivery of electric service.

Also, the results of electric service benchmarks and timelines could be published to a Last-Mile Broadband Dashboard Project documenting the timeliness of broadband-related processes. (See Section 4.2.1.2.3 for more details on this potential opportunity.)

4.1.2 Reported Barrier: Lack of power to communities and homes in isolated areas

Tribal representatives report that many residences on tribal lands do not have grid power. According to a survey of tribal communities by the Department of Energy, Office of Indian Energy Policy and Programs, 47 percent state there are homes in their community not connected to the grid or a community-scale microgrid. In addition, 38 percent of the responses report one to 50 unelectrified homes in their community, 2 percent report 50 to 100, and 8 percent report more than 100.[35]

Tribal stakeholders contributing to this report state that statistics on power service underreport the problem, because statistics for tribal lands are often aggregated by reservation, and count a reservation as served even if only some buildings have power. The representatives also note that the capital cost of

[34] California Public Utilities Commission, Order Instituting Rulemaking to Establish Energization Timelines, R.24-01-018 (January 30, 2024).

[35] "Tribal Electricity Access and Reliability, Congressional Report—Listening Session II," U.S. Department of Energy, Office of Indian Energy, July 28,2022, https://www.energy.gov/sites/default/files/2022-07/ie-congressional-listening-session-2_july2022.pdf.

power installation is very high where service extension requires extensive construction to serve few locations.

A lack of power limits broadband service options to services that can operate over solar or generator power. This limitation can make it challenging to use satellite services because of the power requirements of the equipment. For example, the customer premises equipment (CPE) for Starlink satellite internet service uses 50 to 75 watts when active,[36] while in comparison, fiber CPEs use 6 watts.[37] While satellite can be a "go to" broadband technology for many isolated locations, it may not be an accessible option where power is limited.

4.1.2.1 Existing programs and efforts: Microgrid and electrification programs

Research and outreach conducted in the preparation of this report identified efforts that can support electrification.

The CPUC Microgrid Incentive Program provides funding for community, local, tribal, and government-driven projects. In the case of areas not on the grid, the electrification would be a standalone microgrid. Tribes receive extra consideration. The first application window opens in July 2024.[38]

The BIA operates a $72 million tribal electrification program to extend electrical service to unserved homes,[39] with $7 million to go to four California tribes.[40]

4.1.2.2 Potential opportunity: Coordinate power and broadband installation if areas are unserved by power and broadband

Given the high cost of utility construction (which is even higher in isolated areas that lack utility poles, as well as in areas far from existing infrastructure, labor, and materials), the construction of power and broadband infrastructure could benefit from better coordination, where feasible.

While best practices still separate the two services, usually in separate ducts, the digging and permitting can be done as part of the same process. Also, an experienced power utility may have more staff and capability to handle permitting and project management than a small or startup broadband provider, so both service installations can leverage the expertise of the power utility.

4.2 The processes for obtaining state, county, or local permits to deploy broadband access points

The construction of broadband facilities requires the project owner to obtain permission from permitting authorities and to provide evidence that the project complies with local building codes and traffic control standards. The submission of a permit request frequently includes detailed fiber route

[36] "How much power does Starlink use?" https://www.makeuseof.com/how-much-power-does-starlink-use/#:~:text=Your%20standard%20Starlink%20router%20(along,as%20reported%20by%20Starlink%20Hardware.
[37] FS ONU1710-1G, https://www.fs.com/products/154795.html?utm_country=9012016&gad_source=1&gclid=CjwKCAjwkuqvBhAQEiwA65XxQLY19Kc58NnuDXn1cPXEkloPycZNTyAX2jZLGHNBfEuMnW5bY9yczRoCV74QAvD_BwE.
[38] Resiliency and Microgrids, CPUC, https://www.cpuc.ca.gov/resiliencyandmicrogrids.
[39] Tribal Electrification Programs, U.S. Department of the Interior, Bureau of Indian Affairs, https://www.bia.gov/service/electrification.
[40] "Yurok, three other tribes in California, receive federal funds to boost access to electricity," Jefferson Public Radio, https://www.ijpr.org/environment-energy-and-transportation/2024-03-08/yurok-three-other-tribes-in-california-receive-federal-funds-to-boost-access-to-electricity.

maps and specifications of planned materials and structures, such as hub facilities, field cabinets for housing electronics, and fiber pull boxes. Standards and requirements often vary by location within a municipality, adding complexity to the permit process (both in terms of the applicant's request and the locality's review).

Under certain circumstances, such as when a project crosses jurisdictional boundaries, the submitted plans must meet the criteria of multiple authorities. Furthermore, the permitting process may require an environmental determination under the CEQA rules, as further described in Section 5.5.

The broadband permitting processes among state agencies and in many localities have been identified as barriers to the deployment of broadband access points. ISPs note the complexity of permit requirements and processes, and the resulting timeframes for permit approvals, as obstacles to timely deployment of their construction projects. Permitting rules and regulations have also been identified as a challenge by the state government.

4.2.1 Reported barrier: Delays in permitting by some state agencies, particularly where staffing resources are insufficient

Stakeholders report challenges with inconsistency of standards and processes, lack of clarity regarding processes, and long timelines among the individual boards and districts of state agencies that issue permits. Some ISPs report they often must add six to 10 months to their planning cycle for state permitting.

ISPs describe inefficiencies in permitting at the state level. They also report challenges with the complexity of permit requirements and processes, inconsistency of standards and processes, lack of clarity regarding processes, and long timelines among the individual boards and districts of state agencies that issue permits. ISPs also note that state agencies seem understaffed and overworked due to the number of permit applications that must be reviewed and processed simultaneously.

Wireless and wireline providers state that Caltrans' permitting process has long lead times, sometimes as long as two years. (Caltrans' permitting may include environmental, right-of-way, and other reviews.) Providers further report high costs in complying with Caltrans' design standards and regulations, such as excavation fill requirements. Caltrans' performance target is 30 calendar days for a decision of approval or denial for 90 percent of requests,[41] with more complex projects taking significantly longer. These processes also often include detailed approval and oversight that require Caltrans personnel to inspect and approve the project several times.

Some ISPs report that cost overruns due to state permitting requirements can impact grant-funded projects where providers must adhere to strict budget requirements—and some ISPs have had to cancel projects after budget revisions.

4.2.1.1 Existing programs and efforts: Streamlined permitting processes and programmatic, consolidated reviews for the Middle-Mile Broadband Initiative

The statewide Middle-Mile Broadband Initiative,[42] which is in the preconstruction phase of the majority of the network with construction commencing in various areas throughout the state, requires extensive

[41] "Applications & Forms," Caltrans, https://dot.ca.gov/programs/traffic-operations/ep/applications.
[42] State of California Middle-Mile Broadband Initiative, https://middle-mile-broadband-initiative.cdt.ca.gov/.

permitting across all state agency districts and all state permitting agencies. Recognizing this, SB 156[43] requires that "all state agencies shall work in cooperation to expedite the delivery and permitting of the statewide open access middle-mile broadband network."

As part of its strategic planning efforts—and to further enhance permitting processes in accordance with the Broadband for All Action Plan (Goal 1, action item 6)[44]—CDT convened state agencies to facilitate a collaborative approach to permitting for the Middle-Mile Broadband Initiative.

For example, CDT expanded interagency agreements among state agencies to supply additional resources and provided thought leadership for a Letter of Intent between Caltrans, CDT, and federal agencies to support the mutual goals of broadband deployment and addressing barriers to permitting and environmental review processes.[45]

CDT also worked with Caltrans, the California Coastal Commission, the California Department of Fish and Wildlife, the State Historic Preservation Office, and the California State Water Resources Control Board, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service to develop programmatic approaches that enhance permitting process efficiencies. These approaches include consolidating review and standards at the state level where possible and increasing coordination among agency districts and bureaus for Middle-Mile Broadband Initiative permit applications. In addition, SB 156 provided funding for permit review staffing and resources.

4.2.1.2 Potential opportunities

While a coordinated permitting approach like the one developed for the Middle-Mile Broadband Initiative may be impractical for smaller-scale local broadband network implementation, the state may consider investigating the associated processes as models that can potentially be leveraged for broadband access point deployment. Lessons learned by the agencies and their fine-tuned permitting approaches might be applied in part to last-mile providers' permit requests. Additional opportunities may include public information sharing and expanded resources for permitting offices.

4.2.1.2.1 Provide additional resources for permitting staff to review applications and perform inspections for last-mile projects

To help address the barrier reported by ISPs that some state agencies lack adequate staffing to review the volume of simultaneous permit applications they receive in a timely manner, the state may consider providing additional resources for staff to review permit applications for last-mile broadband deployment projects. The interagency agreements CDT pursued with key permitting agencies to support the Middle-Mile Broadband Initiative could serve as a model approach.

Through this type of agreement, one agency can provide funding to another to support that agency in hiring staff with agreed-upon roles and responsibilities—in this case, dedicated review of applications for last-mile deployment by staff with specific knowledge of the broadband permitting process and requirements. The State Legislature allocated funding to CDT, which then entered into agreements with other state agencies to distribute that funding as needed to support additional staffing. These

[43] Senate Bill 156 (Chapter 112, Statutes of 2021), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB156.
[44] "Action Plan Progress Tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.
[45] See "Action 6," Action plan progress tracker, Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.

agreements could also require a performance level within the permitting agencies and could provide training and support for broadband permitting application reviews.

The benefit of an interagency agreement is the increased collaboration between the agencies involved, which would allow an agency deploying broadband to serve in a coordinating and support role related to permitting for last-mile projects. That agency would be able to coordinate efforts among agencies more effectively and monitor their work in accordance with the state's goals for broadband deployment.

4.2.1.2.2 Consider developing a public-facing state website with comprehensive permitting resources to facilitate communication and planning

ISPs report challenges navigating permitting processes and requirements across the individual boards and districts of state agencies that issue permits. To promote greater transparency, the state may consider developing a public-facing webpage that includes details on state agencies' roles in issuing permits for broadband access point deployment, to provide greater clarity and communications with industry. (Caltrans has an existing website focused on broadband infrastructure in the right-of-way.)[46]

Agencies would be responsible for collecting the relevant information from individual districts or boards and consolidating it in a user-friendly format through a portal developed and maintained by the agency at the state level. They would also need to consider mechanisms for updating content as changes are made at the local level. This webpage would be intended to provide a central information source for ISPs and other interested stakeholders across the state.

For guidance, the state may consider the City of Oakland's "Apply for Telecom Facilities" website[47] and Montgomery County, Maryland's "Telecom Permits" website,[48] which provide examples of such portals that provide clear visualizations of their respective permitting processes.

Collecting information about broadband permitting and related processes in one source is a best practice that would allow ISPs, contractors, administrators, and the public to understand the broadband deployment process from beginning to end. Full transparency about these processes may be an effective way to enable the communications industry to expeditiously plan and deploy networks.[49]

4.2.1.2.3 Provide resources to develop a Last-Mile Broadband Dashboard Project

To further encourage visibility into permitting processes at the state level, the state may consider collecting and publishing data on the timeliness of state agencies' broadband-related permitting processes in a Last-Mile Broadband Dashboard Project. This public-facing dashboard would report in aggregate form, the timeline from submission of an application to a state agency's issuance or rejection of the permit.

The dashboard would not provide real-time tracking; rather, it would provide the industry, the state, and interested members of the public with useful benchmarks for and information about typical

[46] "Wired Broadband Facilities on State Highway Right of Way," Caltrans, https://dot.ca.gov/programs/design/wired-broadband.
[47] "Apply for Telecom Facilities," City of Oakland, Calif., https://www.oaklandca.gov/services/apply-for-telecom-facilities.
[48] Montgomery County, Maryland, https://www.montgomerycountymd.gov/DPS/Process/ld/telecom-permit.html.
[49] "State of California Local Government 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, at p. 3.

permitting timelines by permit type, issuing agency, and high-level project characteristics—and would allow for monitoring of these metrics over time.

As a specific example, Caltrans could document its efforts and create a dashboard and database tracker that would help the state evaluate the permitting process and identify improvements, on a district-by-district basis. Information to be documented on a regular basis could include project length in miles, proposed construction method, projected timeline for each step in Caltrans' permitting process, projected cost of the permitting process, length of time each submittal is in the queue, applications withdrawn during the reporting period, completion time relative to projected time, and actual permitting cost for projects completed in a reporting period relative to projected time.

A dashboard of this sort would enable stakeholders and members of the public to better understand the enormous complexity of what Caltrans and its districts have to undertake to protect Caltrans' critical assets and the public rights-of-way. Such a dashboard would be a helpful tool for Caltrans to demonstrate to stakeholders the complexity of the permitting work and its diligence in conducting those processes.

A dashboard would also provide quantitative insight into service providers' reports of delays. A dashboard would help determine where a new approach might be appropriate. The analysis might identify opportunities to address the issue, such as providing an agency with additional resources to evaluate applications or offering technical assistance to support ISPs in submitting complete applications.

To mitigate potential concerns about sharing proprietary information, the dashboard might avoid identifying the project or the entity submitting a permit application; however, to provide a helpful point of comparison and evaluation, it ideally would display information about the technology type and complexity of the project, such as whether the proposed project traverses an environmentally sensitive area.

4.2.2 Reported barrier: Lack of clarity around availability of state property for broadband leasing

Stakeholders report that leasing of state assets to private entities, which is administered by the Department of General Services (DGS), has suffered from a number of challenges.

ISPs report that leasing space on state-owned properties for deployment of broadband access points and other network infrastructure facilities can be a costly process. Both wireline and wireless ISPs report delays in getting information about the availability of state-owned sites that would be appropriate locations to deploy equipment.

Absent a state agency alerting DGS that a site is available for broadband use, there is no way to signal to the marketplace that it is available. Because opportunities for leasing specific sites are not obvious, the burden is on developers to identify a state site, and then to attempt to initiate lease discussions.

Existing statutory limitations require all such leases, including at renewal, to be at fair market value rates; the fair market value requirement can make establishing a valuation time-consuming, because those valuations are project, site, and benefit-specific.

4.2.2.1 Existing programs and efforts: Department of General Services' inventory of state property

DGS manages a Statewide Property Inventory (SPI) portal that serves as the official repository of state-owned property. Unless a department's property is statutorily excluded from reporting, SPI displays all state-owned property, whether in use or excess.[50] Historically, if an entity wanted to lease state property, they would need to identify a property, use SPI to identify the agency with jurisdiction, and then contact that agency to inquire about the property's availability and their interest in engaging DGS to begin lease discussions.

As part of the Broadband for All initiative, California's 2020 Broadband for All Action Plan directed DGS to review its SPI and identify state property that would be appropriate for lease by wireline and wireless ISPs for placement of broadband facilities.[51] DGS, in cooperation with CDT, Caltrans, and the CPUC, completed an inventory of property specifically appropriate for placement of broadband facilities. The inventory included identification of the assets' geographic locations.

With respect to lease, generally, DGS is required to set lease rates for the use of public property at fair market value.[52] Historically, to expedite the leasing process and for placement of telecommunications equipment on state property, DGS publishes its lease rates and access guidelines, including for space in vaults and on public land, rooftops, buildings, and towers.[53]

Recently, DGS established policies that allow for a discount to lease rates for public or non-commercial users that can show a "broad public benefit for leasing the space," including but not limited to placing equipment used for emergency response by a local, state, or federal agency.

In Senate Bill 387 (SB 387) [2023],[54] the California Legislature adopted a statutory framework to allow DGS to charge lease rates at less than fair market value for broadband projects to connect unserved or underserved locations in the state. For a lease to qualify, the relevant state agency with jurisdiction over the property must give consent, and CDT or the CPUC must give consent and make a written finding that the project is a "public benefit" related to the Middle-Mile Broadband Initiative or last-mile infrastructure deployment projects.[55] The statute further requires that the discounted lease rate must recover all direct costs of the lease.

4.2.2.2 Potential opportunity: Enhance the DGS asset lease program

The state may consider further enhancing the state's success in leasing state property for broadband use by developing specific criteria for identifying/refining properties appropriate for deployment of broadband equipment.

---

[50] Department of General Services, Real Estate Services Division, Statewide Property Inventory Portal, https://www.dgsapps.dgs.ca.gov/RESD/SPI-Web/wscripts/spi.asp?action=Main.
[51] Broadband for All Action Plan, California Broadband Council, 2020, at p. 25, https://broadbandcouncil.ca.gov/wp-content/uploads/sites/68/2020/12/BB4All-Action-Plan-Final.pdf.
[52] Cal. Govt. Code §11011.2(a)(3).
[53] Department of General Service, Real Estate Services Division, Telecommunications Lease Rates for State Facilities/Properties, (2023/2024 lease rates), https://www.dgs.ca.gov/RESD/Resources/Page-Content/Real-Estate-Services-Division-Resources-List-Folder/Telecom-Lease-Rates-for-State-Facilities-Properties.
[54] Senate Bill 387 (Chapter 485, Statutes of 2023) (Amend Cal. Govt. Code §11011.2), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB387.
[55] Senate Bill 387 (Chapter 485, Statutes of 2023) (Amend Cal. Govt. Code §11011.2), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB387.

4.2.3 Reported barrier: Local permitting inefficiencies, high costs, and lack of sufficient resources

Stakeholders report local permitting inefficiencies and high permit costs, and report that some localities lack sufficient resources to expeditiously and efficiently conduct permitting. For example, some ISPs report processing delays and high costs for encroachment permits and traffic plans.

Some ISP stakeholders say the lack of consistent permitting practices and the variation of standards across municipalities within a region create challenges for them. They may also face challenges when practices and standards vary within a municipality and their permit applications must go through multiple city agencies—as well as when local jurisdictions inconsistently apply permitting guidelines.

Some ISP stakeholders express frustration that some municipalities have limited resources to support a robust permitting process. Municipalities, too, acknowledge the challenges of supporting a permitting office and addressing the specific aspects of a telecommunications permit. CDT and the Governor's Office of Business and Economic Development (GO-Biz) developed extensive best practices for local consideration (see Section 4.2.3.1.1), but lack of local resources, particularly in smaller and less-resourced communities, reduces reconsideration of existing policies.

ISPs consulted in the preparation of this report claim permit process inefficiencies in cases where initial permit applications are rejected due to incomplete information or standards violations. Some report that permit applications have been returned to them for the curing of one documentation defect at the very end of a municipality's allowable processing timeframe; the ISPs attribute that scenario to what they believe may be understaffed permitting offices seeking to move an application forward when the office has insufficient resources to fully process the application.

In those circumstances, the ISPs claim their amended applications are sometimes put in the queue of new applications with no certainty that the reviewer of the original submittal will process the updated material. As a result, a new reviewer may find additional shortcomings that require curing—leading to an inefficient, iterative permitting process.

In addition, stakeholders remark that the local permitting entity's engineers sometimes interpret the entity's standards differently from the stakeholders—which leads permitting authorities to require corrections of the design plans and re-submission of the permit package. This also happens when different city agencies within the same municipality impose varying requirements on a single project.

The same issue occurs sometimes on a regional level. Small wireless companies, small local exchange carriers, and infrastructure providers report that permitting inconsistencies can also come from differences in interpretation of construction standards between multiple municipalities involved in a single project.

ISPs also report barriers related to specific types of local permitting:

- Traffic control permitting slows projects.
- Restoration requirements vary widely across the state, with some communities requiring repaving of entire traffic lanes.

- Beautification standards sometimes require burial of components that could otherwise be placed in pedestals or cabinets, and painting and landscaping around above-ground cabinets.
- Blanket permits are rejected for small, routine projects and maintenance efforts (and a municipality instead requires a new permit).
- Cabinet and pedestal permits can take 60 to 90 days to process.

Wireless carriers state that, while some jurisdictions are diligent in their attempts to meet federal timeline requirements for placement of small cell and other wireless equipment on municipal structures, other municipalities fail to comply with these timelines. The providers note that inconsistent application of federal rules creates uncertainty and delays that increase projects costs. The carriers note that some municipalities also require public hearings, add new obligations during lease renewals, or have extensive requirements for modifications of existing facilities.

Wireline providers note that some municipalities have a two-step excavation permit process that can drive costs up by requiring separate permits and city agency reviews for different stages of the excavation—a process that also adds to deployers' timelines by imposing long wait times for city inspectors.

These stakeholders also note high costs from surface restoration, which they say can lead to cancellation or rerouting of a project to avoid the restoration. Wireline providers report that some municipalities require "curb to curb" restoration or restoration of 25 feet in either direction of a street cut, costly upgrades of sewer lines, or restoration that must go several layers of pavement deep. A wireline provider notes an example of required restoration that would have cost $300,000—a large percentage of the estimated project cost—which led to the cancellation of the project.

4.2.3.1 Existing programs and efforts

Municipalities and counties report several efforts to streamline permitting. CDT published a best practices manual to guide local permitting efforts. In addition, Assembly Bill 965 (AB 965) [2023], the Broadband Permit Efficiency and Local Government Staff Solution Best Practices Act of 2023,[56] seeks to mitigate the volume of permit applications by requiring localities to use batch permitting processes.

4.2.3.1.1 Efforts by counties and municipalities to streamline permitting and facilitate broadband deployment

Counties and municipalities focused on broadband deployment have taken steps to streamline and expedite permitting and make broadband deployment a priority in their communities.

Nevada County changed its permitting policies so that many approvals related to power and broadband construction are administrative instead of legislative. The county also hired a land-use ombudsman to provide free consulting services to broadband deployers and within county government.

Nevada County convened a group of department heads to streamline the encroachment permit process, especially for FFA and BEAD projects. Santa Barbara County is working on the development of a programmatic environmental impact reports (EIR) to help facilitate broadband deployment.

[56] AB 965 (Chapter 553, October 8, 2023), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB965.

Nevada County developed documentation of existing utilities that can be used by broadband providers designing and building underground infrastructure. Several counties have offered broadband operators an annual encroachment permit for construction and operation in the right-of-way. Nevada County reported that the cable operator had 102 projects in a year, but the majority were eligible under the annual permit—so the permits were approved, and the provider only needed to submit an inspection notification.

Nevada County noted the criticality of champions in county leadership, and a better outcome when elected officials instructed staff, "you make this [broadband] happen."

4.2.3.1.2 "State of California Local Permitting Playbook" and best practices manual

In accordance with action item 6 under Goal 1 of the Broadband for All Action Plan, which directs the state to "enhance permitting processes at all levels of government through meaningful partnerships,"[57] CDT and GO-Biz developed an innovative "State of California Local Permitting Playbook" (Permitting Playbook)[58] for local governments.

The Permitting Playbook, issued in 2022, provides "smart practices" for localities to facilitate middle-mile and last-mile broadband deployment—with or without public funding, and at varying levels of complexity. It presents a menu of suggestions for permitting authorities that may enhance the efficiency of the permitting processes for the permit requestor as well as for the local permitting offices. The recommendations are experience-based guidelines for permitting and related processes—intended to create effective and efficient access to assets, and equitable access to information. Stakeholders have reported the benefits of the Permitting Playbook, which indicates the value of ongoing evaluation and updates to that guide.

These recommendations acknowledge that every locality has unique challenges and resources; the recommendations include that municipalities may opt to receive value in return for the efforts they make to enable a broadband deployer's efforts. That value may be financial (such as a lease payment in return for access to a city's fiber network) or it may be less tangible (such as a commitment by the partner to deliver broadband service to low-income residents in return for access to a city's excess conduit).[59]

4.2.3.1.3 Batch permitting statute (AB 965)

AB 965 seeks to improve the permitting process for broadband.[60] AB 965, signed by the Governor on October 8, 2023, "requires local agencies to undertake batch broadband permitting processes upon receiving two or more broadband permit applications for substantially similar broadband project sites submitted at the same time by the same applicant."

Local agencies must continue to follow their existing statutory timelines for review of permit applications for wireless broadband projects even if the permits are part of a batch. The statute allows

[57] "Action Plan Progress Tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.
[58] "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.
[59] State of California Local Permitting Playbook at pgs. III-IV.
[60] AB 965 (Chapter 553, October 8, 2023), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB965.

local agencies to "place reasonable limits on the number of broadband project sites that are grouped into a single permit while undertaking batch broadband permit processing." In cities with fewer than 50,000 residents or counties with fewer than 150,000 residents, the statute states that a reasonable limit shall be no less than 25 projects within a batch; for larger cities and counties, the statue states that a reasonable limit shall be no less than 50 projects within a batch. Local permitting entities may remove a project from a batch if it delays the remaining projects—and may only charge a fee on batch processing that reflects its reasonable costs.

This statute seeks to increase efficiency of permitting at the municipal, county, and publicly owned utility levels. However, AB 965 does not apply to state agencies and state-owned rights-of-way and structures.

4.2.3.1.4 Federal shot clock requirements for placement of wireless facilities

Federal shot clock requirements[61] preempt state and local authority over the permitting and placement of wireless communications and wireless communications facilities. Through these requirements, the FCC leaves room for local authorities to regulate the placement of these facilities to protect the localities' public interest in land use and public safety—but the federal requirements limit the scope of those local regulations.

The shot clock requires state government and municipalities to review an application to place a small wireless facility on an existing pole or facility within 60 to 90 days. Municipalities must review an application to place wireless equipment along with construction of a new pole or facility within 90 to 150 days.[62] State and local authorities are also required to notify the applicant of any errors or omissions in their application within 10 to 30 days of submission; this notification temporarily suspends the shot clock to allow for curing and updating of the application. If the permitting entity fails to provide notice of an incomplete application, the shot clock remains in force. If the permitting entity misses the shot clock (i.e., does not complete its review by the deadline), the application is "deemed approved."

California statute aligns with the FCC's timeline and application review regulations to deployment of wireless telecommunication facilities in California[63] and reinforced the concept that applications to place wireless facilities will be "deemed approved" if a city or county does not approve or reject an application under the FCC's timeframe. The California statute also states that a city or county shall not "unreasonably withhold, condition, or delay approval" of any request for a permit to place a wireless facility or related permits such as traffic control and may not prohibit or unreasonably discriminate in favor of or against any particular wireless technology. The FCC requirement also specifies that cities and

[61] 47 USC §332; 47 CFR §1.6003 (Code of Federal Regulations). 47 USC §332; 47 CFR §1.6003.
[62] 47 CFR §1.6003.
[63] Cal. Govt. Code §65964.1. Assembly Bill 537 (Chapter 467, October 4, 2021), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB537. In addition to timelines, these regulations also limit fees that state and local entities can charge for the application processing and license fees. The FCC has adopted safe harbor default rates for these items but allows state and local entities to also negotiate with the applicant. 47 USC §332; 47 CFR §1.6003 (Code of Federal Regulations). 47 USC §332; 47 CFR §1.6003.

counties maintain authority to impose narrow requirements on the placement of these facilities to protect public safety and enforce aesthetic and other local considerations.[64]

California does have deadlines or shot clocks for wireline permit requests.[65] California's Permit Streamlining Act[66] applies review timelines generally to development projects. The Act requires state and local agencies to determine whether an application is complete within 30 days of receipt of the application; a new 30-day timeline begins with each submission of a revised application.[67] Further, "all public agencies" must review and approve or reject an application for a permit within 180 days of completion of a full environmental review (when required)—or within 60 days of a determination that no environmental review is required or issuance of a categorical exemption under CEQA.[68]

4.2.3.2 Potential opportunities

Many stakeholders echo the benefit of permitting measures outlined in the state's Permitting Playbook—and the benefit of continuing to develop and share best practices. Stakeholders also note the barriers of local permitting inefficiencies might be ameliorated if local permitting authorities had sufficient staffing levels and the staff members were well-trained in broadband deployment processes.

4.2.3.2.1 Provide technical assistance to localities to improve policies and procedures

A lack of local resources, particularly in smaller communities, may prevent the consideration and implementation of streamlined permitting policies. The state may consider allocating funds to the CPUC's Broadband Internet Caseworkers program, or a state agency, to provide expert technical assistance to localities with a focus on how best to enhance the development of local broadband leaders—potentially including generally applicable webinar-based trainings and materials alongside the Permitting Playbook, as well as one-on-one consultations as requested.

Additionally, the state may consider supporting information and resource sharing among broadband consortia, municipalities, and counties. This assistance would be designed to enable localities to map, evaluate, and amend their permitting policies and practices to align with their broadband goals, enhance their ability to access funding, and help meet their communities' needs.

---

[64] "In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment," FCC, Declaratory Ruling and Third Report and Order, September 27, 2018, https://docs.fcc.gov/public/attachments/FCC-18-133A1.doc, items 86 to 88.

[65] Other state statutory permitting requirements support deployment of fiber and cable facilities but with more limited applicability. For example, municipalities are required to review an encroachment permit application from a cable company that holds the cable franchise within the municipal jurisdiction within 60 days and can only charge a fee that represents "reasonable costs" to the municipality for permits and work in the right-of-way by a cable company; however, this requirement has limited applicability to those cable companies that hold local franchises with a municipality (see Cal. Pub. Util. Code §§50030, 5885(c)(2)). A more generally applicable requirement, Cal. Govt Code §65964.5(d), limits the fees a municipality can charge a service provider for fiber installation to the reasonable cost of processing the permit and conducting an inspection of the project.

[66] Cal. Govt. Code Section 65920 et seq. Senate Bill 894 (Chapter 699, September 30, 2010), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200920100SB894.

[67] Cal. Govt. Code §65943.

[68] Cal. Govt. Code §65950.

4.2.3.2.2 Require or encourage inclusion of broadband elements in local jurisdictions' general plans

Each county and municipality in California is required to adopt a general plan,[69] which acts as a roadmap for long-term development and land use decisions and sets priorities for the coming years.

The challenges experienced by ISPs in terms of local permitting barriers may be due in part to many local jurisdictions not incorporating or prioritizing broadband planning in their general plans. Requiring localities to include broadband in these plans might enable robust and comprehensive consideration of how their broadband-enabling practices impact deployment and operations.

If a local jurisdiction incorporates priorities for broadband planning and expansion into its general plan, it could rely on that plan when allocating resources to its permitting office for the development of specific processes and dedicated, well-trained staff to process permits for broadband projects.

General plans are required to address the objectives, principles, standards, and plan proposals for a specific set of elements. These elements include land use, transportation, housing, conservation and environmental justice, safety, noise abatement, and open space.[70] Municipalities are required to implement the statutory general plan requirements "in ways that accommodate local conditions and circumstances" to meet the needs of California's diverse communities.[71]

General plan statutes require local jurisdictions to address how the planning process will impact "utilities and other essential public facilities."[72] State guidance documents for municipalities urge municipalities to use their general plans to "right size" utility infrastructure to match planned growth and place utility infrastructure in areas that maximize efficiency and minimize impacts to the community.[73]

These same state guidance documents define telecommunications and broadband as a "utility" that should be incorporated into these elements of a municipality's general plan.[74] However, the statutes that establish requirements for municipal general plans do not explicitly reference broadband planning as a required element, and the guidance documents may not provide enough information, resources, and direction to fully incorporate broadband strategic planning into a general plan process.

The lack of state guidance on broadband in the general plan may result in inconsistent and incomplete approaches to local permitting of broadband projects. Broadband plans articulated within a

[69] Cal. Govt. Code §65300 et seq. ("Each planning agency shall prepare and the legislative body of each county and city shall adopt a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning. Chartered cities shall adopt general plans which contain the mandatory elements specified in Section 65302.") See also, "General Plan Information," Governor's Office of Planning and Research, https://opr.ca.gov/planning/general-plan/.
[70] Cal. Govt. Code §65302.
[71] Cal. Govt. Code §65300.7.
[72] Cal. Govt. Code §65302(b), 65302(g) (requires the transportation and safety elements of a general plan to include the location and development of local public utilities and essential public facilities).
[73] "General Plan Guidelines, Chapter 4: Required Elements," State Office of Planning and Research, at p. 81, https://opr.ca.gov/docs/OPR_C4_final.pdf.
[74] "General Plan Guidelines, Chapter 4: Required Elements," State Office of Planning and Research, at p. 81, https://opr.ca.gov/docs/OPR_C4_final.pdf.

municipality's general plan or adopted by a city council based on the guidance and priorities in the general plan, may provide direction regarding goals for broadband deployment. Implementation of the general plan may then facilitate a streamlined execution of requests for permitting and review of broadband projects within the jurisdiction.

The state may consider revising these general plan statutes and updating related guidance documents to ensure that broadband is supported within a broader general plan. The state may also consider providing additional planning and economic development resources for a municipality to support internal processes directly related to broadband project deployment.

For example, a municipality's planning could include regularly educating all agencies within the local jurisdiction regarding the importance of broadband deployment to meet the needs of unserved residents and improve municipal services. As part of incorporating broadband into long-term land use planning, a municipality might dedicate a single point of contact within a planning and permitting agency to work with ISPs that seek to deploy broadband projects.

Municipalities might also devote resources to developing clear and consistent rules, policies, and timeframes for broadband permitting (and potentially leasing practices of public assets), including a dedicated telecommunications and broadband permitting application. Finally, including broadband in citywide planning could create support at many levels of government to develop cross-agency cooperation, working groups, and overall leadership on implementation of the general plan's broadband planning elements.

As a result of incorporating broadband planning into a general plan, a city could align housing and land development requirements with its broadband goals. For example, the municipality might adopt ordinances that require land developers to deploy conduit or dark fiber as part of a new development or when making significant changes to an existing development.[75]

In that scenario, the city's general plan could also establish whether the developer, the city, or a partner ISP would own the conduit and any fibers to be deployed. The city could also place conditions on ordinances and requirements for affordable housing in the jurisdiction to include specifications for wiring of multitenant dwellings or campuses of affordable housing.[76]

[75] For example, Rural LISC encourages policy makers to consider broadband an essential utility like water and electricity and to require housing developers, including developers of low-income housing, to include broadband facilities as part of their construction processes. Rural LISC notes that developments funded by federal Housing and Urban Development funds already require "broadband ready" infrastructure to be part of the building. See, HUD 24 CFR §983.157; See, also, "Affordable Housing Developers' Broadband Handbook," Local Initiatives Support Corporation (LISC), January 2022, https://www.lisc.org/media/filer_public/b9/8c/b98cd55b-c92c-4f04-9c9b-b8f8a609c889/affordable_housing_developers_broadband_handbook_abridged.pdf.

[76] See, for example, the CPUC's Public Housing Account, under the California Advanced Services Fund, which offers funding to owners of publicly funded or nonprofit affordable housing to partner with an ISP and provide equipment and infrastructure to offer high-speed broadband to residents of the building or campus. With guidance and support from a local entity's general plan, the local housing authority could more easily apply for such funding to deliver broadband within the jurisdiction's affordable housing units. See: https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/california-advanced-services-fund/casf-public-housing-account.

4.2.3.2.3 Develop funding capacity to enable localities to expand staffing and expertise for permitting within under-resourced and low-income communities

In addition to providing technical assistance as described in Section 4.2.3.2.1, the state may choose to consider providing communities with resources to put that technical assistance into practice. As well as allocating funding to a state agency to develop and provide guidance and information, the state may consider providing that agency with funding it could use for targeted capacity building within under-resourced and low-income communities. Localities could request funding to augment staffing to support broadband permitting review and implement technology and process improvements, such as software for tracking permit applications, that would enhance permit review.

As another form of capacity sharing, the designated state agency might consider implementing a software solution for permitting that communities could access through a licensing system. (The state of Oregon's ePermitting system,[77] which allows participating cities and counties to offer an online application process for some building permits, could be a potential example.)

4.2.3.2.4 Monitor and evaluate implementation of the batch permitting statute over the next few years

Though stakeholders express optimism about broadband deployment acceleration through the enactment of AB 965, it may be too early (as of the writing of this report) to evaluate the statute's success in shortening the permitting process. The state may choose to consider designating an appropriate agency to monitor and evaluate the impact of batch permitting in the state by gathering information about how localities are implementing the statute and what efficiencies have been gained—such as a reduction in permitting timelines and improved recordkeeping by both the local entity and the applicant.

The state may consider presenting findings and analysis to inform the next steps, such as the provisioning of technical assistance to localities, which would be appropriate to accelerate implementation of the statute.

4.2.3.2.5 Provide best practices to local governments on modifications that can qualify for streamlined administrative approval

The state may choose to consider encouraging localities to provide more streamlined permitting approval for minor modifications or regular maintenance of wireline infrastructure. One example of a minor modification might be regular maintenance, or replacement of a small structure or device with a structure of like size and appearance. An appropriate streamlined approach might be approved by administrative review.

4.3 Regulatory and legal obstacles in deploying fiber to transport broadband traffic from broadband access points

As a result of a jurisdiction's guidelines and statutes, permitting authorities may limit options for fiber construction and the placement of broadband facilities in the public right-of-way.

4.3.1 Reported barrier: High cost of underground construction in local rights-of-way

The Fiber Broadband Association issued a report in 2023 finding through a survey of fiber providers that the costs of underground construction for fiber deployment were almost double the costs involved in

[77] Oregon ePermitting, State of Oregon, https://aca-oregon.accela.com/oregon/Default.aspx.

placing fiber on poles and other structures with aerial construction.[78] While some of the cost is an unavoidable result of labor and materials costs and the cost to restore, the impact might be reduced by considering construction techniques that reduce impact on rights-of-way and by examining the need for some municipal requirements on underground broadband construction.

Some wireline providers note that projects that required underground construction but prohibited microtrenching were among the most expensive and have resulted in some grant-funded projects going over budget or projects being rerouted or cancelled. Providers report that some localities require extensive road restoration after broadband construction. Nevada County reports that the public works requirement for restoration depends on the age of the road, with newer roads requiring larger restoration areas.

4.3.1.1 Existing programs and efforts: State microtrenching statute (SB 378)

Microtrenching is an underground construction method that places fiber facilities in shallow and narrow trenches under paved roadways and sidewalks. Compared to traditional techniques of horizontal drilling or trenching excavation, microtrenching is often faster and less costly.[79] Trench opening, fiber conduit placement, and surface restoration can be accomplished in one work cycle, minimizing disruption to the neighborhood and vehicular and pedestrian traffic. Microtrenching also typically does not require environmental permitting because the construction occurs in previously disturbed grounds.

Seeking to facilitate the acceleration of broadband deployments statewide at a lower cost, Senate Bill 378 (SB 378) [2021], the Broadband Deployment Acceleration Best Practices Act of 2021,[80] mandates that local agencies allow microtrenching within their respective jurisdictions for the purpose of constructing fiber communications networks. The statute requires responsible agencies "to the extent necessary … [to] adopt or amend existing policies, ordinances, codes, or construction rules to allow for microtrenching" pursuant to the provisions of the statute.[81]

A potential risk of microtrenching is that conduit is installed at a shallower depth than conduit installed through directional boring, plowing, and trenching, so the conduit may be more vulnerable to being cut. A related issue is that placement of fiber within a roadway's existing structural section may ultimately become a conflict/relocation issue if the roadway structural section needs to be removed and reconstructed, because standard methods of construction can damage the shallowly placed fiber conduits. So, while microtrenching provides an initial cost savings, it could increase costs for Caltrans or the local agency when roadway rehabilitation work is needed.

Another challenge is that the best material for filling the microtrench and restoring the surface depends on local conditions, such as the pavement's load rating, the temperature, the moisture level, and the

[78] "Fiber Deployment Report 2023," Fiber Broadband Association, https://fiberbroadband.org/wp-content/uploads/2024/01/Fiber-Deployment-Annual-Report-2023_FBA-and-Cartesian.pdf; finding that the median cost of deploying fiber underground was over twice the median cost of deploying fiber aerially at $16.25 per foot and $6.49 per foot, respectively.
[79] "Fiber Deployment Report 2023," Fiber Broadband Association, at pages 17-18; finding that microtrenching has a median cost of $14.51 per foot while the most expensive underground construction techniques were at $17.00 per foot.
[80] SB 378 (Chapter 677, Statutes of 2021), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB378.
[81] SB 378, Section 3.

position of the microtrench relative to drainage and the rest of the streetscape. Finally, the physical shape of the curb and street vary from community to community, so microtrench placement that works well in one community may not suit another.

Some localities had microtrenching standards before the bill was introduced: The cities of Los Angeles, San Diego, and Santa Barbara, for example, had previously allowed microtrenching[82] and many others have adopted standards since the bill was adopted.

Obstacles to wider adoption among other cities and municipalities include a lack of familiarity with the construction method and trench fill options; a lack of information about long-term outcomes; and a lack of information on successful best practices from past projects.

Right-of-way engineers in stakeholder organizations express concern about the potential for pavement deterioration caused by the wrong choice of backfill material and inadequate pavement resurfacing.[83] The debate about best practices for backfilling microtrenches and surface restoration leads to different approaches, even among communities that allow it. The City of Los Angeles Department of Public Works and the City of San Diego require deployers to repave an 18-inch strip over the trench.[84] Other communities elsewhere in the country, including the City of Nashville, Tennessee; Mesa County, Colorado; and the City of Harrisonburg, Virginia, have standards that do not require as wide a restoration strip.[85]

Some counties and municipalities have begun pilot projects to test different microtrenching configurations; their collective goal is to become more familiar with the method and investigate the impact on the right-of-way in a limited way, before adopting it everywhere.

4.3.1.2 Potential opportunities

Potential opportunities for further mitigation involve monitoring and supporting implementation of the statute by localities (i.e., local governments' development of microtrenching standards).

---

[82] City of Los Angeles Engineering, Standard Plan 474-0-Microtrenching, https://apps.engineering.lacity.gov/techdocs/stdplans/s-400/S-474-0.pdf; City of San Diego Microtrench Standard Drawing SDG-165, https://www.sandiego.gov/sites/default/files/microtrench_standard_drawing_sdg-165_dated_october_10_2022.pdf.

[83] In stakeholder meetings with representatives of Caltrans and the City of Riverside's public works department, engineers shared their observations and thoughts on the potential liabilities and costs of microtrenching.

[84] City of Los Angeles Engineering, Standard Plan 474-0-Microtrenching, https://apps.engineering.lacity.gov/techdocs/stdplans/s-400/S-474-0.pdf; City of San Diego Microtrench Standard Drawing SDG-165, https://www.sandiego.gov/sites/default/files/microtrench_standard_drawing_sdg-165_dated_october_10_2022.pdf.

[85] "Microtrench Policy and Specifications (12,20)," Metropolitan Government of Nashville and Davidson County Department of Public Works, https://filetransfer.nashville.gov/portals/0/sitecontent/pw/docs/drawings/ST276A.pdf; "Micro-Trench Policy and Specifications," Mesa County, https://www.mesacounty.us/sites/default/files/2022-12/mesa-county-design-standards-microtrenching-policy-and-specification.pdf; and "Microtrenching Installation and Construction Standards," City of Harrisonburg Public Works, https://www.harrisonburgva.gov/sites/default/files/PublicWorks/files/Appendix%20B%20-%20Microtrenching%20Construction%20Installation%20Standards.pdf.

4.3.1.2.1 Monitor and evaluate the impact and use of the microtrenching statutory requirements

The state may consider monitoring and evaluating the adoption and impact of requirements established through SB 378 [2021][86] over the next few years.

Some providers and local jurisdictions have engaged in pilot projects and demonstrations of the construction method that may pave the way to broader adoption.[87] Pilot projects can help jurisdictions determine the best microtrenching approach for their streets and curbs and provide a lower-risk approach to learn from real-life hands-on experience.

The state may also consider designating an agency that would be responsible for gathering continued input from local jurisdictions and ISPs about their experiences with the application of the statute, as well as data to quantify cost and time savings for underground fiber construction or other benefits gained. This agency could present findings and analysis of additional action that could help achieve the expected results.

4.3.1.2.2 Develop technical assistance materials for local entities to craft microtrenching and restoration standards

The state may consider providing resources to a state entity to provide engineering guidance and data to localities about best practices for how and where to allow microtrenching, and what restoration practices to require on microtrenching projects.

The best practices could address microtrenching in different climates and different road and sidewalk configurations. The guidance could include sample microtrenching ordinances and technical standards. The state's technical assistance could also seek to address the concerns of public works engineers regarding the long-term impact and viability of microtrenching as an alternative to traditional underground construction.

The state may consider providing resources to a state agency to create a database of information about microtrenching projects across the state and the nation, including lessons learned and available data about long-term outcomes such as cable depth and durability of surface restoration.

4.3.1.2.3 Provide recommended practices on reasonable levels of restoration after broadband construction

The state may consider developing recommended practices for reasonable levels of restoration after broadband construction. Taking input from multiple communities and broadband deployers, the state might suggest approaches that would be appropriate for a given community based on local conditions, and that would lead to consistent expectations and outcomes.

That said, the California Water Boards notes that restoration requirements are also mandated by state policies and are not necessarily a decision for local agencies alone. For example, Executive Order W-59-93 (signed by Governor Pete Wilson on August 23, 1993) established state policy guidelines for wetlands

[86] SB 378 (Chapter 677, Statutes of 2021), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB378.

[87] In collaboration with AT&T, the City of Riverside set up a microtrenching demonstration project on November 1, 2023, to gain a better understanding of the microtrenching process.

conservation. The primary goal of this policy is to ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage in California.

4.3.2 Reported barrier: High cost of underground construction in Caltrans rights-of-way

Stakeholders report high costs associated with construction along Caltrans roadways with narrow rights-of-way and lack of shoulders where only limited options (such as horizontal drilling or trenching) are available because microtrenching is not permitted.

An ISP that primarily serves rural areas notes this issue is particularly acute because they are seeking to construct in mountainous and forested areas; if they construct outside of Caltrans' right-of-way, the project may increase in cost and require additional permits from federal or state agencies that control the adjacent land.

Given California's geography, this stakeholder's experience is likely similar to that of other potential builders of broadband infrastructure in rural and remote areas.

Another stakeholder reports high costs of construction in Caltrans rights-of-way caused by practices that are not required in other rights-of-way, such as requiring the excavator to bring fill material rather than fill with the excavated material.

4.3.2.1 Existing programs and efforts: Trenching and microtrenching in some settings

Some Caltrans districts allow trenching and microtrenching in some settings. Caltrans has permitted "shallow trenching" reducing the depth requirement to 24 inches for the Middle-Mile Broadband Network project, which could be used under pavement and in unpaved areas. In many cases, the 24-inch depth has been allowed due to historical and cultural sites that cannot be trenched through or disturbed.

A representative of a regional broadband consortium also reports that two of the 12 Caltrans districts have explored microtrenching, stating that Caltrans District 8 has been supportive of the development of associated standards and has allowed microtrenching for a number of underground projects. However, Caltrans has not implemented formal standards or issued guidance at the department level.

4.3.2.2 Potential opportunity: Caltrans could consider developing microtrenching policies and surface restoration requirements for all districts

Caltrans could consider refining its standards for all districts. Caltrans must be able to protect public assets and follow U.S. Department of Transportation requirements, but because its rights-of-way are critical for service to currently unserved and underserved areas, the state may consider requiring Caltrans to demonstrate within those parameters that its policies are designed to limit the costs and burdens of broadband deployment.

For example, requiring permit applicants to locate and include existing utilities in their designs creates a significant requirement as compared to other right-of-way owners that either provide documentation of existing utilities or allow excavators to locate utilities prior to construction and add them in as-builts. Another example is requiring the excavator, in some instances, to remove and bring fill material rather than fill a trench with the excavated material.

While permitting and construction standards guidelines generally are issued by Caltrans at the department level, the individual Caltrans districts are able to apply the standards and guidelines based

on their unique environments and right-of-way characteristics. Introducing microtrenching as a Caltrans-wide fiber construction option might require the Caltrans engineering department to study the technique and its ramifications for pavement resurfacing and to develop guidelines for the districts.

4.3.3 Reported barrier: Variations in permitting standards and processes within state agencies

Stakeholders report permitting standards and processes are different among districts of the same state agency. Wireless and wireline providers further report that inconsistencies and delays in coordination among the different boards, bureaus, and districts of state agencies can create significant delays and cost increases for projects. These stakeholders also say variations in permitting standards can create uncertainty in planning projects that have similar requirements but are in different parts of the state.

State permitting agencies such as Caltrans and the California Air Resource Board (CARB) note that due to the sheer size and diversity of needs in the state, permits are issued by Caltrans districts and local air pollution control districts, which must consider local conditions. While most jurisdictional permitting agencies acknowledge that diverse rules across districts can add complexity to broadband planning and permitting process, some note the standards and policies generally are similar across districts and thus should not create significant inconsistencies or delays for projects that involve more than one district. When multiple state agencies may be responsible for broadband permitting, there continues to be opportunity for a systematic increase in efficiencies.

4.3.3.1 Existing programs and efforts

According to the California Water Boards, all applications related to water board permitting for the MMBI, regardless of geographical location or jurisdictional boundary, are being processed by the State Water Resources Control Board and not the individual Regional Boards. The California Water Boards report this was a purposeful decision to address the potential barrier noted in Section 4.3.3, since broadband efforts (in general) are considered projects of statewide significance.

4.3.3.2 Potential opportunity: Consider requiring state agencies to take steps to make standards and processes consistent

The state may consider directing state agencies to explore ways to better standardize permitting processes for broadband projects at the state level, including across district lines. Reducing variation in processes, standards, and requirements across districts within agencies would support greater predictability and efficiency for applicants; while many of the processes must take into account conditions and impact at the district level, there may be opportunity to find efficiencies in meeting regulatory requirements.

The state could consider directing state agencies to review their broadband-related permitting processes and determine where policies or guidance at the agency level could help mitigate the project impacts of inconsistencies across the state while balancing the need for district-level variation.

Through the batch permitting statute and microtrenching statute (discussed further in Section 4.3.1.1), the state has taken steps to establish greater consistency in elements of the local permitting process to support the state's goals for broadband deployment—in line with the Legislature's statutory declaration that fiber broadband deployment is of "statewide concern and is not a municipal affair."[88]

[88] Cal Govt. Code §65964.5(c).

4.3.4 Reported barrier: Access to utility poles (both publicly owned and those owned by electric utilities and/or telephone companies)

Advocacy groups and ISPs report that timely and cost-effective access to utility poles is hampered by many factors. These include poor pole conditions, poor records of pole information by pole owners and attachers, and long timelines and uncertainty in timing of make-ready and pole replacement.

Stakeholders also report that pole attachment processes and pole space lease costs for telecommunications pole owners are subject to onerous cost increases. Further, stakeholders report that congested poles do not have space for new attachers because old, unused attachments are left on poles.

The planning process for fiber broadband infrastructure requires ISPs to assess construction options and select the optimal approach. Aerial placement of cables on utilities poles—if available—is often preferred to underground construction because of lower cost, faster construction, and fewer environmental permitting requirements.

Aerial construction requires approval by pole owners. The process can be lengthy and costly. Applicants may be required to spend a significant amount of time preparing detailed analysis and documentation of pole health and plans for remediation of inadequate pole conditions. Applicants then submit pole applications. Applicants, in many cases, are responsible for coordinating with all other attachers on each pole to perform “make-ready” to create space for the new attachment. Each individual attacher is responsible for moving its attachments. The CPUC’s one-touch make-ready rules make it possible for the new attacher to perform simple make-ready work. Then, the pole owner performs any necessary make-ready of the electrical plant. The remediation of pole situations by the pole owners typically takes several months and, in some cases, well over a year.

If make-ready does not create space on the pole for the new attachment or the pole condition is too poor, the pole owner places a new, taller utility pole next to the existing one, and the attachers move to that pole.

If an ISP believes the cost or timing of aerial construction will prevent the ISP from meeting its project plan, it may resort to underground construction.

Some pole access issues are primarily faced by wireless providers placing antennas on poles. The use of utility poles for microcell sites requires fiber backhaul and metered electrical service. If the electric meter cannot be mounted on the pole due to the pole owner’s rules, the wireless operator is forced to place the meter in a pedestal—which then requires additional permit approvals from the local authorities and/or placement outside the right-of way, which requires an easement. Pedestal regulations can vary greatly within a jurisdiction, or even within a street block, so they can require revisions to a deployment plan.

In situations where aerial construction is combined with underground fiber installation, the connection point of the two segments is typically in an underground vault or a pedestal, which will require additional permitting.

4.3.4.1 Existing programs and efforts

4.3.4.1.1 Pole databased required by the CPUC's rights-of-way and pole attachment rules

The CPUC's rights-of-way and pole attachment rules require pole owners to maintain a database of their poles, pole conditions, and replacement schedules and further require attachers to report to the same database. According to the CPUC, the five major pole owners (PG&E, SCE, SDG&E, AT&T, and Frontier) have operational pole databases pursuant to D. 20-07-004. Development of the databases and reporting processes is ongoing and the CPUC currently is reviewing requests for extensions and clarifications by some pole owners and attachers.

In 2020, the CPUC required the five major pole owners in California[89] to each develop and maintain a database with information on the electric and communications equipment attached to each pole they own.[90] In 2021, the CPUC directed the pole owners to collect a set of 20 data points from entities that have pole attachments using standardized templates approved by the CPUC.[91]

These databases will be updated regularly and will provide information about safety, available capacity, and physical space on each pole. These five databases will not be linked to each other and will not be publicly available but will be used by current and future pole attachers (ISPs and other infrastructure providers) to support network and strategic planning, achieve safety goals, and promote competition on utility poles.

The development of these pole information databases and the process of populating them with pole attachment information is ongoing. The stakeholders are working with the CPUC to make refinements in the database design, gather and organize the data that will be reported, and request extensions to ensure accuracy of the reported data.[92]

There have also been discussions between CPUC and stakeholders regarding the process for protecting confidential and proprietary information of the pole owners and attachers. Based on the timelines set in 2021 and the stakeholders' subsequent requests for extensions, these databases are not likely to be available until the second half of 2025.

As part of its public rulemaking, the CPUC is also considering comments from parties on whether to extend the database requirements to publicly owned utilities and smaller pole owners such as rural incumbent local exchange carriers.[93] The CPUC is also considering plans to collect and make available data and information on conduit and duct infrastructure as part of the pole owners' database portal.

---

[89] Investor-owned utilities Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric; Frontier Communications; and AT&T California.

[90] CPUC, "Decision Approving Track 1 Workshop Report Work Plans," D.20-07-004 in I.17-06-027, et al., issued July 21, 2020, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M344/K043/344043706.PDF.

[91] CPUC, "Decision Adding Attachment Data to Pole Owner Databases Ordered in D.20-07-004," D.21-10-019 in I.17-06-027, et al., issued October 26, 2021, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M418/K659/418659905.PDF.

[92] CPUC, "Administrative Law Judge's Ruling Requesting Further Information to Evaluate Requests for Extension of Time to Comply with Decision 21-10-019," filed August 16, 2023, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M517/K539/517539874.PDF.

[93] CPUC, "Administrative Law Judge's Ruling Requesting Responses on Remaining Proceeding Issues," filed December 12, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M499/K772/499772824.PDF.

Beyond requests for comments on both proposals, the CPUC has not provided a timeline for these efforts.

4.3.4.1.2 State law governing lease costs and terms for pole attachment

State law governs lease costs and terms for pole attachment, but requires pole owners and attachers to mutually agree with the CPUC rules as the fallback option.

California has an extensive and long-standing set of statutes and regulations to ensure ISPs have access to public rights-of-way, poles, and towers to support the deployment of communications infrastructure. The state requires all utilities, including publicly-owned utilities, investor-owned electric companies, and telecommunications utilities, to grant access to conduits, wires, poles, or other equipment to other public utilities, cable companies, and communications providers.[94] The access cannot interfere with utility service or cause irreparable harm to the facilities. These statutes further grant access to municipal and utility rights-of-way by other utilities and communications service providers.[95]

This statutory framework requires compensation to the utility pole owner. In most cases, the statute directs parties to negotiate the terms and rates for access to poles and other facilities.[96] But, these statutes also provide direction for a pricing structure and cap on the fees that can be charged if negotiations fail. Generally, the annual and one-time fees must be based on the costs of ownership of the pole and only allow for regulated annual increases. The statutory requirements for the fees and charges may differ for poles that are "jointly owned" and the attacher may have to deal with two different owners (typically the electric utility and the telecommunications utility owner).[97]

---

[94] Cal. Pub. Util. Code §§767 (1951), 767.5 (1980), 767.7 (1995) (public utility obligations to provide access to other utilities and cable companies), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=4.&article=3; Cal. Pub. Util. Code §§9510 et seq. (2012) (requires publicly owned utilities to provide access to structures for wireline and wireless broadband deployments), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=4.8.&title=&part=2.&chapter=&article=.

[95] Cal. Pub. Util. Code §§7901(1951), 7901.1(1995) (requires municipalities to provide access to right of way for public utilities and telecommunications providers), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=4.&title=&part=&chapter=3.&article=; Cal. Pub. Util. Code §2902 (1951) (preserved authority to municipalities to regulate access to right of way in certain circumstances), https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=2902.

[96] Cal. Pub. Util. Code §§9512, 9513 (annual fees and one time fees charged by publicly-owned electric utilities for wireless and wireline pole attachers), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=4.8.&title=&part=2.&chapter=&article=; Cal. Pub. Util. Code §767.5, 767.7 (fee structure charged by public utilities regulated by the CPUC for access to regulated structures), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=4.&article=3.

[97] Some utility poles in California are regulated as "jointly owned poles." These poles are generally co-owned by an electric utility and a communications provider. The pole has equipment to provide electric service on the top of the pole and equipment underneath the electric equipment on the pole to provide communications services. The communications services equipment can be owned by several different companies. The terms and conditions for access to these poles can vary from single-owner poles and are set by statute and the CPUC. These poles are

The CPUC is directed to implement pricing as the "default" structure or rate cap for poles that are jointly or individually owned by investor owned electric and telecommunications utilities if negotiations between pole owner and pole attacher are unsuccessful.[98] The CPUC has implemented these statutory requirements through its decisions on right-of-way access, pole attachments, and one-touch-make-ready regulations.

These statutes also establish timeline requirements on the publicly owned utilities and municipal right-of-way owners that are working with cable franchisees to review and approve applications for access.[99] The CPUC has adopted timeframes to regulate access to investor owned and telecommunications owned poles and jointly owned poles, including pole replacements, through its One -Touch- Make-Ready processes.

4.3.4.1.3 The CPUC's One-Touch-Make-Ready decision

Following the FCC's initiative of providing a more cost- and time-efficient approach to pole make-ready,[100] the CPUC adopted its own one-touch-make-ready process in October 2022,[101] finding these new rules will support investor-owned utility and telecommunications safety considerations and will result in "a transparent and efficient pole attachment process that vests new attachers with greater options."[102]

The CPUC's one-touch make-ready process decision adopts required timelines, criteria, and processes for pole owners regulated by the CPUC to process pole attachment applications and determine required make-ready work and costs.[103] The statute enables attachers to unilaterally undertake make-ready

---

managed by "joint pole authorities" that keep records of the attachments, serve as a billing agency for the pole owners, and mediate some types of disputes among pole owners and attachers. For more information, see the Northern California Joint Pole Association, https://www.ncjpa.org/about/; and the Southern California Joint Pole Committee, https://scjpc.net/.

[98] Cal. Pub. Util. Code §§767.5 (1980), 767.7 (1995), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=4.&article=3. See, CPUC, "Commission-Adopted Rules Governing Access to Rights of Way and Support Structures of Incumbent Telephone and Electric Utilities" (2022), D.22-10-025 Attachment A, Section VI, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M498/K026/498026496.PDF.

[99] Cal. Pub. Util. Code §9511(b) (requires publicly owned utilities to respond to a request for access within 45 to 60 days and complete all make-ready work within 150 to 190 days, with some exceptions), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=4.8.&title=&part=2.&chapter=&article=; Cal. Pub. Util. Code § 5885 (2008) (requires a local entity to respond to a request for right-of-way access by a cable franchise holder in the local community), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=2.5.&title=&part=&chapter=&article=.

[100] In May 2019, the FCC updated its pole attachment access rules including a one-touch-make-ready provision for pole attachments governed by federal law. The pole attachment rules allowed pole attachers to use a one-touch-make-ready process for wireline attachments in the communications space of the pole. See, "Wireline Competition Bureau Announces Effective Date Of Order Instituting "One-Touch-Make-Ready" Regime For Pole Attachments," WC Docket No. 17-84, WT Docket No. 17-79, FCC public notice, released May 20, 2019, https://docs.fcc.gov/public/attachments/DA-19-445A1.pdf.

[101] CPUC, "Decision Adopting One-Touch-Make-Ready Requirements," D.22-10-025 in I.17-06-027, issued October 27, 2022.

[102] CPUC, "Decision Adopting One-Touch-Make-Ready Requirements," D.22-10-025 in I.17-06-027, issued October 27, 2022, at p. 2.

[103] CPUC, "Decision Adopting One-Touch-Make-Ready Requirements," D. 22-10-025 in I.17-06-027, issued October 27, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M498/K026/498026496.PDF.

under limited circumstances to speed deployment. The CPUC states that one-touch-make-ready will further policies of promoting robust competition and expanding broadband access through deployment of new infrastructure.

The one-touch-make-ready rules require information sharing between an electric utility pole owner and a cable, cellular, or telecommunications provider regarding capacity, pole conditions, and internal design and maintenance standards. They require utilities to respond to an attachment application within 10 business days to determine completeness and 45 to 60 days (or 15 to 30 days for "simple make-ready") to grant or deny the application depending on the size of the project. A failure to respond results in a "deemed approved" request.

The rules require the utility to conduct a "survey" of the poles to determine the necessary work on the pole to support the requested attachments and a utility must provide an estimate of the cost of make-ready work within 14 days. The rules also allow the requestor to participate in the survey or to do the survey itself if the utility fails to perform. Make-ready work must be completed within 30 to 75 days depending on the size of the project, and for very large projects (i.e., more than 3,000 poles) that timeline could be further extended.

The rules give the new attacher a "self-help" option of completing make-ready work itself—but not pole replacements—when either the pole owner or existing attachers do not complete the work within the required timelines. The new attacher must use authorized contractors from a list maintained by the pole owner except under very specific circumstances, including the unavailability of contractors on the list.

While this decision is a critical piece of the state's efforts to facilitate and streamline deployment of broadband access points, the one-touch-make-ready rules are not available for all poles in California—for example, these rules do not apply to municipally owned utilities—and one-touch-make-ready is only a useful tool to accelerate investment if the utility pole owner has the required resources and adheres to timelines.

The CPUC is considering and taking comments regarding further amendments to its rules on the treatment of unauthorized pole attachments; removal of abandoned equipment; processes and cost sharing for pole replacements; and transparency requirements for pole owners (e.g., the cost of pole ownership as it relates to pole attachments rates and cost sharing).[104]

The utility must respond to an application within 45 to 60 days of receipt of a request depending on the size of the project. It then must provide cost estimates, make-ready work, and requirements ready for the application within 14 days of a completed application and make-ready work must be completed within 60 to 105 days, depending on complexity.[105] Fees for application processing and for licensing must be limited to cost for these utilities and is calculated using a formula set out in statute.[106]

[104] CPUC, "Administrative Law Judge's Ruling Requesting Responses on Remaining Proceeding Issues," filed December 12, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M499/K772/499772824.PDF.
[105] Cal. Pub. Util. Code §9511.
[106] Cal. Pub. Útil. Code §9512.

4.3.4.2 Potential opportunities

4.3.4.2.1 Monitor the impact of one-touch-make-ready and pole database requirements

The impact of the CPUC's one-touch-make-ready rules and pole database requirements can be monitored and reviewed over the next few years to determine their impacts and gained efficiencies, as well as any necessary updates, next steps, and revisions.

The state may consider augmenting the data collection in progress by gathering from pole owners and attachers quantitative data on attachment timelines and the costs of make ready and pole replacement by geographic region and analyzing this data to determine if these regulatory efforts have achieved the state's goals and to make additional recommendations to address the barriers reported above.

For example, the state could consider potential outcomes of these two initiatives as to whether they facilitate deployment of broadband access points on utility-owned poles; whether they increase competition in underserved areas by facilitating network planning with access to pole condition and availability information in those areas; whether they shorten the timelines for deployment; whether they facilitate communication among pole attachers and owners; whether they increase the safety of workers; and whether they broaden the contractor pool.

The state could further gather data and analyze the implementation of the cost sharing requirements for pole make-ready and pole replacements in the CPUC's current rules and from recent transactions between pole owners and attachers. The CPUC is considering comments it has received on updating the rules related to pole attachments.

The state can augment the data collection in progress by gathering from pole owners and attachers quantitative data on attachment timelines and the costs of make ready and pole replacement, as well as recommendations to address the barriers reported above. For example, the New York Public Service Commission conducted in 2022 a proceeding regarding "streamlining actions related to utility pole attachments," in which it sought and received public comment on:

> "(1) dispute resolution models related to utility pole attachments;
>
> (2) cost sharing models related to utility pole attachments;
>
> (3) impacts on the expansion of broadband into unserved and underserved areas associated with alternative cost allocation scenarios;
>
> (4) requiring new, less expensive pole attachment methods; and
>
> (5) modifying existing rules regarding the cost obligations associated with new pole attachments and an assessment of the utility ratepayer and broadband subscriber impacts associated with alternative cost allocation scenarios, including, but not limited to, if a pole replacement is necessitated because of insufficient vertical space or clearance to accommodate an attachment request or the attachment will exceed

> loading, making the requesting attacher liable for the costs in connection with the replacement."[107]

The state's inquiry could also determine how cost sharing impacts new entrants, small non-incumbent providers, and the impact on business decisions to expand networks into unserved and underserved areas and disadvantaged communities. Findings could be presented to determine what potential future action would be appropriate.

4.3.4.2.2 Annually gather and publish pole lease rate information

The CPUC may consider annually gathering and publishing pole lease rate information to create a centralized public data resource to support ISP and investor-owned utility planning efforts and enable compliance evaluation.

The CPUC currently is considering comments from parties regarding the need and methodology to make the pole owner rate calculations, including the cost data used in the calculations, more transparent and standardized. Wireline ISPs note that a lack of transparency around the methodology and data for pole attachment rates and rate increases can be a barrier to planning a sustainable project.

While the CPUC is considering ways to address this specific barrier raised by the carriers, ISPs discussed additional issues regarding the lack of access to information about pole attachment rates in specific geographic areas that can help ISPs during the planning stage to route networks and support business case planning and decisions.

As discussed above in Section 4.3.4.1.2, while pole attachment lease rates are regulated, they are not subject to a set rate. Rates are negotiated between the pole owner and pole attacher within a regulated framework that is based on utility cost of ownership of the poles and capped annual increases. As a result, actual lease costs vary across different pole owners and by pole attacher. Additionally, because rates are based on cost, pole access rates could vary depending on geography and number of attachers.

To support planning, particularly by smaller ISPs, new entrants, or under-resourced entities, an appropriate state agency could collect and analyze pole lease rates and publish this information in a centralized, publicly available, user-friendly database. This resource would allow ISPs to easily identify and compare rates charged by pole owners in different areas of the state. This database could be designed to protect the proprietary and confidential information of pole owners and attachers where necessary by aggregating data by geographic region or type of attacher. However, to be most useful these regions or areas should be drawn narrowly. The resources could include lease rates, one-time attachment fees, make-ready costs, lease terms, and any special or unique conditions or safety procedures that apply in the area.

4.3.4.2.3 Review progress on pole information databases

Under its current rules, the CPUC can review the progress made by pole owners on the development of pole information databases to determine whether additional information needs to be gathered, and

[107] New York Public Service Commission, Case 22-M-0101 - Proceeding to Review Certain Pole Attachment Rules, Notice Seeking Comments, issued and effective March 1, 2022, https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BC07D0EEF-823F-4EDC-AC53-08EBDD38B6AD%7D.

whether the collected information provides insight on making broadband deployment more efficient and less costly.[108] (See Section 4.3.4.1.1.)

4.3.5 Reported barrier: Challenges and delays getting access to state and local rights-of-way where Dig Smart policies do not coincide with deployment schedules

Some states and municipalities developed "Dig Smart" or "Dig Once" policies to protect rights-of-way from repeated impact from excavation and to support expansion of broadband. Repeated excavation can reduce the useful lives of roads and cause traffic congestion. In some cases, Dig Smart can reduce the overall cost of multiple projects by reducing excavation and restoration costs for a shared construction environment relative to the costs for several consecutive projects.

In practice, a state or municipality may implement Dig Smart by requiring that excavation projects in their jurisdiction include construction of conduit, fiber, or other broadband infrastructure for public and/or private use. They may also announce excavation projects and coordinate with broadband providers to add broadband infrastructure alongside the project. They may require broadband providers performing excavation to announce their project and coordinate it with broadband construction by other providers.

To encourage use of the Dig Smart opportunity and to protect the right-of-way, the state or municipality may place the excavation area under a construction moratorium after the project is completed. Stakeholders report delays and difficulties accessing rights-of-way in some cases where Dig Smart policies impose inflexible construction moratoria.

Some ISPs report that Dig Smart policies create barriers if the original Dig Smart opportunity was not adequately publicized. ISPs note there are instances where the Dig Smart opportunity emerges too late for a provider interested in building to set aside capital funds.

Some ISPs also claim that, because of the technical specifics of broadband deployment (e.g., incompatibility with water and storm sewer construction, use of directional boring instead of trenching), Dig Smart policies do not save money or effort for broadband deployers.

4.3.5.1 Existing programs and efforts: Dig Smart programs run by both Caltrans and localities

In accordance with the corresponding action item under Goal 1 of the Broadband for All Action Plan,[109] Caltrans updated its Dig Smart policy on September 30, 2023.[110] This Dig Smart policy requires applicants for encroachment permits for wired broadband deployment projects to provide notice of joint-build opportunities if the proposed project will exceed 10 miles in length. For projects that are subject to a Dig Smart notification, broadband underground construction activities in the area covered by the project will be limited to once every five years with only limited exceptions. Caltrans informs the industry of its projects that may provide opportunities for coordination with broadband.

---

[108] CPUC, "Decision Approving Track 1 Workshop Report Work Plans," D.20-07-004 in I.17-06-027, et al., issued July 21, 2020, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M344/K043/344043706.PDF. CPUC, "Decision Adding Attachment Data to Pole Owner Databases Ordered in D.20-07-004," D.21-10-019 in I.17-06-027, et al., issued October 26, 2021, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M418/K659/418659905.PDF.

[109] See action 4, "Action Plan Progress Tracker," Broadband for All, https://broadbandforall.cdt.ca.gov/progress-tracker/.

[110] "Encroachment Permits Manual," Chapter 600, Caltrans, revised September 2023, https://dot.ca.gov/programs/traffic-operations/ep/ep-manual.

Caltrans further updated its existing process and technical standards on conduit sharing and deployment of broadband facilities in Caltrans controlled space in 2018 and 2022 to "1) promote and provide opportunities for joint builds of broadband infrastructure by allowing multiple broadband providers to utilize the same installation opportunity in broadband permit or state-funded transportation projects and 2) enforce a process to minimize disruptions to road users caused by ongoing or duplicative construction."[111]

Caltrans' Dig Smart requirements complement a 2017 statutory mandate to implement a Dig Smart policy for any department-led highway construction project initiated on or after January 1, 2017. Caltrans is required to give notice to companies and organizations working on broadband deployment of the opportunity to collaborate with the department to install a broadband conduit as part of the construction project.[112] Additionally, as of 2022, Caltrans projects that are part of, and funded through, the Middle-Mile Broadband Initiative must include proactive installation of conduits capable of supporting fiber optic communications cables.

The application of Dig Once policies by municipalities vary by municipality or agency and may depend on the length of the trench. Also, planning processes and application of potential exceptions to the instituted moratoria vary among counties and cities that have a Dig Once policy. As an example, the City of Salinas and the City of San Francisco collaborate with contractors to accommodate the participants' requirements but enforce a 5-year re-excavation moratorium.[113]

The City of South San Francisco maintains a database of known interested parties and notifies them of joint trench opportunities. It also has a 5-year re-trenching moratorium but permits underground construction with enhanced remediation standards.[114]

The City of Lakeport takes a proactive approach to Dig Once projects by reaching out to prospective participants and has provisions for exceptions to the 5-year moratorium for projects that connect locations where no other reasonable means of providing service exists.[115]

4.3.5.2 Potential opportunities

Dig Smart policies can be adapted based on best practices that would support deployment in alignment with the state's priorities to reach unserved and underserved addresses. These opportunities could

[111] "Wired Broadband Facilities on State Highway Right of Way," Caltrans, May 2018, https://dot.ca.gov/programs/design/wired-broadband; Caltrans "Project Development Procedures Manual," Chapter 17 (Encroachments and Utilities), March 2022, https://dot.ca.gov/-/media/dot-media/programs/design/documents/pdpm-chapter17-a11y.pdf (as amended by "Accommodation of Wired Broadband Facilities Within Access-Controlled State Highway Right of Way" (March 2022), https://dot.ca.gov/-/media/dot-media/programs/design/documents/attachment-a-wired-broadband-facility-accommodation.pdf.

[112] Government Code §14051.

[113] San Francisco Public works code, article 2.4: Excavation in the Public Right-of-Way; https://codelibrary.amlegal.com/codes/san_francisco/latest/sf_publicworks/0-0-73,
A resolution establishing a policy reducing underground excavation for communications infrastructure within the city's right-of-way;
https://www.tellusventure.com/downloads/salinas/salinas_resolution_dig_once_ordinance_15nov2016.pdf.

[114] "Open Trench Notification Policy and Procedure," City of South San Francisco, https://www.ssf.net/home/showpublisheddocument/15876/636951714558430000.

[115] Lakeport Municipal Code, Title 15 Buildings and Construction, Chapter 15.28 Telecommunications Infrastructure Improvement; https://www.codepublishing.com/CA/Lakeport/#!/Lakeport15/Lakeport1528.html#15.28.040.

include providing latitude to grant-funded construction subject to time constraints, engaging with Caltrans and localities for projects planned to reach unserved addresses that do not coincide with joint construction opportunities, and also leveraging and/or expanding on exception criteria.

4.3.5.2.1 Implement Dig Smart moratorium improvements based on best practices

The following Dig Smart moratorium improvements may be implemented to accommodate critical broadband construction where there are no cost-effective alternatives:

a. Given time constraints on broadband grants, Caltrans and local jurisdictions might consider exempting California Advanced Services Fund (CASF), BEAD, and Federal Funding Account (FFA) grant-funded projects from moratoria—and, for these projects, might develop a standardized set of requirements for notifications, planning, and implementation of joint construction opportunities, as well as for pavement restoration templates and costs.

b. Given the state's priorities to address the needs of unserved and underserved addresses, Caltrans and localities might consider exempting projects from moratoria, that are designed to reach unserved and underserved addresses.

4.3.5.2.2 Develop technical assistance materials for Dig Smart policies

The state may wish to develop a manual of best practices, akin to its local government permitting playbook, for Dig Smart policies and then provide technical assistance to localities to develop policies and processes.

The best practices could encourage municipalities constructing broadband infrastructure alongside excavation projects to continue this practice. If they are not doing so already, they could perform outreach to service providers to create awareness of the effort and optimize the policy and technical standards to maximize the likelihood the infrastructure will be used.

Road and right-of-way projects run by the state or municipalities typically have a long planning horizon. To take advantage of the Dig Smart Policy, municipalities may be able to provide one year or more notice for service providers to discuss opportunities for future joint-build projects.

An effective Dig Smart policy could also require sufficient notification for providers of opportunities from other broadband construction that may provide a joint trench. Given that a broadband project, especially one of smaller size, might be able to proceed more quickly than a state or municipality-initiated excavation, the best practices could encourage a permitting authority to consider a threshold length, such as 5 contiguous miles, and only require projects that exceed that length to allow a year or more between announcement and start of work.

Another consideration is that many broadband projects use directional boring or microtrenching, which have lower impact than conventional trenching, require less restoration and do not leave an open trench. The economies of scale to add additional conduit are relatively small. Therefore, the best practices could consider broadband projects using directional boring or microtrenching in a different category than a broadband project with open trenching and consider allowing subsequent broadband construction in a moratorium area, as well as not requiring a 1-year interval between announcement and start of work.

4.3.5.2.3 Maintain a centralized website for notice of all pending local and state Dig Smart opportunities

The state could allocate funds to a relevant agency to maintain a centralized website that offers one location for notice of all pending local and state Dig Smart opportunities. Having an integrated state website that includes both Caltrans and municipal rights-of-way will improve the likelihood of providers seeing the opportunity in time and encourage planning, including in areas that were not previously considered in a provider's capital plan.

As discussed above in Section 4.3.5.1, Caltrans provides notification of Dig Smart opportunities on its website. Municipalities that have implemented a Dig Smart program could be encouraged or required to submit notification of upcoming opportunities to the state database.

4.4 The lack of legal limitations on the price for leasing private or public property to deploy broadband access points on public and private property and buildings

Publicly and privately owned structures, including building rooftops, public open space, and maintenance yards and parking lots, can be appropriate for deploying broadband access points to serve a community and can improve the quality of broadband for residents.

4.4.1 Reported barrier: High cost and effort to access public assets other than rights-of-way, such as building rooftops

Some ISPs report high costs and effort, and limited information regarding public assets other than rights-of-way that may be available and useful for placement of communications facilities. For example, access to building rooftops, street furniture, building facades, and other public facilities, including those outside the right-of-way and not subject to access regulations, sometimes requires effort by an ISP to identify the locality's interest in leasing access, and then to agree to pricing and other terms.

The anecdotes shared with regard to these challenges by ISP stakeholders reflect the reality that many public assets are not made available for lease to telecommunications companies by localities, for a wide range of reasons—including public opposition to placement of telecommunications equipment at those locations, public sector need to reserve those facilities for other uses, uncertainty about how to price access to the facilities, and security and safety concerns related to providing access to public facilities. For all these reasons, many local governments choose not to lease their assets consistent with the approach taken by many private owners of similar assets.

Some providers report delays and high costs to install equipment and generators at publicly owned sites, as well as charges for inspections and design fees. Some wireless providers also state that lease fees for public property can be significantly above market rates for the area despite rules in some jurisdictions that impose a cost-based rate structure. Stakeholders report some local governments and school districts are not making property available for deployment of wireless infrastructure.

Lease renewals also can create uncertainty as providers find that the state and municipalities sometimes impose unexpected additional terms and conditions on the leaseholder, increase lease rates beyond market-based expectations, and delay renewal negotiations until the last minute.

While stakeholders did not identify similar concerns about the cost of leasing private property for similar purposes, many stakeholders—including emergency and public safety agencies that operate their own wireless networks—report difficulty negotiating access agreements in places where private property is

the only option. Even with a successful agreement, these entities note continued difficulties in accessing private land regularly to maintain equipment or build fiber through the property.

4.4.2 Existing programs and efforts

Research and outreach conducted in the preparation of this report did not identify any existing programs or efforts that address this reported barrier.

4.4.3 Potential opportunities

4.4.3.1 Provide resources and direction to localities to assemble inventories of public assets available for placement of broadband infrastructure

As noted in Section 2, the expense of leasing access to public or private property is a typical cost of doing business for broadband deployers nationwide. The state could allocate funding for an agency to provide resources and direction to localities to assemble inventories of public assets that localities are willing to make available for placement of broadband infrastructure. This resource could also include a summary of terms and rates, using the DGS inventory of state assets as a potential model.

To develop tools and information to support access to these facilities, and foster collaboration and community between municipalities and the ISPs, the state could encourage municipalities to create an inventory of publicly owned property that is available and appropriate for deployment of broadband access points. This would include buildings, land, dark fiber and conduit space.

The state could provide guidance for assembling this inventory that specifies the characteristics and requirements for the property to be “appropriate” for this use, including access to electricity, protection from harsh weather, environmental controls in harsh climates, ease of access to the facility during non-business hours, and overall security of the equipment.

Municipalities should be encouraged to make this list of facilities as widely available as possible, while being cautious to honor confidentiality and security concerns. The information could include pricing, lease terms, and other relevant information.

This type of inventory can follow the efforts of DGS to provide similar information regarding available state real estate assets for deployment of communications network facilities, while gathering feedback from ISPs and DGS regarding the criteria and processes used to carry out that Broadband for All initiative.

Additionally, the state could provide additional support for very small or under-resourced communities, such as support for updating and maintaining the list.

Once municipalities build out their list, the state could provide assistance in setting timeframes for municipalities to process requests for access to these properties and in setting lease rates that are cost based.

As a comprehensive step to support access to publicly owned property outside of the right-of-way, the state could consider developing a program to inventory municipal properties that are available for lease. With coordination between municipal and state real estate and asset managers, the state can compile an interactive map and list of properties, using a consistent set of parameters and characteristics built with input from service providers, that is regularly updated.

4.4.3.2 Provide information to localities regarding the value, with respect to broadband expansion and competition, of making public assets available at reasonable cost

Many local governments choose not to lease their assets for broadband deployment. There may be instances in which a local government would benefit—both through lease fees and through improved broadband in the area—from making available public assets for such uses.

In some cases, the locality is not aware of the benefit of using its assets in this way. The opportunity exists to explain that providing access may facilitate private investment and efforts that would improve broadband availability—and, further, that those investments could align with the community's own public policy goals around broadband and the economic and community development benefits it engenders.

Awareness and understanding of these benefits could serve to incentivize localities to make available public assets to use for communications facilities or may serve to incentivize them to publicize the fact that they have such assets available (and work to streamline the process for access by the communications network developers).

A state effort to provide information and best practices to localities regarding such benefits could result in increasing voluntary efforts to use public assets to facilitate private broadband deployment.

4.5 The cost of leasing access to middle-mile broadband networks

Middle-mile networks are typically built and operated by large wholesale and commercial providers that then lease capacity, or sell services, on the networks. These providers often build their networks to serve larger metropolitan and dense suburban communities, so frequently there is less middle-mile infrastructure in more rural and less populated communities. Middle-mile options are also frequently more limited in low-income parts of metro areas than in other parts.

As discussed in Section 4.5.2, below, SB 156 established and allocated funding to the Middle-Mile Broadband Initiative to develop a statewide open-access Middle-Mile Broadband Network. When it is complete, the Middle-Mile Broadband Network will allow ISPs to connect on equal economic and service terms, lowering costs for last-mile deployment and the construction of broadband access points.

Generally, pricing for middle-mile access and services offered over middle-mile networks is not regulated. In the past, for more than 25 years, incumbent local exchange carriers in California had an obligation under state and federal law to lease access to segments of their network infrastructure at regulated cost-based rates with strict terms and conditions according to the Telecommunications Act of 1996.[116] However, those obligations have been lifted and the market for middle-mile access and services over the middle mile are provided on a negotiated carrier-to-carrier contract basis.

[116] Where telecommunications companies had excess dark fiber or could provision dedicated managed services, these could serve as middle-mile for interested competitive local telephone companies—and later new rural broadband providers—as these telephone providers started offering internet service. Telecommunications Act of 1996, Pub. L. No. 104-104, Stat.56, (February 8, 1996), Section 251(c), https://www.congress.gov/104/plaws/publ104/PLAW-104publ104.pdf; See also, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696 (1999) (UNE Remand Order), rev'd USTA I, 290 F.3d 415 (ordering local exchange carriers to provide dark fiber and transport network elements to competitive

4.5.1 Reported barrier: Challenges and high costs associated with current middle-mile services

Stakeholders report challenges and high costs associated with currently available middle-mile services, which have historically been provided by entities that face little competition and can choose the rates they charge to last-mile providers.

The current lack of affordable or reliable high-speed middle-mile access has been reported as a barrier to deployment of last-mile facilities and broadband access points. (As discussed in Section 4.5.2, below, the statewide open-access Middle-Mile Broadband Network in intended to lower costs.)

A tribal entity, an infrastructure provider, and ISPs report high costs associated with middle-mile services, which have historically been provided by entities that face little competition and therefore have little market pressure on the rates they charge to last-mile providers. One tribe planning a small, local last-mile network reports a single middle-mile option of 10 Gbps for $6,000 per month, with the provider planning on eliminating the 10 Gbps service and only offering higher-capacity, high-cost services.

Counties planning ARPA-funded projects also report a need for competitive middle-mile services and endorse open access on middle-mile networks to facilitate competition, even where there is only a business case for constructing one network.

Some stakeholders report challenges accessing middle-mile networks. The Governor's Office of Emergency Services (OES) reports that it has difficulty accessing middle-mile networks for some Public Safety Answering Point (PSAP) locations. The Colusa Indian Community mentioned that middle-mile infrastructure does not exist on tribal land, and that building it themselves is too expensive. Verizon mentioned that getting access to middle-mile fiber for transport to wireless sites in some parts of the state is a barrier. Community advocates in urban areas with few middle-mile options report high middle-mile costs, reportedly five to 10 times the cost available in more competitive areas.

As service providers plan last-mile deployments, they must consider the availability of reasonably priced middle-mile access services. Providers must determine their potential cost for building to the closest middle-mile facility that will allow them to access the internet backbone. Last-mile providers must also factor in the ongoing lease cost of middle-mile services as part of the business case analysis to determine economic feasibility.

The cost to obtain access to middle-mile networks will directly impact a provider's decision whether to invest in deployment of last-mile broadband network facilities—and will have an impact on the rates that last-mile providers can charge subscribers for internet access.

4.5.2 Existing programs and efforts

The Legislature acted to address this barrier through SB 156, which established and allocated funding to the Middle-Mile Broadband Initiative to develop a statewide open-access Middle-Mile Broadband

providers); In the Matter of Modernizing Unbundling and Resale Requirements in an Era of Next=Generation Networks and Services, WC Docket No. 19-308, Report and Order, FCC 20-152 (Rel. October 28, 2020), https://docs.fcc.gov/public/attachments/FCC-20-152A1.pdf (eliminating unbundling requirements for enterprise grade loop facilities and dark fiber transport in areas with evidence of competition subject to reasonable transition periods).

Network. The open-access network will allow ISPs to connect on equal economic and service terms,[117] lowering costs for last-mile deployment and the construction of broadband access points.

4.5.2.1 Middle-Mile Broadband Initiative

The State Legislature allocated $3.25 billion to the Middle-Mile Broadband Initiative in SB 156 and an additional $550 million in Senate Bill 189 (SB 189) [2022] to deploy a statewide fiber network that will deliver cost-effective middle-mile access, on a competitive basis, where such service does not currently exist. The work of CDT and partner agencies to develop the proposed 10,000 miles of open-access middle-mile capacity in California will not only provide last-mile projects with much-needed connection to transport traffic but should provide an affordable alternative for middle-mile access that will motivate investment in harder to reach communities.

In addition to covering much of the state's geography, the Middle-Mile Broadband Initiative is unprecedented in its focus on flexible access to last-mile providers and other connected entities. The architecture designed by CDT provides connection points every 2,400 feet and interconnection and colocation at hut facilities every 50 miles. The service offerings will include affordable dark fiber and lit services sized for small and large last-mile providers.

The goal of California's open-access Middle-Mile Broadband Initiative is to substantially reduce the cost to lease access to middle-mile networks and reduce barriers to deployment of infrastructure in unserved and underserved areas. However, until it is activated, last-mile providers must rely mostly on commercial middle-mile services.

4.5.2.2 Open access for BEAD-funded middle-mile facilities

The CPUC plans to mandate open access for BEAD-funded middle-mile facilities, as documented in its Initial Proposal to the federal government for the BEAD program. Applicants to the CPUC's grant program will be required to certify "willingness to operate their BEAD-funded middle mile elements on an Open Access basis" in their application and commit to such in their grant agreement.[118]

In alignment with the open access requirements established in SB 156, this provision is intended to support greater competition among providers of last-mile services with a focus on "creating … equity and parity"[119] for areas of the state that are currently unserved or underserved.

4.5.3 Potential opportunities

4.5.3.1 Continue to develop the Middle-Mile Broadband Network as a long-term, self-sustaining enterprise

CDT anticipates that the planned Middle-Mile Broadband Network will begin operations by January 2027, with the potential of some span becoming operational in Q3 or Q4 of 2025. This will be dependent on the timing of onboarding a Third-Party Administrator, the installation of hubs across the networks,

[117] State of California Middle-Mile Broadband Initiative, https://middle-mile-broadband-initiative.cdt.ca.gov/.
[118] State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program, December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at p. 27.
[119] State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program, December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf.

and deployment of network electronics. CDT is developing a long-term, self-sustaining operating model to ensure its continued value.

CDT's analysis of other publicly owned middle-mile networks finds that these networks have mostly been self-supporting over time.[120] However, publicly run networks sometimes need assistance to generate enough revenue to recover operating costs, depending on the operating model, capabilities, and market environment. In most cases, a market comprising more customer types than just last-mile ISPs is necessary for sustainability, and state-owned middle-mile networks are most successful when providing services both for public sector and private users.

CDT's preliminary assessment indicates that MMBI can operate on a self-sustaining basis without ongoing state subsidy. Further market analysis was conducted to understand the full market and develop detailed parameters.

In April 2024, CDT published a market sounding that was conducted to inform its approach to long-term operations and maintenance of the Middle-Mile Broadband Network.[121] The market sounding includes interviews with existing public middle-mile network administrators, private entities with experience operating large networks, and potential customers of the network. Through the market sounding, CDT identified best practices for operating and maintaining the network in a sustainable way that minimizes the future fiscal burden on the state.

4.5.3.2 Continue to emphasize open access as a scoring factor or requirement of middle-mile grants where possible

To further mitigate the barriers that may result from high costs to lease access to middle-mile networks, the CPUC may consider emphasizing open access as a scoring factor or requirement of middle-mile grants where possible.

Many grant programs allow applicants to include expenses for the construction of a limited section of the middle-mile network that is necessary to support the development of a last-mile project and in some instances, these new middle-mile builds will also have open access requirements.[122] This trend could be expanded to more consistently and aggressively support middle-mile open access requirements, especially when the grant-funded project is located in a low-income or underserved community. This effort would align with the Broadband for All Action Plan, which includes the task to "prioritize funding open access, middle-mile infrastructure" as part of action 1 to "recommend and adopt shared standards among all state grant-funding and related broadband programs."[123]

---

[120] Middle-Mile Advisory Committee Meeting presentation, January 19, 2024, https://cdt.ca.gov/wp-content/uploads/2024/02/middle-mile-advisory-committee-meeting-presentation_1-19-24.pdf; see slides 35-36.
[121] "Middle-Mile Broadband Initiative market sounding: Results and recommendations for network operations and maintenance," California Department of Technology, April 22, 2024, https://cdt.ca.gov/wp-content/uploads/2024/04/MMBI-Market-Sounding-Report-042224_Final.pdf.
[122] "Federal Funding Account Program Rules and Guidelines," California Public Utilities Commission (2022), Section 6.1, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M470/K481/470481278.PDF; "Broadband Infrastructure Grant Account Program Requirements, Guidelines, and Application Materials," California Public Utilities Commission (2022), Section 5.2, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M498/K965/498965038.PDF.
[123] "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, at pp. 23-24.

4.5.3.3 Develop a database for the publication of information on private middle-mile facilities and lease rates where possible

The state may consider developing a public database for the publication of details on private middle-mile facilities and lease rates to the extent that information is available (and with necessary protections of proprietary data). While rates charged by middle-mile providers are not currently regulated, providing access to data and information about the rates in the marketplace could help last-mile providers plan their networks, network design, and infrastructure deployment based on meaningful pricing data. This data could be especially valuable to less sophisticated, smaller, or geographically isolated last-mile providers that do not have ongoing statewide or nationwide relationships with large middle-mile providers.

As the Middle-Mile Broadband Network is completed, the state has the opportunity to conduct a study of middle-mile pricing over the course of two to three years through data and information requests to middle-mile providers and its own marketplace research. This study can make data publicly available in such a way as to protect confidential and proprietary information, but it can serve several purposes. Collecting middle-mile pricing data over time will provide some insight into the impact of the state's open-access middle-mile network on the trends of middle-mile pricing throughout the state. Additionally, the study will provide publicly available data to last-mile providers that can support meaningful planning.

4.6 California Coastal Commission permitting policies

The California Coastal Commission has jurisdiction over the California "coastal zone" (as designated by the California Coastal Act)[124] for the protection and preservation of the natural coastal ecosystem and coastal communities. According to the Commission, "[o]n land the coastal zone varies in width from several hundred feet in highly urbanized areas up to five miles in certain rural areas, and offshore the coastal zone includes a three-mile-wide band of ocean."[125]

The coastal zone includes 15 counties and 61 cities (i.e., 76 government entities), and these entities are responsible for developing Local Coastal Programs (LCP) to establish permitting requirements for their respective regions. (These are described in more detail in Section 4.7.)

For most broadband deployment projects within the coastal zone, broadband providers must apply for and receive a coastal development permit.[126] The permit is generally issued by the local government entity or entities that have a certified LCP and jurisdiction over the proposed project location.

The California Coastal Commission may directly issue the permit in some circumstances, such as for a project in an area not covered by a certified LCP; a project on public trust land or tidelands; a project where federal land or regulations may be involved; or as part of the California Coastal Commission's appeal jurisdiction over certain categories of local government permit actions.

---

[124] California Coastal Act, Pub. Resources Code §§30000 et seq., https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=PRC&division=20.&title=&part=&chapter=&article=&nodetreepath=43.

[125] "Our Mission," California Coastal Commission, https://www.coastal.ca.gov/whoweare.html.

[126] Pub. Resources Code §30600 et seq., https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=20.&title=&part=&chapter=7.&article=1.

4.6.1 Reported barrier: None

Stakeholders identified Coastal Commission processes and the requirement to obtain a separate coastal development permit, as an additional step and cost in the permitting process for projects in the coastal zone but did not identify these requirements as a significant barrier to their projects.

4.6.2 Existing programs and efforts

To support the Middle Mile Broadband Initiative, the California Coastal Commission has developed broadband-specific standards and guidance to streamline broadband permitting, including guidance to the local jurisdictions' LCPs and a consolidated, programmatic permitting process and environmental review. In addition, SB 156 provided Middle-Mile Broadband Initiative funding to the California Coastal Commission and other state entities for staff and contracted resources.

The Coastal Commission's guidelines for permitting have been informed by its collaboration with CDT and Caltrans on the Middle-Mile Broadband Initiative construction, several years of prior permitting experience, and work with both wireline and wireless ISPs.[127] These guidelines accommodate relevant industry standard practices while still complying with the Coastal Act.

The guidelines provide transparency and education about what will be required of an applicant for a coastal permit, including standard design requirements, construction techniques, paint colors, placement recommendations, and other standards that provide options to the ISP to comply with the requirements.

These guidelines may not apply in situations where the local entity is the permitting agency; however, the Commission reviews and certifies Local Coastal Programs and will work with local agencies to support the incorporation of permitting processes and requirements that have been informed by permitting at the Commission level.

In addition, certain broadband deployment projects may be exempted from obtaining a coastal development permit.[128] The specific exemption requirements are adopted and implemented by the local jurisdictions in their local coastal programs, but the exemptions must be consistent with California Coastal Commission regulations. The only projects eligible for an exemption are likely those involving the installation of a utility connection between an existing service facility and development previously approved under the Coastal Act or the repair and maintenance of existing facilities (e.g., existing conduit or communication lines).

---

[127] "Coastal Development Permit Applications & Appeal Forms," California Coastal Commission, https://coastal.ca.gov/cdp/cdp-forms.html. See also: "Middle Mile Broadband Network Coastal Zone Guidelines for Programmatic Permitting," California Department of Transportation, December 2022, https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/mmbn-coastal-zone-guidelines-a11y.pdf. See also: "Coastal Middle-Mile Broadband Network, Coastal Resources Assessment," California Coastal Commission, September 2023, Exhibit 7 CDP#1-24-0047, https://documents.coastal.ca.gov/reports/2024/3/F8a/F8a-3-2024-exhibits.pdf.

[128] Pub. Resources Code §30610, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=30610; California Code of Regulations, Title 14, §13253, https://govt.westlaw.com/calregs/Document/I8104D6395B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

An exemption would only be granted if the project demonstrated it would avoid the risk of adversely affecting coastal resources or public access, and not be located in certain particularly sensitive areas such as wetlands. Potential visual impacts of installed structures and equipment in highly scenic areas are evaluated, and above-ground developments affecting views in a scenic road corridor as designated by a certified LCP likely cannot receive an exemption.

Repair and maintenance activities of existing facilities that do not result in additions to or expansions of such facilities can be granted an exemption, as would replacement of a structure destroyed in a disaster with a substantially similar structure, or measures taken in response to an emergency under certain circumstances that may not apply to broadband projects. The installation, testing, and placement of any necessary utility connections between an existing service facility (e.g., existing broadband network) and any development previously authorized under the Coastal Act may also be exempt except that they may be subject to minimization or mitigation requirements, including if they impact "scenic resources."

Other projects may not meet the definition of a project exempt from the coastal permit requirements, but the service provider could in many cases, request a coastal development permit waiver, which still provides an expedited permit process.[129]

Where available, the applicant must demonstrate that the development will have no potential adverse effects on coastal resources to qualify for a waiver.[130] Incorporation of avoidance and minimization mitigation measures can help ensure a project meets these criteria. Applicants must file a full application for a coastal development permit as part of their request for a waiver.

4.6.3 Potential opportunity: Work with relevant state and local agencies to develop a consolidated, programmatic California Coastal Commission permit and environmental review process for last-mile projects in coastal zones

The Coastal Commission has the authority, pursuant to the Coastal Act and related regulations to issue a consolidated coastal development permit for a project that requires permitting from both the Commission and local jurisdiction(s) with a certified LCP or that is part of a programmatic permitting effort for a specific type of development.[131] A local jurisdiction also has the authority to approve permits for a large coordinated project within its community, including when the project has multiple segments or points across a jurisdiction.

The consolidated permit process is coordinated between the Commission and the relevant local jurisdictions. The Commission is responsible for ensuring that the development under the consolidated

[129] Ibid.

[130] Not all local coastal programs have a waiver process or will have a waiver process that mirrors the Commission's.

[131] Pub. Resource Code §§ 30601.3, 30601.4, 30610.9 (exemption of certain actions taken to protect life and public property from imminent danger or otherwise in response to an emergency), https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=20.&title=&part=&chapter=7.&article=1; California Code of Regulations Title 14, Section 13252. Authority for Commission to develop a consolidated coastal development permit application. Section 30601.4 specifically applies a consolidated permit process on to the construction and operation of offshore wind energy projects in the coastal zone and transmission facilities needed for those projects. Section 30605 also allows consolidated permit processes for public works and university development projects.

permit conforms to the Coastal Act requirements, although the certified LCP may be used as guidance, as well as any required public hearing processes.

For example, Caltrans and CDT worked with the Coastal Commission to develop a consolidated permit process for segments of the Middle-Mile Broadband Network, so that only one consolidated permit is needed per coastal zone. Caltrans and CDT also worked with the Coastal Commission to develop a set of programmatic guidelines that coordinated the environmental review, design elements, construction methods, and timelines through a series of Best Management Practices (BMP) and required mitigation practices.[132]

4.7 Local coastal plans that use California Coastal Commission policies

An LCP is a wide-ranging planning document that comprises specific guidelines, rules, and regulations for development in the coastal zone within a local entity's jurisdiction.

An LCP may include regulations regarding sightlines and aesthetics such as pole or structure height, design, and colors. It also typically requires mitigation of any potential environmental impacts from trenching or digging and can restrict the placement and size of a structure or access to a structure if the structure impedes public access to the shoreline.

The California Coastal Commission has guidelines for the development of and updates to these LCPs, including the processes for reviewing and approving coastal development permits. The state also has statutes and regulations, pursuant to the Coastal Act, that impose minimum standards on the local entity's processing of a coastal development permit; the permitting process must be set out in the LCP documentation. The Commission works closely with local entities to review and certify these programs.[133]

4.7.1 Reported barrier: Difficulty navigating local coastal permitting requirements and standards that are not specific to broadband deployment

Some stakeholders stated that some local entities within the coastal zone appear to have applied their LCPs to create a de facto barrier to broadband deployment. These stakeholders claim that regulations or requirements intended to apply to residential development or intended to restrict projects with major ground disturbance very close to shore are improperly applied to broadband projects.

Stakeholders also state that the LCPs adopted by local entities in the coastal zone can have significant differences from jurisdiction to jurisdiction. Therefore, even under the review and coordination of the Coastal Commission, when a last-mile project crosses multiple local jurisdictions, the ISP may have to meet different requirements from multiple LCPs, each applied and interpreted differently by each local entity.

Providers also report difficulties in determining which projects are eligible for exemption.

[132] "Middle-Mile Broadband Network Coastal Zone Guidelines for Programmatic Permitting," California Department of Transportation, December 2022, https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/mmbn-coastal-zone-guidelines-a11y.pdf.
[133] "Key Statutory Responsibilities," California Coastal Commission, https://www.coastal.ca.gov/whoweare.html.

4.7.2 Existing programs and efforts

4.7.2.1 Consolidated permitting process for the Middle-Mile Broadband Initiative

The California Coastal Commission is using its existing regulatory authority to consolidate permitting processes and environmental review under the Coastal Act to support Middle-Mile Broadband Initiative project segments in the coastal zone. California Coastal Commission regulations allow a consolidated permit to remove coastal development permitting authority from local entities. To be consolidated, a project would involve multiple LCPs, be larger and involve a single applicant.

The California Coastal Commission's consolidated permit process requires notice and consultation with the local entities but coastal permitting and any required environmental review occurs at the state level. Other zoning, encroachment, and local permitting requirements not specific to the coastal zone would still be required and would remain with the local communities.

4.7.2.2 Technical assistance for last-mile broadband permitting by local entities

The California Coastal Commission reports that it provides technical assistance to localities with last-mile broadband permitting. The Commission also shares general educational materials for local governments on its website,[134] including information about policies and administrative regulations for LCPs and a resource library for local officials that covers relevant topics including permitting process requirements.[135]

4.7.3 Potential opportunities

4.7.3.1 Explore opportunities to implement a consolidated permit process for regional last-mile broadband deployment within the coastal zone

The California Coastal Commission and local coastal agencies could convene to explore opportunities to implement a consolidated permit process for regional last-mile broadband deployment within the coastal zone, similar to what was implemented for the Middle-Mile Broadband Initiative. This could apply to projects that span at least one certified LCP jurisdiction and the Coastal Commission's permitting jurisdiction.

For projects that are not eligible for the Commission's consolidated permit process, there may be other streamlining opportunities available through a local agency's certified LCP. A certified LCP can be tailored by the local jurisdiction but must follow the provisions of the Coastal Act and the Coastal Commission's regulations regarding exemptions and exclusions, jurisdiction and authority, environmental review processes, and appeals processes.[136] The local entities can thus employ existing streamlining opportunities provided in their LCP or seek an amendment to include new streamlining opportunities. Such opportunities may include coastal development permit exemptions, waivers, "master" coastal development permits for same applicant permit applications, or processing multiple discretionary permits that have to be issued for the same project at a single local hearing.

[134] "Local Government Resources," California Coastal Commission, https://www.coastal.ca.gov/lcps.html.
[135] "Materials & Resources," California Coastal Commission, https://www.coastal.ca.gov/lcp/mrfcj/.
[136] Pub. Resources Code §§30510-514.

4.7.3.2 Provide best practices and technical assistance to local coastal agencies on broadband deployment and possible revisions to local coastal programs to incorporate broadband-specific provisions

The state may consider allocating resources to an appropriate state agency to provide best practices and technical assistance to local coastal agencies on broadband deployment and to coordinate with local agencies on possible revisions to LCPs to incorporate broadband-specific provisions. Potential topics of technical assistance may include helping increase consistency across jurisdictions, sharing information about effective aesthetic guidelines, developing streamlined permit processes for broadband projects that met certain best practices criteria, and sharing information about broadband technology, such as wireless technology with design features that suit coastal areas.

4.8 The permitting policies and processes to deploy on property governed by port authorities

The permitting process to deploy broadband on property governed by port authorities is affected by the differences in ownership and operations among the state's 11 publicly owned ports. Some ports are owned by a municipality and others by special harbor districts formed by the state of California. Each port has its own permitting regulations and standards that providers must consider when deploying broadband access points.

Ports, operating both on land and sea, also cross different jurisdictional boundaries, which impacts the scale of permitting. If a provider intends to lay underwater fiber in port-operated water, it may trigger federal permitting requirements overseen by the U.S. Army Corps of Engineers if the project affects navigable waters.

The state's 11 publicly owned ports comprise the membership of the California Association of Port Authorities (CAPA), which advocates for its members' public policy objectives at the local, state, and federal levels.[137] However, CAPA has no authority or control over the ports' permitting policies and processes.

4.8.1 Reported barrier: None

Stakeholders identified port authority processes, including security measures and access permits, as an additional step and cost in the permitting process for projects, but did not identify these issues as significant barriers to broadband access point projects.

4.8.2 Existing programs and efforts

Research and outreach conducted in the preparation of this report did not identify any existing programs or efforts that address this issue.

4.8.3 Potential opportunity

Because no barriers were reported in terms of the permitting policies and processes for deploying on property governed by port authorities, this report does not identify any potential opportunities to address this issue.

[137] "About CAPA," CAPA, https://californiaports.org/about-capa/.

4.9 Air quality management district permitting requirements

In the context of broadband infrastructure construction and the operations of broadband networks, air quality control mandates typically apply to carbon-fueled construction machinery operated by construction crews; stationary standby generators used in case of power outages at hub facilities; and mobile emergency generators deployed as needed in various network locations.

The California Air Resource Board (CARB), established under the California Environmental Protection Agency, oversees permitting through 35 local air pollution control district offices (known as "air districts") throughout California. The air districts enforce air quality standards set by the federal Clean Air Act[138] and state standards for emissions.[139]

4.9.1 Reported barrier: State and local restrictions on emergency generators

Although ISP stakeholders did not report that their compliance with CARB regulations is a major obstacle in general, they report challenges associated with local, state, and federal restrictions on the use of emergency generators from out of state that exceed accepted California emissions standards—and further challenges associated with restrictions on operating generators and other emergency equipment during long-duration outages.

Air districts may impose stricter requirements as they deem necessary in the region for which they have jurisdiction. These requirements depend on the site and the air quality condition at the generator location. ISPs commented that regional restrictions on allowable types of generators[140] result in higher implementation costs. (As noted in Section 2, the expense of complying with regulations can be considered a regular cost of doing business in the state, rather than a barrier specific to the deployment of broadband access points.)

Permitting by the air district entails two parts: authority to construct (install) and permission to operate the equipment.[141] Depending on the complexity of the project, the permitting process takes three to six months. Middle-Mile Broadband Initiative engineers involved in the process of obtaining permits have experienced longer timeframes and estimate nine to 12 months to obtain authority to proceed with construction; CARB states that this is the exception, not the rule.

State law requires air districts to determine whether or not a permit can be issued within 180 days of receiving a permit application. CARB states that permits that take longer than 180 days are delayed because of missing information, inability of the applicants to demonstrate compliance with regulatory limits, or changing project parameters—and notes that any project that extends further than 180 days must be agreed to by the applicant.

[138] "Clean Air Act Text," U.S. Environmental Protection Agency, https://www.epa.gov/clean-air-act-overview/clean-air-act-text.
[139] "About," CARB, https://ww2.arb.ca.gov/about.
[140] For example, stationary generators with a power rating of 37kW or more require a permit from the CARB air district, as do any modifications to such equipment or the use of a new generator model with that power rating.
[141] The permit to construct allows 12 to 24 months to complete the project. Upon completion, the air district may elect to perform a site inspection to issue the permit to operate. The permit to operate must be renewed after one to three years.

4.9.2 Existing programs and efforts: Portable Equipment Registration Program

CARB's Portable Equipment Registration Program (PERP) speeds up the deployment of backup generators. Through PERP, owners of portable equipment can register to operate throughout California without applying to an individual air district.[142] PERP registration processing time is within 90 days of receipt of a complete application.

4.9.3 Potential opportunities

4.9.3.1 Identify, clean and zero emissions technology to meet the needs of low-income and environmentally sensitive areas

The state may wish to develop resources to assist utilities and broadband providers in identifying cost-effective clean and zero-emissions technology for deployment in low-income and overburdened communities where air quality issues can be especially acute. These approaches would address temporary and permanent equipment needs. Using cleaner technology options results in less emissions overall and could possibly help with processing time for permits, especially if fewer requirements are triggered during the process.

This opportunity is consistent with California's decarbonatization goals, especially within the context of the California Climate Commitment. Further, this potential opportunity aligns with the opportunity for state agencies to develop a public-facing website with information about their broadband-related standards and processes (see Section 4.2.1.2.2).

Additionally, engagement between ISPs and air district offices early in the planning process could also help ISPs understand equipment considerations and permitting timelines.

4.9.3.2 Seek to ensure that regulations are specifically adapted to emergency situations

The state may wish to evaluate and identify air quality regulations to ensure they accommodate, to the extent feasible, the use of emergency backup equipment (ideally comprising clean and zero-emissions technologies), during short and long-term emergency activities and post-emergency restoration. Examples of clean and zero-emissions technology options include battery backup and fuel cells.

4.10 Noise abatement regulations that result in delay or block investment in, and deployment of, broadband access points

Acceptable noise levels vary among municipalities and the locations of the noise source within the communities. Noise regulations impose restrictions on the machinery used during the construction of broadband infrastructure, on the options for stand-by generators at hub facilities, and on mobile emergency generators that are deployed at various broadband network locations during extended electric grid outages.

4.10.1 Reported barrier: Local and state requirements to abate noise created by construction machinery and generators

ISP stakeholders report challenges associated with local and state requirements to abate noise created by construction machinery and generators. Several ISPs note restrictions imposed on noise levels and the duration of operation for electric generators as obstacles to maintaining uninterrupted broadband

[142] "Portable Equipment Registration Program (PERP)," CARB, https://ww2.arb.ca.gov/our-work/programs/portable-equipment-registration-program-perp/about.

services in emergency situations. For example, noise abatement regulations may prevent large ISPs from using equipment they operate in another state if that equipment does not adhere to local noise standards.

Noise regulations may impose restrictions on the type of machinery allowed for the construction of fiber facilities and on the time of day that equipment can be in use. Such restrictions are spelled out in the permit issued by the local authorities.

Once a network has been completed, noise abatement regulations may govern an operator's stationary power generators, which are commonly installed at hub locations for backup of the electrical grid feed. Regulations may also impose limits on noise created by emergency generators, which are mobile units that are deployed on an as-needed basis to keep the network operational. A typical use case scenario for the deployment of emergency generators in California is to maintain operations during a wildfire that disrupts the electrical grid and affects distributed wireless systems or field cabinets that serve as points of traffic aggregation.

Local authorities may restrict the time of operation if the generator's noise is above tolerated levels or penalize the operator if a set cumulative time of operation limit is exceeded.

4.10.2 Existing programs and efforts

Research and outreach conducted in the preparation of this report did not identify any existing programs or efforts that address this reported barrier.

4.10.3 Potential opportunity: Develop best practices that accommodate temporary and permanent equipment and meet the needs of low-income and environmental/wildlife-sensitive areas

Given the purpose of these requirements, the state may consider developing best practices for state and local agencies as a resource for ensuring that restrictions are closely aligned with the purpose of the regulations and are not excessive.

The state can encourage the development of best practices for regulating noise created by temporary and permanent equipment, including ways to tailor rules and regulations to meet the needs of low-income and environmental/wildlife-sensitive areas.

Localities could be encouraged to publish their requirements for maximum noise levels and times of operation by zones within a district to support ISPs in planning for deployment and operations. As a best practice, localities could also be encouraged to ensure that the limits they impose on the use of generators by ISPs are no more burdensome than the limits imposed on comparable equipment by other entities in an emergency—potentially including a waiver of restrictions on maximum noise level and hours of operation for the use of portable generators by an ISP during an emergency.

If such a waiver is appropriate, localities could consider applying it to an ISP when a total loss of grid power would result in an outage to their broadband access point network—whether or not the municipality has declared a larger state of emergency.

4.11 The income of households in the area and the economic feasibility for internet service providers to deploy

Perhaps the most consequential challenge to broadband deployment is the underlying economics associated with deployment—high capital costs (particularly in remote rural areas and complex urban environments) and relatively modest revenue opportunities in low-income and low-density areas.

This challenge is significantly compounded by the possible sunsetting of the federal Affordable Connectivity Program (ACP). California's broadband subsidy programs, while impactful, are not sufficiently resourced to fill the gap the winding down of ACP is likely to leave.

4.11.1 Reported barrier: Economic feasibility of broadband projects given high capital costs and relatively modest revenue opportunity in low-income and low-density areas

Wireline providers, tribal entities, and both small and large wireless providers report facing challenges in expanding to remote, low-density areas due to a lack of potential revenue opportunities sufficient to offset the high cost of building and sustainably operating new infrastructure.

Stakeholders report challenges related to the economic feasibility of broadband projects in urban and rural low-income areas, given the relatively modest revenue opportunities in those locations. Advocacy groups report that larger telecom companies will not expand existing infrastructure to low-income areas due to a lack of profitability.[143]

As described in Section 2, these barriers reflect the realities of the broadband industry. Private entities tend to prioritize projects with higher revenue potential. Low-income areas are less attractive to last-mile providers compared to more affluent neighborhoods because the projected average revenue per unit (ARPU) is less favorable.

This is particularly true for broadband access point deployments that would incur higher construction costs, such as in locations that require underground rather than aerial construction, areas of low density of serviceable households, or where challenging geography and terrain make construction more complicated.

The broadband deployment challenges related to household income (i.e., revenue potential) are compounded by the possible sunsetting of the federal ACP, as discussed in Section 5.4.4. The ACP has been a singularly successful means of enabling low-income households to pay for broadband service—making services to low-income areas more economically feasible for ISPs.[144]

The digital divide in California disproportionally affects low-income households. A study conducted in 2023 by CDT and the CETF in partnership with the University of Southern California (USC)[145] found a broadband adoption rate of 85 percent among households earning less than $20,000 per year, compared to 91 percent of all respondents statewide—and significantly higher rates at higher income tiers.[146]

---

[143] Stakeholder meeting with advocacy groups, January 8, 2024.
[144] See, for example: "The death of ACP could cut $4B out of telecom industry," Light Reading, March 19, 2024, https://www.lightreading.com/finance/the-death-of-acp-could-cut-4b-out-of-telecom-industry.
[145] "2023 Statewide Digital Equity Survey," Final Report, August 31, 2023, University of Southern California Annenberg School for Communication and Journalism, https://arnicusc.org/wp-content/uploads/2023/12/2023-Statewide-Digital-Equity-Survey-Final-Report.pdf.
[146] "2023 Statewide Digital Equity Survey," p. 19.

Notably, this finding reflects an increase among households at the lowest income tier from the previous iteration of the study conducted in 2021.[147] Although the previous study found that the same overall percentage of Californians as a whole (91 percent) had access to high-speed internet service, the broadband adoption rate among households earning less than $20,000 fell sharply to 70 percent.

The study attributes the gain of 15 percentage points in recent years to "strong demand for affordable broadband services from households on the lower end of the income distribution"[148]—potentially underscoring the importance of broadband service subsidy and discount programs including the ACP.

4.11.2 Existing programs and efforts

4.11.2.1 State subsidies for low-income customers and community institutions

The State of California offers broadband service subsidies for low-income customers through the California LifeLine Program. These subsidies lower eligible subscribers' costs (thus making it more likely they will adopt broadband service) while also increasing ISPs' revenue potential, particularly in low-income communities.

The LifeLine program provides a discount of up to $19 per month for wireline or wireless voice phone service and wireless data plans (in addition to the Federal Communications Commission's monthly Lifeline subsidy of between $5 and $9, or more on tribal land) and a one-time $39 service connection fee discount.

For wireless subscribers, the program often includes a phone with only basic voice and data features. The CPUC recently expanded LifeLine with a pilot program to allow participants to apply some or all of the state subsidy to a standalone broadband plan offered by wireline and wireless providers as part of their ACP participation to bring down the cost of broadband service. This was designed to work with any "successor" program to the ACP, but the future of this pilot program is uncertain. It is not designed to work with the providers' own low-cost programs.

In addition to the LifeLine subsidy for households, the state supports broadband access in communities with "lower rates of internet adoption and greater financial need"[149] by providing qualifying organizations with discounts on broadband services through the California Teleconnect Fund. The CPUC-administered program provides a discount of 50 percent on the monthly cost of advanced communications services for institutions including schools, community-based organizations, libraries, and health care facilities that provide direct services to community members.[150] By subsidizing these institutional customers, the state also increases the revenue potential for ISPs in lower-income areas.

[147] "CETF-USC Statewide Broadband Adoption Survey," March 2021, https://s42263.pcdn.co/wp-content/uploads/2021/03/Statewide-Survey-on-Broadband-Adoption-CETF-Report.pdf.
[148] 2023 Statewide Digital Equity Survey, Final Report, p. 59.
[149] "California Teleconnect Fund Applicant & Participant Guidebook," CPUC, version 5 last revised January 30, 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/california-teleconnect-fund/ctf_applicant_and_participant_guidebook.pdf, at p. 3.
[150] "California Teleconnect Fund Applicant & Participant Guidebook," CPUC, version 5 last revised January 30, 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/california-teleconnect-fund/ctf_applicant_and_participant_guidebook.pdf, at pp. 3-7.

4.11.2.2 State investment in last-mile broadband infrastructure

The CPUC's Federal Funds Account (FFA) is a $2 billion last-mile infrastructure grant program administered by the CPUC to support deployment projects in every county in the state. The FFA rules require subgrantees to freeze their rates for five years for services offered in the grant-funded area and to participate in the ACP or a successor program. [151] In the absence of an existing subsidy program, the rules require subgrantees to develop their own income-qualified service plan that offers benefits commensurate with the ACP program. The FFA program further "encourage[s] applicants to offer a 'generally available low-cost broadband plan'" with no income qualifications or eligibility at a cost of $40 or less (i.e., at a cost of $10 with the application of the ACP subsidy) with speeds of at least 50/20 Mbps.[152]

The CPUC's BEAD program incorporates the FFA's affordability framework and proposes to require subgrantees awarded BEAD funding to offer households that are eligible for the ACP or with incomes below 200 percent of the federal poverty line a low-cost service option that costs no more than $30 (i.e., at no cost with the ACP subsidy) for a service with speeds of at least 100/20 Mbps. Subgrantees would be required to continue offering this service option if funding for the ACP is expended and a successor program is not established.[153]

In addition to the federally funded FFA and BEAD programs, the California Advanced Services Fund provides grant funding for broadband infrastructure deployments in unserved areas.[154] This program also has affordability criteria that require grantees to waive installation fees, freeze their rates for five years after project completion, and provide an income-eligible discounted broadband plan either through participation in Lifeline, ACP, or a successor program to ACP. The CASF rules also provide additional scoring points if the grantee will offer a specific plan to income-eligible customers with service at speeds of 100/20 Mbps for $15 per month.

The FFA and CASF programs encourage ISPs to invest in and deploy broadband infrastructure in low-income areas by prioritizing projects with additional scoring points that are located in these areas. The CASF program provides additional points for project areas with Census Data that shows a median household income at or below 80 percent of the statewide median income or designated as "low income" by the state's Department of Housing and community development.[155]

---

[151] CPUC, Decision Adopting Federal Funding Account Rules, Decision 22-04-055 in Rulemaking 20-09- 001, issued April 22, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M470/K543/470543650.PDF; Federal Funding Account Program Rules and Guidelines, adopted April 22, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M470/K481/470481278.PDF.

[152] Initial Proposal Volume II, submitted to NTIA in December 2023, p. 189.

[153] Initial Proposal Volume II, submitted to NTIA in December 2023, pp. 189-190.

[154] CPUC, Decision Adopting Modifications to California Advanced Services Fund Broadband Infrastructure Grant Account, Decision 22-11-023 in Rulemaking 20-08-021, issued November 18, 2022, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/casf-infrastructure-and-market-analysis/broadband-infrastructure-grant-account---landing-page/decision-docs/d2211023attachment-1casf-guidelinesw-coverheader053123.pdf, at Attachment 1, Program Requirements, Guidelines, and Application Materials.

[155] CASF Program Requirements, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/casf-infrastructure-and-market-analysis/broadband-infrastructure-grant-account---landing-page/decision-docs/d2211023attachment-1casf-guidelinesw-coverheader053123.pdf.

FFA also prioritizes projects located in areas with a median household income at or below 80 percent of the statewide median income or areas designated in the top 25 percent of "Disadvantaged Communities" by the CalEPA using their CalEnviroScreen.[156]

These grant programs support the economic sustainability of these projects by providing funding for a significant portion of the capital costs and initial investment to extend high-speed broadband to these areas. Thus, lowering the cost per passing to the ISP and supporting adoption through discounted services.

4.11.2.3 Strategic planning to promote affordable broadband access

The State Digital Equity Plan[157] (submitted for public comment in December 2023, and approved by NTIA in April 2024) and the state's draft Initial Proposal Volume II for the BEAD Program (submitted to NTIA in December 2023) acknowledges the central role of the ACP in strategies to address affordability as a barrier to broadband adoption. Efforts proposed in the Plan are designed around the ACP in the short term, while also proposing approaches by the state to address the long-term sustainability of these strategies given the likely sunset of the program.

The State Digital Equity Plan recognizes that many low-income households will continue to rely on subsidized service, although the Plan calls for multiple measures to overcome affordability as a barrier to broadband adoption, including providing state funding for network development and promoting consumer choice and competition among ISPs. Accordingly, a key activity in the implementation strategy for the Plan involves both promoting the ACP and advocating for the extension of the program or a sustainable successor program. According to the Plan, the state may also consider developing a state-level program that complements federal programs to ensure internet access is accessible and affordable for those Californians who remain in need.[158]

The state's Initial Proposal Volume II for its BEAD program also notes that "[b]eyond 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 [s]tate grant programs it administers including the California Advanced Services Fund (CASF) … and Federal Funding Account (FFA)."[159]

4.11.3 Potential opportunities

4.11.3.1 Expansion of the state's subsidy program to make up for low-income residents' loss of the federal government's ACP subsidy

The construction of broadband facilities into unserved or underserved areas has been incentivized by funding from the state and the federal government, which enables last-mile providers to build projects

[156] Federal Funding Account Program Rules and Guidelines, adopted April 22, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M470/K481/470481278.PDF.
[157] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf.
[158] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf, at p. 64.
[159] Initial Proposal Volume II, submitted to NTIA in December 2023, p. 188.

that would not otherwise be financially feasible. Even with federal or state funding for construction, ISPs may find some projects not economically feasible due to the lack of revenue over the long term.

In addition, while the FFA rules and proposed BEAD requirements will help ensure that eligible low-income households living in an area served by a grant-funded network will have a service option available at a lower cost relative to other subscribers, these plans would effectively cost an additional $30 per month (potentially more for qualifying tribal households) without the ACP subsidy.

Most ISPs with their own discounted plans for low-income subscribers, like Comcast's Internet Essentials or AT&T's Access from AT&T internet plan, also rely on the ACP subsidy to provide eligible customers with a meaningful discount. The loss of the ACP would presumably result in an increase in cost to the subscriber for these provider plans.[160]

California's current state broadband subsidy programs, while impactful, are not sufficiently resourced to fill the gap the ACP is likely to leave. Given that extension of the ACP is not in the state's control, the state may consider expanding the state's subsidy program to make up for low-income residents' loss of the ACP subsidy.

4.11.3.2 Expand existing broadband infrastructure programs to include subsidy of operational costs

The state may choose to identify limited cases where it would contribute funding to support the sustainability of a broadband network where the need for service is high, but revenues are unlikely to pay for operational costs. These cases may include very low-income areas and areas that are very isolated and rely on large amounts of infrastructure to serve few locations.

The program could attempt to offset the subsidy by working with the connected community to identify revenue sources or to reduce costs over time. This effort could include helping establish tribal consortia and developing local workforce skills through broadband bootcamp programs (which are already building community and skills among tribes). It could also include identifying support from philanthropic organizations.[161]

[160] The effective price of low-cost plans that are offered by ISPs in California at the time of this report with the application of the ACP subsidy varies, and the availability and terms of these plans are subject to the provider. California's BEAD initial Proposal identifies some of the larger ISPs in the state that offer low-cost plans for ACP-eligible subscribers, which includes Spectrum/Charter, Cox Communications, Frontier Communications, Verizon, Comcast, and AT&T; Initial Proposal Volume II, submitted to NTIA in December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at p. 188.

[161] An example is Will.I.Am's I.Am/Angel Foundation working with the ISP WeLink to bring broadband to underserved communities in Los Angeles, https://welink.com/2023/01/11/will-i-am-i-am-angel-foundation-and-welink-help-close-digital-divide-in-los-angeles-with-zero-cost-ultra-high-speed-wireless-internet/.

5 Additional reported barriers

This section of the study summarizes additional barriers, not called out in SB 717, that were reported by stakeholders during preparation of this study. The section describes and evaluates those reported barriers and, if applicable, summarizes current state efforts to address them, as well as additional potential opportunities.

5.1 Reported barrier: Lack of access to data and associated broadband mapping challenges

A range of stakeholders, including broadband advocacy organizations and local governments, report challenges with data regarding existing broadband service availability and infrastructure—including concerns that some existing data may overstate or incorrectly assess the true availability of broadband.

This concern is shared by stakeholders throughout the country who seek to access the best possible data for purposes of planning, resource allocation, and advocacy. This shortcoming is due in part to the fact that federal and state mapping efforts ask ISPs to report their service details, but there are limited legal or regulatory mechanisms for requiring companies to report the location of their infrastructure; unless the ISPs' infrastructure is grant-funded, local government generally will not have those data.

The State Digital Equity Plan documents this barrier—noting, for example, that broadband maps may not accurately count individual units within multi-dwelling unit buildings.[162] That Plan also notes, "[w]hile federal and state broadband data and mapping capabilities continue to increase, current data and mapping definitions may not always reflect the lived experiences of communities across the state."[163] In the same vein, the BEAD Program allows broadband map challenges on the basis of service availability at a location "including a unit of a multiple-dwelling unit."[164]

The stakeholders report this issue frequently arises when fixed wireless service providers claim to serve an area based on their coverage maps—but in actuality, the fixed wireless provider may not have the technical capacity to reliably serve all households in the area with broadband speeds. Because of these coverage assumptions, these areas are considered "served" on broadband maps and thus are ineligible for grant-funded infrastructure.

[162] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf, at p. 13.
[163] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf. at p. 79.
[164] "BEAD Initial Proposal Volume I," California Public Utilities Commission, April 4, 2024, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/communications-division/documents/broadband-implementation-for-california/bead/cpuc-bead-ipv1-approved-04042024--updated.pdf, at p. 13. *See also:* "BEAD Model Challenge Process," National Telecommunications and Information Administration, November 1, 2023, https://www.internetforall.gov/bead-challenge-process-policy.

The State Digital Equity Plan notes the same consequence for incorrectly labeled MDUs: "These inaccuracies can result in a lack of eligibility for funding opportunities and can make it more difficult to target solutions."[165]

In California, stakeholders report real consequences due to a lack of access to reliable data and mapping. Some counties report facing delays and cancellation of potential grant-funded projects because they have selected project boundaries that are challenged (protested) by incumbents who claim to serve the areas. This happens even when the county governments make every effort to identify existing incumbents using current state and federal maps and local knowledge.

5.1.1 Existing programs and efforts

5.1.1.1 State legislation (AB 286)

As described in the Legislative Counsel's digest, Assembly Bill 286 (AB 286) [2023][166] requires that the CPUC's state broadband map identify broadband service providers and the maximum service speed available at each address in the state.

The bill additionally requires the map "to include certain features to receive self-reported data, including, among others, a feature that allows individuals to refute the broadband speed or technology, or both, that an internet service provider claims to offer at an address. The bill requires the map to include a feature for users to submit a verified speed test, as defined, at their location."

The bill further instructs the CPUC to "make this self-reported data publicly available by address" (with the provision that the CPUC obtain consent from an individual before publicly disclosing information that the individual submits).

The bill also prohibits the CPUC "from accepting certain self-reported information… as evidence in a commission proceeding unless the commission validates the accuracy of that self-reported information."

5.1.1.2 The CPUC's BEAD Program challenge process

The BEAD Program has been designed by NTIA to enable availability challenges—that is, challenging the status of a location as documented on the FCC's National Broadband Map—in a way that has not been allowed by federal grant programs before. Reversing the previous process (which favored claims by incumbents), BEAD provides an opportunity for local governments and individuals to submit challenges—and shifts the burden of proof to the service provider.

Within the NTIA's framework, the CPUC has proposed a reasonable, low-burden approach for local governments, tribes, nonprofits, and ISPs to challenge the FCC's broadband map. Once that map is finalized for purposes of California's BEAD grant program (i.e., broadband-serviceable locations and the service attributes of all served locations are confirmed), potential broadband deployers will have the certainty of the map's data as the basis for developing projects and preparing BEAD grant applications.

(This effort builds on the CPUC's previous, highly successful effort to challenge and improve the National Broadband Map during the FCC's truncated availability challenge process window that ended in January

[165] "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf, at p. 84.
[166] Assembly Bill 286 [2023], https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB286.

2023.[167] Along with localities, the CPUC challenges yielded significant improvements to the map in terms of more accurate documentation of unserved locations in the state.)

The BEAD challenge process represents an important and first-of-its-kind approach. While it is required by the federal government that the FCC's map be the basis of the BEAD challenge process, the state is allowed to design and run a challenge process for the purposes of developing its own BEAD funding map.

The CPUC has proposed a meaningful challenge process designed to address many of the concerns raised by stakeholders. This approach effectively turns former public policy on its head. Generally, local communities bear the burden of showing that a location has been incorrectly reported. ISPs report their service locations; if the service is overstated or incorrectly reported, communities and tribes must document the error.

The CPUC has proposed to the federal government that its BEAD challenge process will include "area challenges," in which showing that a certain number of locations have been incorrectly identified as served would then change the presumption for an entire census block group to underserved or unserved. In that scenario, the burden would be on the ISP to demonstrate that its reporting is correct.

This is far less of a burden on the challenger, and far more of a burden on the entity that filed the original data (though, if the ISP's reporting is correct, the ISP will have a low burden to re-confirm its assertions). If the ISP's reporting is incorrect, however, the area challenge process enables local governments and other challengers to ensure corrections are more easily made.

Similarly, the CPUC has proposed allowing a speed test challenge,[168] which is more available to the public than other evidentiary efforts. The speed test process would allow residents to share data with their local or tribal government to file in the challenge process to show that broadband service is overstated at particular locations.

The CPUC's proposed BEAD challenge process is significant because it means local governments and residents will have a lower barrier to correcting inaccurate broadband service data. It is also significant because it means the map of eligible locations will be established before the BEAD grant application deadline, so applicants can invest in project planning with the confidence that their applications will not be rejected based on incorrect service availability data.

5.1.2 Potential opportunity: Consider a state challenge process modeled after the CPUC's BEAD Challenge Process

The state may choose to evaluate the efficacy of the BEAD Challenge Process and consider using that process or a version of that process in future grant programs and broadband expansion efforts.

[167] See, for example: "Federal Communications Commission Broadband Availability Challenge Process," December 2, 2022, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2022/12/CPUC-CDT-Webinar-on-FCC-Challenge-Process-12-2-2022-1.1.pdf.

[168] "State of California Initial Proposal Volume I [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," November 2023, https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M520/K752/520752666.PDF, at p. 10.

5.2 Reported barrier: Costs associated with risk assurance

This section of the study summarizes barriers (as reported by stakeholders) that are experienced primarily by smaller providers, including public sector and tribal start-up ISPs.

Smaller ISPs identify challenges and costs that are prohibitive for them in light of their relatively modest resources. These costs are more easily borne by larger service providers. These costs may have a sound basis, but effectively serve as barriers to participation by small providers in the broadband economy. They include costs required for participation in grant programs (e.g., letter of credit or performance bond; audited financials) or costs associated with risk assurance for participation in joint pole authorities (e.g., audited financials).

These costs can be mitigated by public subsidy, in which the state effectively takes on the costs and risks that are barriers for the small providers so as to give them an opportunity to participate. The California Infrastructure and Economic Development Bank (IBank) Loan Guarantee Program may also be a potential source of assistance for small ISPs.[169] Similarly, the CPUC's Loan Loss Reserve Fund might be a resource for local governments, tribes, and non-profits.[170] (See Section 5.3.1.2 for more details.)

5.2.1 Existing programs and efforts: Provisions in CPUC grant programs

Some CPUC grant programs allow exemptions and/or offer alternative accommodations for letters of credit and performance bonds, but these may not be available for a program that has significant federal requirements.

The notice of funding opportunity (NOFO) for the BEAD program, for example, includes the requirement that subgrantees obtain an irrevocable standby letter of credit representing at least 25 percent of the award amount from an eligible bank.[171] As discussed further in Section 5.4.2, the CPUC utilized the provisions of a conditional waiver issued by NTIA for this requirement[172] to provide applicants with options that could help reduce the burden for smaller ISPs. The letter of credit may be issued by a credit union—which may be more familiar with financing local development projects and have established relationships with smaller ISPs.

Subgrantees may also obtain a performance bond for 100 percent of the award amount, a typical practice for construction projects; or may have the obligation of their letter of credit or performance bond progressively reduced, or the committed amount reduced upfront, under certain scenarios for administration of their funding. [173]

---

[169] "Loan Guarantee Program," California Infrastructure and Economic Development Bank (IBank), https://www.ibank.ca.gov/small-business/loan-guarantees/.

[170] "Loan Loss Reserve Fund," California Public Utilities Commission, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/loan-loss-reserve-fund.

[171] "Notice of Programmatic Waiver," NTIA, November 1, 2023, https://broadbandusa.ntia.gov/sites/default/files/2023-10/BEAD_LOC_Waiver_Notice_10.23.23.pdf.

[172] BEAD NOFO, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, at Section IV.D.2.a.ii.

[173] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at pp. 48-49.

As a general rule in designing the proposed BEAD program rules, the CPUC intends to "encourage … opportunities for smaller local applicants" by following the principle of "simplicity and widespread participation."[174]

5.2.2 Potential opportunity: Develop a state backstop for grant-funded project risk

Federal grant programs in broadband, both in the current generation of large federal programs such as BEAD but also smaller programs such as the U.S. Department of Agriculture's (USDA) ReConnect Loan and Grant Program, inevitably are structured with requirements that are burdensome to smaller companies. These are requirements designed to reduce to the greatest extent possible the risk of the grantee's default or failure to perform.

When the federal government extends money in these areas, it follows a general set of practices that are universal for trying to secure the investment and reduce or eliminate the risk of waste, fraud, and abuse. These safeguards also protect against the attendant scandal that comes with grants that are extended to entities that prove unable to deliver when using public funds.

This is a particularly challenging factor to address because federal policy seeks to create opportunity for smaller entities and seeks to enable all entities to participate in grant opportunities—but inevitably the restrictions intended to protect the federal dollars may have a disproportionate impact on small providers relative to larger, well-resourced providers (whether they be local, regional, national, or international).

In this way, the federal policy goals may be at odds with each other—but federal entities are nonetheless required and incentivized to be restrictive and structured in imposing protections to avoid the risk of funding an entity that cannot perform, even at the cost of effectively precluding or significantly burdening participation by such smaller providers.

For example, in the context of the BEAD Program, the NTIA initially proposed a requirement of a letter of credit for a high percentage of a subgrantee's total project cost.[175] After considerable input and concern expressed by many states, as well as emerging and nontraditional ISPs such as local governments, tribal governments, and nonprofits, NTIA extended a waiver to the letter of credit requirement that maintained the requirement but in a new form—allowing states to reduce the letter of credit amount or to require alternative guarantees such as performance bonds.[176]

Another example of a costly risk assurance requirement is the federal requirement of a minimum 25 percent match by the subgrantee for BEAD-funded projects intended to serve the great majority of eligible locations. (A small portion of eligible locations are excluded from the match obligation based on NTIA's assessment that the locations are particularly high cost to build, and a match would therefore greatly reduce or eliminate the potential of any ISP bidding for those locations.)

---

[174] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at p 21.

[175] Similar letter of credit requirements appear in Federal Communications Commission (FCC) programs such as the Rural Digital Opportunity Fund (RDOF) and the USDA's ReConnect program.

[176] "BEAD Letter of Credit Waiver," NTIA, U.S. Department of Commerce, https://broadbandusa.ntia.gov/funding-programs/policies-waivers/BEAD-Letter-of-Credit-Waiver.

While the reduced match requirement is helpful for high-cost locations, California stakeholders report a barrier with regard to the match requirement for all others BEAD-eligible locations. As the state's BEAD grant program is rolled out by the CPUC, that requirement may serve to deter or reduce participation by ISPs for which the imposition of the 25 percent match eliminates the commercial attractiveness of a grant to serve that location. The state of California could choose to seek to reduce the scale of this barrier for some applicants that demonstrate the disproportionate impact. This could be particularly beneficial given that the impact is likely to be felt most acutely in those parts of California that have not been attractive for private investment in the past; these are locations where the business case is challenging and where, as a result, there may be few bids, no bids, or only bids for the BEAD funds that are too costly given the finite number of federal dollars available.

Some states have chosen to reduce this particular barrier by partially funding required matches from the state rather than federal appropriations. In many places in California and elsewhere, localities have also sought to partially fund the match, generally in return for commitments from a selected company to collaborate with that locality and address its broadband public policy goals in the context of an application to the grant-making entity (i.e., the CPUC in the case of California).

As of the writing of this report, the CPUC is working with NTIA to get clarity on if and how funds from FFA or CASF may be used as match for BEAD. However, NTIA has not yet approved California's Initial Proposal Volume II, so the mechanics of that approach are not yet determined.

In summary, there exist considerable efforts by the CPUC, through its BEAD planning, as well as by many California localities, to alleviate the match requirement burden. Those and other funding efforts might address this particular barrier. The letter of credit or performance bond obligations, however, may not be addressable through state funding, given that NTIA, as well as other grant-making federal entities such as USDA Rural Utilities Service (RUS), use those requirements as a protection against funding entities without financial wherewithal—and thus the likelihood that those agencies would not allow the state to pay those costs, because doing so would undercut the purpose of the requirements.

5.3 Reported barrier: Lack of local resources to plan and develop networks, particularly on the part of localities and tribal governments

Localities and tribal entities that seek to become ISPs report challenges developing business plans, hiring a trained and certified workforce, and achieving the operational sophistication to deploy and operate networks in a sustainable manner. California has acted to support such efforts through the Local Agency Technical Assistance (LATA) program, the Tribal Technical Assistance Grant Program, and comparable efforts to provide planning resources. A potential additional approach is renewal of such funds to support additional planning.

5.3.1 Existing programs and efforts

5.3.1.1 Local Agency Technical Assistance Program (LATA) and Tribal Technical Assistance Grant Program

To encourage and support local governments' broadband planning efforts, the CPUC offered $45 million in Local Agency Technical Assistance (LATA) and $10 million in Tribal Technical Assistance.[177] This funding was intended to support local jurisdictions and tribal entities in efforts to expand broadband service in their communities through strategic planning, environmental reviews, network designs, and feasibility studies.

The funding for these programs has been exhausted except for a small amount of tribal technical assistance. The fund supported more than 100 technical support projects for non-tribal jurisdictions and has exhausted the additional $5 million in funding for tribal projects from its LATA funding. The LATA program received requests for funding beyond the available program amount creating significant unmet demand and a need for additional technical assistance.

5.3.1.2 Loan Loss Reserve Program

The $750 million Broadband Loan Loss Reserve Fund, which was established by SB 156, supports costs related to the financing of local broadband infrastructure development. The reserve fund expands local and tribal governments' ability to secure financing for building last-mile projects, with an emphasis on public broadband networks.[178] Funding will support "payment of costs of debt issuance, obtaining credit enhancement, and establishment and funding of reserves for the payment of principal and interest on the debt."[179]

Funding will be offered in three cycles per year of four months each, with 40 percent of funding available to all applicants in a General Market Track. The remainder of the funding will be divided between a Tribal Track that sets aside 10 percent of funding for sovereign tribal governments, and a Digital Equity Track that makes 50 percent of funding available to applicants who propose to serve SB 535 [2012][180] disadvantaged communities and low-income areas, including tribes. The scoring criteria consider whether projects benefit unserved locations, but the program will support financing in "adjacent underserved and served communities."[181]

---

[177] "Local Agency Technical Assistance," CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/local-agency-technical-assistance. Tribal Technical Assistance Grant Program, CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/california-advanced-services-fund/tribal-technical-assistance.

[178] "Last Mile and Adoption Programs," Broadband for All, https://broadbandforall.cdt.ca.gov/last-mile-broadband/.

[179] Loan Loss Reserve Program Requirements and Guidelines, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M521/K112/521112033.PDF, adopted in CPUC Decision 23-11-045 (November 2, 2023) in Rulemaking 20-08-021, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M520/K736/520736029.PDF.

[180] Senate Bill 535 (SB 535) (Chapter 830, September 30, 2012), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB535.

[181] Loan Loss Reserve Program Requirements and Guidelines, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M521/K112/521112033.PDF, at pp. 16-18.

The CPUC adopted rules and guidelines for the program on November 2, 2023, and the program began accepting applications in March 2024.[182]

5.3.1.3 CPUC Broadband Internet Caseworkers Program

The CPUC's Broadband Internet Caseworkers provide education and technical assistance to help local governments develop strategies and access funding for broadband infrastructure and digital equity projects. Recognizing that local governments needed assistance navigating the varied ecosystem of state and federal programs that support broadband infrastructure planning and development as well as broadband affordability and adoption, caseworkers provide in-person and virtual assistance including consultations and seminars, with resources available on the CPUC's website.[183] In addition to helping communities access potential funding opportunities, caseworkers can advise on project planning and considerations including business models, data and mapping, applicable regulations, and workforce development.

5.3.1.4 CDT technical assistance and outreach to local governments

CDT developed a broadband planning resource hub in the Broadband for All online portal to assist local and tribal governments through the various stages of broadband planning. [184] The hub hosts materials including toolkits specific to broadband planning and implementation; sample digital inclusion plans, initiatives, and best practices; and digital skills training tools.

CDT has also developed a public-facing, searchable database of state and federal funding opportunities to support broadband deployment and adoption initiatives, and digital literacy program planning and implementation.[185]

To help local governments implement or enhance policies and processes for permitting based on best practices, CDT and GO-Biz also developed a "State of California Local Permitting Playbook" as discussed in more detail in Section 4.2.3.1.1. [186]

5.3.2 Potential opportunities

5.3.2.1 Expand technical assistance for localities and tribal entities

The state may want to consider providing additional resources to a state agency to support extensive technical assistance for localities and tribal entities. This new funding would continue to support economic feasibility studies, strategic planning, and network design efforts for local governments to identify needs and explore options to meet those needs.

This effort would align with one of the objectives for the state's BEAD program outlined in the state's Initial Proposal Volume II: "Provide technical assistance and support local and tribal governments, schools, community-based organizations, anchor institutions, and other carriers serving at-risk

[182] "Loan Loss Reserve Fund," CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/loan-loss-reserve-fund.
[183] "Broadband Internet Caseworkers," CPUC, https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/broadband-implementation-for-california/broadband-caseworkers.
[184] "Planning," Broadband for All, https://broadbandforall.cdt.ca.gov/planning/.
[185] "Funding opportunities," Broadband for All, https://broadbandforall.cdt.ca.gov/funding/.
[186] "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.

communities to help them prepare to leverage federal and state funding opportunities related to broadband."[187]

However, to reduce barriers for deployment of broadband access points by service providers and nontraditional providers like consortia or regional entities, it is necessary to provide additional funding to support local government permitting offices, land use planning, and related efforts, including staffing permitting offices, establishing improved mapping and permit tracking and processing software, and supporting general improvement in the capacity and expertise of local governments to support network deployment in their communities.

5.3.2.2 Expand worker training to support local hiring and a trained/skilled workforce

Resources could be provided for worker training to support local hiring and a trained/skilled workforce familiar with California electricity and telecommunications safety regulations.

Potential strategies for the state to support the availability of a highly skilled and diverse workforce for broadband deployment in line with its long-term economic development goals are outlined in the state's Initial Proposal Volume II.[188] Given that post-secondary training programs that produce trainees for field work roles are largely concentrated in urban population centers in northern and southern California, workforce shortages may be more acute in rural areas and particularly on tribal lands.[189] Supporting training programs for skilled workers in these areas is a key component of the state's potential workforce development strategy[190]—along with encouraging local hiring in these communities.[191] These strategies could support longer-term growth in local workforce capacity to address the barriers reported by stakeholders in this study.

To effectively direct its resources for these efforts, the state could continue to work in collaboration with the public, private, and nonprofit stakeholders involved in training, growing, and diversifying the state's telecommunications workforce. Strategies based on industry best practices for the state to consider include supporting apprenticeship and on-the-job training programs, supporting ongoing coordination between employers and training providers, and providing clear opportunities for workers entering the field to advance in their career.[192]

5.3.2.3 Create awareness of training opportunities and careers in broadband

As part of its workforce development efforts, the state may consider working alongside stakeholders to create awareness of training opportunities and careers in broadband.

---

[187] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/internet-and-phone/bead-program/draft-cpuc-bead-ipv2-as-submitted.pdf, at p. 5.
[188] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023; see Section 9.
[189] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 108.
[190] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 109.
[191] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 110.
[192] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 109-110.

The state's BEAD Program Initial Proposal notes the challenges of recruiting individuals to a new career—particularly in a field such as broadband that may be unfamiliar to many. Potential strategies for successful recruitment could include "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."[193]

In growing the broadband workforce, the state can seek to encourage people who have not historically been represented in telecommunications to enter the field.[194] As the Initial Proposal notes, community colleges, trade schools, and technical 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."[195] Supporting work in tandem by the private sector to establish inclusive hiring and training practices would also be critical to supporting greater diversity in the field.

To address the local capacity shortages discussed above, the state could consider supporting pathways to connect individuals in rural communities and tribal members to training opportunities, including marketing in these areas, supporting training programs by California tribes for tribal members, including Tribal Broadband Bootcamps, and encouraging more accessible forms of training and credentialing such as virtual learning and pop-up events.[196]

5.4 Reported barriers created by federal policy

This section of the study summarizes the range of challenges and barriers reported by stakeholders that are outside the authority of state or local government because the federal government has determined these policies. In these areas, the state can advocate to federal policymakers for changes, but these reported barriers may not be addressed solely through state action.

5.4.1 Reported barrier: Federal preference for fiber over fixed wireless

Multiple wireless stakeholders and counties raised concerns with federally imposed preferences for grants to be made for fiber construction rather than fixed wireless.

There is some flexibility in the state's CASF, where the requirement that the "Commission may only fund projects that deploy infrastructure capable of providing broadband access at minimum speeds of 100 Mbps downstream and 20 Mbps upstream" does allow funding of wireless projects with that speed or greater. The federal BEAD program, however, prefers fiber technology and only funds wireless or other technologies where the cost of fiber exceeds the state's Extremely High-Cost Threshold.

[193] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 110.
[194] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 110.
[195] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 110.
[196] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 110-111.

Under the requirements of the BEAD program, in selecting subgrantees the state must fund end-to-end fiber projects "to the extent possible within budgetary constraints"[197] through a selection process in which such a project, defined as a Priority Broadband Project, "shall be 'the default winner' over other permissible technologies (and subject to NTIA's explicit permission) unless the locations would be too costly to serve with fiber."[198]

NTIA instituted this requirement in the NOFO for the BEAD program based on its determination that only an end-to-end fiber architecture meets criteria for a Priority Broadband Project established in the Infrastructure Investment and Jobs Act that include scalability of projects over time to meet "evolving connectivity needs" and support for emerging technologies.[199]

Wireless ISPs and counties shared their concern that the federal prioritization of fiber for deployment will result in less broadband coverage given the economics of broadband deployment. However, this concern was not shared by wireline entities. Moreover, this is a matter of federal policy, not state policy, and a precondition of receiving federal funding under the BEAD program.

5.4.2 Reported barrier: Federal requirements for verification of financial soundness of grant awardees

Stakeholders identified the requirement of audited financials and costly guarantees (such as letters of credit or performance bonds) as barriers.

Modeled on Rural Digital Opportunity Fund (RDOF) program requirements, the NOFO for the BEAD Program requires subgrantees to provide an irrevocable standby letter of credit that represents at least 25 percent of the award amount and is issued by a bank meeting the requirements of 47 C.F.R. § 54.804(c)(2) before entering into a grant agreement.[200]

After reportedly receiving criticism that this requirement could limit participation by smaller and non-traditional providers, NTIA subsequently issued a conditional programmatic waiver of this requirement that sets out alternate provisions available to states in designing their grant program.[201]

The CPUC will follow the guidelines in the waiver by allowing applicants to either[202] provide a letter of credit for 25 percent of the subaward amount as originally specified or from a qualifying credit union; provide a performance bond representing 100 percent of the subaward amount; elect to have the obligation of the letter of credit or performance bond reduced as they complete deployment milestones specified by the CPUC; or request a reduction in the initial committed amount of the letter of credit or

[197] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 18; see also, BEAD NOFO, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, at Section IV.B.7.b.2.
[198] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 18.
[199] BEAD NOFO, at Section IV.B.7.b.2.i.
[200] BEAD NOFO, at Section IV.D.2.a.ii.
[201] "Notice of Programmatic Waiver," NTIA, November 1, 2023, https://broadbandusa.ntia.gov/sites/default/files/2023-10/BEAD_LOC_Waiver_Notice_10.23.23.pdf.
[202] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p 49.

performance bond if funding is issued by the CPUC on a reimbursable basis for periods of six months or less.[203]

Additionally, the CPUC intends to encourage eligible public and tribal entities applying to the BEAD Program to participate in the CPUC's newly established Loan Loss Reserve Program, which will offer additional resources to help mitigate the costs of the BEAD letter of credit and performance bond requirement.[204] As discussed in Section 5.3.1.2, the program offers payments on the cost of debt issuance, debt service guarantees, and credit enhancements used for the deployment of broadband infrastructure by public and nonprofit entities. The program utilizes a "credit enhancement" mechanism to reduce the credit risk of the debt an applicant incurs to fund their project, thereby lowering the cost to obtain the required debt issuance—including a letter of credit or performance bond.

The CPUC anticipates that encouraging BEAD applicants to leverage the Loan Loss Reserve Program will "support stronger applications from public and tribal entities."[205] Further, it "finds that the accountability measures required by the [Loan Loss Reserve Program], including a detailed application process, strict standards for eligible projects and risk calculations, and post-award reporting requirements, will satisfy the letter of credit objectives and requirements as set out in the NTIA Guidance, its recent waiver notice, and the BEAD rules."[206]

5.4.3 Reported barrier: Federal limitations on use of E-rate-funded infrastructure for non-educational purposes

One ISP reports that it leverages public spaces to install equipment, but E-rate limitations prevent it from using existing backhaul at schools.[207] This reported issue reflects the federal E-rate program's established rules regarding eligible expenses and the use of E-rate-funded infrastructure. As the FCC notes in its program overview, "[t]he FCC's E-Rate program makes telecommunications and information services more affordable for schools and libraries."[208]

5.4.4 Reported barrier: Likely sunsetting of the federal Affordable Connectivity Program

For California households that have internet service available, affordability remains a top barrier to digital equity for all populations throughout the state.

[203] Subgrantees may only request this fourth option for a reduction "where 1) funding will be issued on a reimbursable basis and the CPUC has implemented all other subgrantee accountability measures as set out in the BEAD NOFO rules (Section IV.C.1.b); 2) funding will be on a reimbursable basis for periods of no more than six months; and 3) the letter of credit or performance bond remains at 10 percent of the subaward until the subgrantee successfully demonstrates 100 percent project or completion or the period of performance for the subaward has ended;" see Initial Proposal Volume II, as submitted to NTIA in December 2023.
[204] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 50-51.
[205] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 50-51.
[206] "State of California Initial Proposal Volume II [Draft]: Broadband Equity, Access, and Deployment (BEAD) Program," December 2023, p. 50-51.
[207] "Backhaul" for wireless service providers can comprise middle-mile fiber or, as in the case of microcell access points, could include last-mile fibers as well.
[208] "E-Rate: Universal Service Program for Schools and Libraries," FCC, https://www.fcc.gov/consumers/guides/universal-service-program-schools-and-libraries-e-rate.

According to the FCC, the entity that administers the ACP, the program represents "the nation's largest broadband affordability program."[209] The program offers eligible low-income households a discount of $30 per month on high-speed internet service through participating internet providers—or up to $75 per month for households on qualifying tribal lands—and a one-time discount of up to $100 for a laptop, tablet, or desktop computer.[210]

As of February 5, 2024, a total of 2,925,882 California households were enrolled in the ACP[211]—representing approximately 50 percent of the households in the state that are estimated to be eligible for the subsidy.[212]

However, the FCC expects the funding for the ACP to be exhausted in April 2024 without action by Congress to appropriate additional funding, and as of the writing of this report has "begun taking steps to wind down" the program.[213] As of 11:59 ET on February 7, 2024, the program no longer accepted new enrollments. Households that were enrolled in the program will continue to receive the benefit until the remaining funding runs out[214]—at which point the nearly 3 million enrolled households in California will no longer receive the monthly subsidy.

Current subscribers may opt not to continue their service when the program ends[215] and a significant number of households could decide not to purchase service in the future without the subsidy available, given that 61 percent of respondents to a telephone survey conducted for the State Digital Equity Plan in 2023 identified cost as the primary barrier to obtaining home internet service.[216] Nationally, 77 percent of ACP recipients surveyed by the FCC in December 2023 anticipated that losing their ACP benefit would cause them to cancel their service or change service plans.[217]

---

[209] "FCC Chairwoman Highlights Next Week's Enrollment Freeze for Nation's Largest Broadband Affordability Program," FCC news release, February 1, 2023, https://www.fcc.gov/document/fcc-chair-highlights-acp-enrollment-freeze.

[210] "Affordable Connectivity Program," Broadband for All, https://broadbandforall.cdt.ca.gov/affordable-connectivity-program/.

[211] "ACP Enrollment and Claims Tracker," USAC, https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/ (accessed February 9, 2024).

[212] "Affordable Connectivity Program enrollment tracker," Broadband for All, updated February 6, 2024, https://broadbandforall.cdt.ca.gov/affordable-connectivity-program/acp-enrollment/. Data are provided by the California Emerging Technology Fund (CETF) and the Geographical Information Center at Chico State Enterprises (CSE), an affiliate of California State University, Chico.

[213] "The FCC is Taking Steps to Wind Down the Affordable Connectivity Program," FCC, January 12, 2024, https://www.fcc.gov/fcc-taking-steps-wind-down-affordable-connectivity-program.

[214] Per the terms of the program wind-down established by the FCC, providers participating in the ACP are required to provide notice to subscribers "informing them that the ACP is ending, how and when the end of the ACP will impact their bill, and that they may opt-out of continuing service after the end of the ACP or change their service;" "Affordable Connectivity Program To End Soon Barring Congressional Action," FCC news release, January 11, 2024, https://docs.fcc.gov/public/attachments/DOC-399712A1.pdf.

[215] "The FCC is Taking Steps to Wind Down the Affordable Connectivity Program," FCC, January 12, 2024, https://www.fcc.gov/fcc-taking-steps-wind-down-affordable-connectivity-program.

[216] Bar, F., Galperin, H., Le, T., 2023 Statewide Digital Equity Survey, p. 27; see, "California Digital Equity Plan," California Department of Technology, April 2024, https://broadbandforall.cdt.ca.gov/wp-content/uploads/sites/19/2024/04/California-State-Digital-Equity-Plan-04.04.2024-Remediated-Version.pdf, at p. 27.

[217] "ACP Consumer Survey," FCC, updated February 29, 2024, https://www.fcc.gov/acp-survey.

As discussed in Section 4.11, the unique success of the ACP in enabling low-income households to pay for broadband service has thus made services to low-income areas more economically feasible for ISPs. In addition to presenting a significant risk that households may become disconnected in areas where service is available, loss of the subsidy reduces the potential revenue ISPs can anticipate when evaluating whether to serve a low-income area, and they may choose not to invest in expanding or upgrading their networks as a result.

5.5 Reported barriers associated with CEQA

CEQA[218] requires public agencies to comply with the rules and processes put forth by the CEQA guidelines when they initiate or have discretionary approval over a project.[219] Because new broadband facilities are commonly constructed in the public right-of-way, municipal, county, and state authorities must approve the projects and issue permits for the construction and are therefore bound by the CEQA rules. Completed CEQA documentation is a prerequisite for the acceptance of a permit application in most jurisdictions.

The process and the level of effort to satisfy CEQA requirements can vary greatly by location, by the scope of the project, and, more importantly, by its potential impact on humans, wildlife, and flora during the construction phase as well as in its final stage.

The CEQA process may be completed within a few months when no adverse impacts on the environment are identified. However, the process can require well over a year to complete—or, in some cases, multiple years—if potentially significant impacts to the environment are identified and require impact-mitigation measures.

The CEQA documentation process is performed under the auspices of a lead agency, which is a stakeholder that has jurisdiction over the construction zone and issues the necessary permit. In instances where multiple agencies are involved, the one with primary jurisdiction ordinarily assumes the role of the CEQA lead agency and "shall be the public agency with the greatest responsibility for supervising or approving the project as a whole."[220]

Further, the lead agency "will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose such as an air pollution control district or a district which will provide a public service or public utility to the project."[221] If multiple agencies share responsibility more or less evenly, the one "which will act first on the project in question will normally be the lead agency."[222] If, after considering all of those factors, there remains a substantial question about which agency should be lead, the agencies may agree to designate one as the lead.[223]

Unless the proposed project meets the criteria of a CEQA exemption (see Section 5.5.1.1), the process starts with an initial study or environmental review and documentation of potential impacts and consistency with land use in the project area. If at this stage no potential adverse effects on the

[218] "CEQA: The California Environmental Quality Act," OPR, https://opr.ca.gov/ceqa/.
[219] "2023 California Environmental Quality Act (CEQA) Statute and Guidelines," Association of Environmental Professionals, as of January 1, 2023, https://www.califaep.org/docs/CEQA_Handbook_2023_final.pdf.
[220] Cal. Code Regs., Tit. 14, § 15051, subd. (b).
[221] Cal. Code Regs., Tit. 14, § 15051, subd. (b)(1).
[222] Cal. Code Regs., Tit. 14, § 15051, subd. (c).
[223] Cal. Code Regs., Tit. 14, § 15051, subd. (d).

environment are identified, a notice of determination of a negative declaration is filed by the lead agency with the County and relevant state agencies. A corresponding notice and CEQA documentation is made available for public review and comments. Similarly, if significant impacts are identified but they can be reduced to less than significant through the implementation of mitigation, a mitigated negative declaration can be adopted.

In cases where a negative declaration (or mitigated negative declaration) is not tenable, a full Environmental Impact Report (EIR) will be required which includes granular analysis of the action's impact, project alternatives may be considered and evaluated, and provides details of proposed mitigations described. The development of an EIR follows several steps that include interim and draft report reviews by the public and other agencies. EIRs are the highest level of environmental CEQA documentation and require significant time to prepare before lead agency certification. Timeframes of up to two years are not uncommon but can be much longer for large projects with significant environmental complexities.

Stakeholders reported there can be uncertainty around CEQA obligations, including identification of the lead agency and appropriate exemptions for last-mile projects.

For example, wireless providers state that projects deploying wireless equipment generally qualify for a "categorical exemption" under CEQA rules, thus eliminating the formal environmental review process; however, these same providers note that municipalities and other entities serving as the lead agency can often fail to recognize or disagree that a project qualifies for a CEQA exemption—leading to a lengthy approval process with limited opportunities to appeal the decision.

Otherwise, CEQA was not discussed as a significant or a consequential barrier by any of the stakeholders interviewed during preparation of this study, or in the survey responses received from stakeholders. This may be because many last-mile projects are designed to place facilities in existing rights-of-way and existing disturbed areas, raising fewer environmental impact concerns and are easily recognized by CEQA lead agencies as being categorically exempt from CEQA. Additionally, considerable processes have already been put in place by the CPUC, Caltrans, and other agencies as they have been working with broadband providers to implement network expansions, larger middle-mile projects, and grant-funded projects.

5.5.1 Existing programs and efforts

5.5.1.1 CEQA exemptions

CEQA has provisions for statutory, ministerial, and categorical exemptions as defined in the CEQA guidelines that absolve the project owner from above-described actions and therefore reduce the time for CEQA filing substantially. CEQA exemptions, however, do not eliminate the need for compliance with other state and federal environmental laws and regulations.

Statutory exemptions are granted by the California State Legislature for certain types of projects, whereas categorical exemptions apply to categories of circumstances and classes of actions that are recognized as generally having insignificant impacts on the environment. State permitting agencies note there are methods to design a project for CEQA exemption; however, this could not be executed as a blanket exemption for all broadband projects.

If an exemption is accepted by the lead agency, the project owner may still perform an abbreviated "technical study" if environmental agencies require to issue a permit. A notice of exemption is commonly filed with the State Clearinghouse, which provides the public a period of a minimum of 30 days to view the posting. The filing and posting of the notice of exemption also starts a 35-day statute of limitations on legal challenges to the validity of the exemption. If the notice of exemption is not filed, then the statute of limitations is 180 days. The application of an exemption potentially shortens the CEQA process time to one or two months.

Unlike statutory exemptions, the definitions of categorical exemptions leave room for interpretation by the lead agencies and consequently may not be applied consistently across all agencies. Telecommunications service providers generally seek to leverage categorical exemptions to the extent possible. For the replacement of or additions to existing infrastructure, a categorical exemption[224] may apply. However, for new fiber underground route construction in the public right-of-way CEQA does not provide any exemptions unless the construction occurs in previously disturbed grounds.

5.5.1.2 Statutory exemption for the Middle-Mile Broadband Initiative

The California State Legislature, in SB 156,[225] provided for a statutory exemption from specific CEQA requirements for projects under the MMBI, subject to specific safeguards. To apply the statutory exemption, the project must be located within 30 feet of an existing right-of-way of any public road or highway; must be placed aerially or underground with restoration requirements; must incorporate and comply with any mitigation conditions imposed by the CPUC, Caltrans, or state environmental agencies; and must comply with non-CEQA permitting processes imposed by local and state law and regulations.

5.5.1.3 Designation of the CPUC as "lead agency" authority

The CPUC often qualifies as the lead agency for CEQA reviews where an entity that has local exchange authority[226] (which can include cable, small wireline ISPs, and long-haul providers) and a qualifying Certificate of Public Convenience and Necessity (CPCN) permit submits an application for approval of a broadband deployment project. The CPUC also often qualifies as the lead agency for grant-funded projects under CPUC authority, especially when the project crosses local agencies' jurisdictional boundaries.

The CPUC's procedures include a programmatic "negative declaration" for projects that will occur in existing rights-of-way and disturbed land with limited environmental impacts. For projects that cross federal land or tribal areas, the CPUC will sometimes work with federal agencies to conduct a joint NEPA and CEQA environmental review, depending on project circumstances. Additionally, when acting as a

[224] Cal Code Regs., Title 14, paragraph 15301.
[225] Senate Bill 156 (Chapter 112, Statutes of 2021), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB156.
[226] See, CPUC Energy Division, CEQA website, https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/permitting-and-environmental-review/current-project; CPUC decision D.23-08-007 (A.20-10-008) (Zayo Application to extend facilities outside of existing rights-of-way under CPCN authority and MMBI exemption process), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M517/K413/517413020.PDF.

responsible agency,[227] the CPUC has relied on CEQA review (e.g., a CEQA exemption or an adopted CEQA document) completed by another lead agency, such as another state or local agency.

For grant-funded projects under CPUC authority, the applicant will not always have a CPCN and a funded project may not qualify for a CEQA exemption. In this case, if no other agency has equal or greater regulatory authority over the project as a whole, the CPUC may serve as lead agency and will require applicants to demonstrate whether a project will qualify for a CEQA exemption. If an exemption is not granted, a full environmental review is required to ensure CEQA compliance. For projects where CEQA review has been completed by another agency, the CPUC may rely on that CEQA document for its own CEQA determination.

5.5.2 Potential opportunities

5.5.2.1 Consider possible application of a streamlined CEQA process for grant-funded projects

The state may choose to consider applying a streamlined CEQA process for grant-funded projects and assisting projects in navigating CEQA—for example by ensuring the project finds a lead agency that best streamlines the process for grant-funded last-mile projects.

CEQA does not require the CPUC to be the lead agency for all grant-funded projects. For efficiency purposes, CEQA guidelines allow the CPUC to act as a responsible agency and rely on CEQA documents prepared by another agency acting as lead. There may be streamlining opportunities that consider other agencies acting as lead such as a government agency with jurisdiction (and expertise) over general land uses in the project area.

5.5.2.2 Expand coordination between state and federal agencies for environmental review procedures for last-mile projects

State agencies may choose to consider expanding cooperation with federal agencies for environmental review procedures for last-mile projects. This may be an issue for fiber construction that encroaches on federally administered land, which requires NEPA[228] as well as CEQA compliance.

NEPA is generally similar to CEQA in terms of environmental documentation requirements and processes. In addition, in April 2024, the U.S. Department of Commerce's National Telecommunications and Information Administration "announced 30 new 'categorical exclusions' established to support [NEPA] reviews for broadband infrastructure deployments funded by the Internet for All programs."[229]

---

[227] A Responsible Agency under CEQA is a public agency with some discretionary authority over a project or a portion of it, but which has not been designated the Lead Agency. (Cal. Code Regs. Tit. 14, § 15381.) So, if a project involves discretionary actions by more than one agency, one may be selected as the Lead Agency pursuant to Cal. Code Regs. Tit. 14, § 15051, and the others would become Responsible Agencies Because Responsible Agencies will take discretionary actions regarding a project, they are also required to comply with CEQA. For efficiency, CEQA allows Responsible Agencies to rely on a CEQA document prepared by the Lead Agency to meet their CEQA compliance requirements. However, Responsible Agencies must independently review and approve the CEQA document, and not rely automatically on the Lead Agency's judgments. According to CEQA, a Responsible Agency complies with CEQA "by considering the EIR or negative declaration prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project involved" (Cal. Code Regs. Tit. 14, § 15096(a)).

[228] "NEPA.gov: National Enviornmental Policy Act," https://ceq.doe.gov/.

[229] "NTIA Adopts New Measures to Streamline Environmental Impact Permitting Review for "Internet for All" Projects," NTIA, News Release, April 1, 2024, https://www.ntia.gov/press-release/2024/ntia-adopts-new-measures-streamline-environmental-impact-permitting-review.

Providers that deploy fiber and operators of wireless access points encounter these situations more commonly in rural areas, where installations require the use of land managed by the Bureau of Land Management (BLM), by National Park Service or Bureau of Reclamation. Encroachment permits are also required on military bases, on ocean ports under the jurisdiction of the Port Authorities, and in the right-of-way of highways under the jurisdiction of the Federal Highway Administration (FHWA) and trigger NEPA actions.

As an example, last-mile providers connecting with the Middle-Mile Broadband Network, which is built largely within the interstate right-of-way, would have required an encroachment permit approval of issuance by the FHWA and predicated on NEPA documentation, had the network not been designed with access points at the boundary of the interstate right of way to manage this requirement.

The lead agency for NEPA documentation is in all cases a federal agency. Ideally, CEQA and NEPA lead agencies would work together in a coordinated fashion and reduce process redundancies.

Even if streamlined, CEQA and NEPA documentation processes may be time-consuming and costly, and may represent obstacles to projects with tight timelines and funding constraints. The processes can be additionally complicated and protracted by a lack of specificity or ambiguity of rules and their applications that provide leeway for interpretation on the part of the lead agency.

As a result:

- Categorical exemptions (CEQA) and categorical exclusions (NEPA) are likely inconsistently applied among agencies and jurisdictions.
- Environmental review processes can deviate among individual offices of the same agency.
- In locations where several agencies qualify as lead agencies, CEQA guidelines do not provide sufficient clarity on the determination of the lead agency, potentially leading to disputes and time delays.
- In situations where CEQA and NEPA documentations are required, the rules do not address a streamlined shared combined effort meeting both environmental acts' requirements.

Appendix A: Legislative background

California Senate Bill (SB) 717 [2022] requires CDT to consider the following 11 factors, at minimum, in identifying barriers to investment in or deployment of broadband infrastructure and evaluate the extent to which they act as barriers:

1. The processes for and cost of obtaining electric service to broadband access points.
2. Processes for obtaining state, county, or local permits to deploy broadband access points.
3. Regulatory and legal obstacles in deploying fiber to transport broadband traffic from broadband access points.
4. The lack of legal limitations on the price for leasing private or public property to deploy broadband access points on public and private property and buildings.
5. The cost of leasing access to middle-mile broadband networks.
6. California Coastal Commission permitting policies.
7. Local coastal plans that use California Coastal Commission policies.
8. The permitting policies and processes to deploy on property governed by port authorities.
9. Air quality management district permitting requirements.
10. Noise abatement regulations that result in delay or block investment in, and deployment of, broadband access points.
11. The income of households in the area and the economic feasibility for internet service providers to deploy in areas.[230]

[230] Senate Bill 717 (Chapter 813, Statutes of 2022), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB717.

Appendix B: List of outreach sessions and attendees

The following tables list the stakeholders CDT contacted in the preparation of this report, the meeting(s) they attended, and the written comments they submitted. Note that multiple representatives of some organizations were contacted and/or attended listening sessions.

Stakeholder group	Organization	Meeting(s) attended
SB 717-identified state agencies	California Public Utilities Commission	October 27, 2023 November 2, 2023 January 25, 2024
	Department of Forestry and Fire Protection/CalFire	January 12, 2024
	California Coastal Commission	January 22, 2024
	California Department of Transportation	October 27, 2023 November 8, 2023
	California Governor's Office of Emergency Services/Cal OES	October 27, 2023 February 22, 2024
Tribes	Tule River Indian Tribe of California	January 5, 2024 March 20, 2024
	Consolidated Tribal Health Project, Inc.	January 5, 2024
	Colusa Indian Community Council	January 5, 2024
	California Association of Tribal Governments	January 5, 2024
	Indian Health Service	January 5, 2024
	Table Mountain Rancheria	January 5, 2024
	Yurok Telecommunications Corporation	March 1, 2024
	Ewiiaapaayp Band of Kumeyaay Indians	January 5, 2024 March 8, 2024
	Hoopa Valley Tribe and Acorn Wireless	February 23, 2024
	Chumash Enterprise	February 15, 2024
	Fort Bidwell Indian Community	March 19, 2024
	Yurok Telecommunications	March 1, 2024
Additional state agency outreach	State Water Resources Control Board	December 13, 2023
	California Air Resource Board (CARB)	January 18, 2024
	California Department of General Services (DGS)	October 27, 2023
	Governor's Office of Business and Economic Development (GO-Biz)	October 27, 2023 November 2, 2023
	California Department of Housing and Community Development	March 8, 2024
	California Department of Fish and Wildlife (CDFW)	December 13, 2023
County governments and county associations	California State Association of Counties (CSAC)	November 2, 2024 March 8, 2024
	Alameda County	November 2, 2023

Stakeholder group	Organization	Meeting(s) attended
	County of Monterey	November 2, 2023 March 8, 2024
	County of Fresno	November 2, 2023
	Fresno County EDC	November 2, 2023
	Coachella Valley Association of Governments	November 2, 2023
	County of Los Angeles	November 2, 2023
	County of Marin – Digital Marin	November 2, 2023
	County of Santa Barbara	November 2, 2023 March 8, 2024
	San Mateo County	November 2, 2023
	Sacramento County	November 2, 2023
	Butte County	November 2, 2023
	County of Santa Barbara Public Works – Transportation – Permits & Construction	November 2, 2023
	Marin County Information Services and Technology	November 2, 2023
	Kings County Community Development Agency	November 2, 2023
	Los Angeles County Public Works	November 2, 2023
	Sonoma County Economic Development Board	November 2, 2023
	North State Planning and Development Collective	November 2, 2023
	Nutter Consulting	November 2, 2023
	LA County	November 2, 2023
	Tectonic Engineering	November 2, 2023
	Valley Vision	November 2, 2023
	San Diego Association of Governments (SANDAG)	November 2, 2023
	Southern California Association of Governments (SCAG)	November 2, 2023
	Bayne and Associates	November 2, 2023
	County of Tuolumne	March 8, 2024
	County of San Luis Obispo	March 8, 2024
	County of El Dorado	March 8, 2024
	County of Sonoma	March 8, 2024
	County of Mendocino	March 8, 2024
	Rural County Representatives of California (RCRC)	February 6, 2024
Municipal governments and associations	City of Pittsburg	November 2, 2023
	Cathedral City	November 2, 2023
	City of Moreno Valley	November 2, 2023

Stakeholder group	Organization	Meeting(s) attended
	City of Atascadero	November 2, 2023
	City of Lompoc	November 2, 2023
	City of Camarillo	November 2, 2023
	City of Cathedral City	November 2, 2023
	City of Buena Park	November 2, 2023
	City of Port Hueneme	November 2, 2023
	City of Big Bear Lake	November 2, 2023
	League of Cities	November 2, 2023
ISPs: incumbent telecommunications providers, cable providers, wireless cellular providers	AT&T	November 2, 2023 December 15, 2023 January 16, 2024
	Charter Spectrum	November 6, 2023
	Comcast (Xfinity)	November 6, 2023 December 6, 2023
	Cox Communications	November 6, 2023
	Gen Tech Wireless	November 2, 2023
	Frontier	November 2, 2023 December 15, 2023
	Crown Castle	November 2, 2023 December 15, 2023 January 8, 2024
	Siskiyou	December 19, 2023
	Ponderosa	December 19, 2023
	Sierra Tel	December 19, 2023
	Foresthill/Kerman	December 19, 2023
	Ducor	December 19, 2023
	CalTel	December 19, 2023
	Motive IS	December 15, 2023 January 16, 2024
	Volcano Comms (rural)	December 19, 2023
	TDS Telecom	December 19, 2023
	Consolidated Communications	December 19, 2023
	US Telecom	December 15, 2023 December 19, 2023
	CTIA, the Wireless Association	December 15, 2023 January 16, 2024
	T-Mobile	December 15, 2023 January 16, 2024
	Verizon	November 2, 2023 December 15, 2023 January 16, 2023
	CalBroadband	November 6, 2023 December 7, 2023

Stakeholder group	Organization	Meeting(s) attended
ISPs: Competitive wireline providers, satellite providers, fixed wireless providers	Cruzio	November 9, 2023 November 29, 2023
	Sonic	November 9, 2023 November 29, 2023
	Surfnet	November 9, 2023 November 29, 2023
	Cal.Net	November 9, 2023 November 29, 2023
	Sky Valley Network	November 9, 2023 November 29, 2023
	Mjm Telecom Corp	November 29, 2023
	Wireless Internet Services, Inc.	November 9,2023
	Catalina Broadband Solutions LLC	November 9, 2023
	CENIC	February 22, 2024
Publicly owned utilities	Plumas Sierra Rural Electric Cooperative and Telecommunications	November 2, 2023 December 7, 2023
	City of Anaheim Public Utilities Department	November 2, 2023
	Sacramento Municipal Utilities District	December 19, 2023
Investor-owned utilities	Southern California Edison (SCE)	November 17, 2023 December 4, 2023
	San Diego Gas & Electric (SDG&E)	November 17, 2023 December 4, 2023
	Pacific Gas & Electric (PG&E)	November 17, 2023
Ports	Port of Stockton	December 12, 2023
	Port of Long Beach	December 12, 2023
	Port of Humboldt Bay	December 12, 2023
	Port of Long Beach	December 12, 2023
	California Association of Port Authorities (CAPA)	December 12, 2023
	Port of Hueneme	January 12, 2024
	Port of Oakland	December 12, 2023 January 12, 2024
Organized labor	International Brotherhood of Electrical Workers, Local 1245	January 9, 2024
	Communications Workers of America	January 9, 2024
Manufacturing associations	Wireless Infrastructure Association	February 8, 2024
	Telecommunications Industry Association	February 6, 2024
	Fiber Optic Association	February 9, 2024
	Fiber Broadband Association	February 6, 2024
	Sierra Business Council	November 2, 2024
Consumer and ratepayer advocacy organizations	Public Advocates Office of the CPUC	January 8, 2024
	CA Center for Accessible Technology	January 8, 2024

Stakeholder group	Organization	Meeting(s) attended
	#Oakland Undivided	January 8, 2024 February 29, 2024
	California Community Fund	January 8, 2024
	The Utility Reform Network	January 8, 2024
Technology associations	Silicon Valley Leadership Group (SVLG)	February 9, 2024
	CalForward	February 21, 2024
California Middle-Mile Broadband Initiative	GoldenStateNet	March 5, 2024
	Middle Mile Broadband Initiative (MMBI)	January 30, 2024
Broadband consortia groups	North Bay / North Coast Broadband Consortium	November 2, 2024
	Inyo Mono Broadband Consortium	February 15, 2024
	Inland Empire Regional Broadband Consortium	November 2, 2023 February 15, 2024
	Gold Country Consortia	February 15, 2024
	Connected Capital	February 15, 2024
	Central Coast Broadband Consortium	February 15, 2024
	Broadband Consortium of the Pacific Coast	February 15, 2024
	Redwood Coast Connect	February 15, 2024
	UniteLA/LA Digital Equity Action League	February 15, 2024
	Central Sierra Connect	February 15, 2024
	San Joaquin Valley Regional Broadband Consortium	February 15, 2024
Public Housing	Oakland Housing Authority	February 29, 2024
	Education Superhighway	February 29, 2024
	People's Self-Help Housing	February 29, 2024
	Fresno Housing Authority	February 29, 2024
	California Department of Housing and Community Development	March 8, 2024
Public safety	Santa Barbara County	March 18, 2024
	Nevada County Office of Emergency Services	March 18, 2024

Stakeholder	Written comments received
CalBroadband	January 31, 2024
CTIA	January 24, 2024 January 30, 2024
CalBroadband	January 31, 2024
California Water Boards	February 2, 2024 March 14, 2024
USTelecom	February 2, 2024
Wireless Infrastructure Association (WIA)	February 9, 2024
California Coastal Commission	February 14, 2024
California Air Resources Board (CARB)	February 14, 2024
City of Santa Barbara	March 11, 2024
City of Fairfield	March 13, 2024
City of Arcadia	March 14, 2024
City of Rancho Cucamonga	March 15, 2024
Nevada County Sheriff's Office	March 18, 2024
City of Santee	March 19, 2024
California League of Cities	March 19, 2024
Santa Barbara County	March 26, 2024

Appendix C: Survey instrument

The following online survey was shared with stakeholders as part of CDT's outreach efforts.

Broadband Access Point Investment Study

The Office of Broadband and Digital Literacy is reaching out to you today to ask for your participation in the California Department of Technology's (CDT) Broadband Access Point Investment study.

Senate Bill 717 requires CDT to conduct a study on barriers and opportunities for investment in broadband deployment with a goal to better serve low-income households, tribal, urban, and rural customers, and underserved communities. As part of this study, we are seeking input on existing barriers and possible solutions to investing in broadband access points - both wireline and wireless.

* 1. Please provide contact information.

Entity name

Contact name

Job title

* 2. What group do you represent?

- ◯ Government
- ◯ Association
- ◯ Tribe
- ◯ Advocacy group
- ◯ Utility
- ◯ ISP
- ◯ Other (please specify)

3. Which types of access points does your organization own, maintain, regulate, or serve on public land in your jurisdiction? Check all that apply.

- ☐ Fiber to the premises
- ☐ Middle mile fiber
- ☐ Other wireline infrastructure
- ☐ Regional exchange points
- ☐ Large cell towers
- ☐ Small cell towers

4. Please explain any information related to the access points selected above.

5. What types of partnerships does your organization engage with to enhance broadband access to your constituents? Check all that apply.

- [ ] Municipal governments
- [ ] State government or agencies
- [ ] Tribal governments
- [ ] Private sector
- [ ] Advocacy groups and nonprofit partners
- [ ] None of the above

6. Please explain the agreement with each partner and the outcome of each partnership.

7. Which of the following barriers to deployment of physical infrastructure do you see as an issue for your organization and/or your constituents? Check all that apply.

- [ ] The process for obtaining permits to deploy access points
- [ ] Regulatory obstacles for deploying fiber for backhaul
- [ ] A lack of price controls and/or state guidance on leasing property to deploy access points
- [ ] The cost of deployment
- [ ] The permitting requirements of Air Quality Management Districts
- [ ] Noise abatement regulations that limit or delay construction
- [ ] The economic feasibility for ISPs to deploy in the jurisdiction
- [ ] Other (please specify)

8. Please add any information regarding barriers to deployment on public and private property.

9. If your organization is subject to the local coastal plans and the Coastal Commission policies, what challenges have you experienced or recommendations do you have to improve those plans and policies as related to broadband access point deployment?

10. What types of access points that are not found yet in your jurisdiction would be beneficial for your community? Check all that apply.

- [ ] Fiber to the premises
- [ ] Middle mile fiber
- [ ] Other wireline infrastructure
- [ ] Regional exchange points
- [ ] Large cell towers
- [ ] Small cell towers

11. Please add any additional information about the future access points selected above.